CITY OF OREGON CITY
PLANNING COMMISSION
AGENDA

Hanlon Commission Chambers, Libke Public Safety Facility, 1234 Linn Ave, Oregon City
Monday, April 20, 2026 at 7:00 PM

Ways to participate in this public meeting:

- *Attend in person, location listed above. Please see the public comment guidelines below.*
- *Attend the livestream of the meeting on the City's YouTube Channel: https://www.youtube.com/user/CityofOregonCity*
- *Register to provide electronic testimony (email ocplanning@orcity.org or call 503-722-3789 by 3:00 PM on the day of the meeting to register)*
- *Email ocplanning@orcity.org (deadline to submit written testimony via email is 3:00 PM on the day of the meeting)*
- *Mail to City of Oregon City, Attn: City Recorder, P.O. Box 3040, Oregon City, OR 97045*

1. CONVENE MEETING AND ROLL CALL

2. PUBLIC HEARINGS

a. GLUA-25-00025: CU-25-00001, MAS-25-00001, PARK-25-00001-1367 Molalla Ave. Masterplan General Development Plan Approval, Conditional Use Approval for Drive-Through Uses, Maximum Parking Adjustment

b. GLUA-25-00025: MAS-25-00002, GEO-25-00007, NROD-25-00012-1367 Molalla Ave -Detailed Development Review (DDP) for the construction of a new public road (Parcel C)

3. COMMUNICATIONS

4. ADJOURNMENT

PUBLIC COMMENT GUIDELINES

Complete a Comment Card prior to the meeting and submit it to the clerk. When the Chair calls your name, proceed to the speaker table, and state your name and city of residence. Each speaker is given 3 minutes to speak. As a general practice, the committee does not engage in discussion with those making comments. Complaints shall be addressed at the department level prior to addressing the committee.

ADA NOTICE

The location is ADA accessible. Hearing devices may be requested from the City Recorder prior to the meeting. Individuals requiring other assistance must make their request known 48 hours preceding the meeting by contacting the City Recorder's Office at 503-657-0891.

Agenda Posted at City Hall, Pioneer Community Center, Library, City Website.

Video Streaming & Broadcasts: The meeting is streamed live on the Oregon City's website and available on demand following the meeting. The meeting can be viewed on Willamette Falls Television channel 28 for Oregon City area residents as a rebroadcast. Please contact WFMC at 503-650-0275 for a programming schedule.

625 Center Street
Oregon City, OR 97045
503-657-0891

CITY OF OREGON CITY

Staff Report

To: Planning Commission **Agenda Date:** April 20, 2026
From:

SUBJECT:
Item 2.a. - GLUA-25-00025: CU-25-00001, MAS-25-00001, PARK-25-00001-1367 Molalla Ave. Masterplan General Development Plan Approval, Conditional Use Approval for Drive-Through Uses, Maximum Parking Adjustment

STAFF RECOMMENDATION:
Staff recommends that the Planning Commission deliberate and make a final decision on the application. Staff has provided a staff report that recommends conditional approval of the application. At the April 13, 2026 Planning Commission Meeting, the Planning Commission closed the record, allowed the applicant to submit final written arguments in support of their application as allowed by ORS 197.797, and continued the hearing to April 20, 2026.

No additional information or public comment may be added to the record.

During the deliberation, the Planning Commission will need to provide direction on the following aspects of the proposal:

- Has the applicant adequately demonstrated a need for an adjustment to the maximum parking standard on parcels A and D, and have any adverse effects been mitigated?
- Has the applicant designed drive-through facilities on Parcels A and D that are safe, contain adequate queue storage, and have any adverse effects been mitigated?
- Do you agree or disagree with the staff recommendation to relocate the north end of the shared use path, integrate it into Parcel B to improve visibility, move it away from the geohazard buffer area, and allow its construction either concurrently with the DDP or as a Future DDP on Parcel B?
- Do you agree or disagree with Staff's interpretation of *OCMC 17.44.060(L) - Development* standards that staff does not have the authority to approve development in the buffer area beyond *"four thousand square feet of the surface area... graded or stripped of vegetation or covered with structures or impermeable surfaces"*

Please refer to the Applicant's final arguments for their response to the above questions.

Please reference the April 6, 2026 staff report for the following topics: Conditional Use

pages 39-49, **Parking Adjustment** pages 29-36, **shared use path location**: pages 37,38,44 **Geohazard Overlay District:** 22-23,57-67, **Rough Proportionality** page 67.

EXECUTIVE SUMMARY:

The Applicant is proposing a Master Plan to create future development parcels for a site zoned Mixed Use Corridor 2. Once approved, each parcel will be submitted for a separate Type II Administrative Detailed Development Plan (DDP) Review when market conditions are ready for each development. The buildings and their locations on the three development parcels are subject to change unless otherwise specified by conditions in this application.

While the applicant could have created the development parcels and built the public road through an Administrative Type II Site Plan design review, the Master Plan process will provide the applicant with the needed clarity for phasing and site-wide impact analysis, and ensure that the same code is used for review at the time of each Detailed Development (DDP) application. Staff has found that, as conditioned, the application meets all relevant Master Plan transportation and utility impact review criteria.

Two requests in the proposal specifically require Planning Commission review: drive-through facilities and adjustments to the parking maximums for parcels A and D. Staff has found that both requests are reasonable, well-designed, and can meet the criteria for approval with the enclosed conditions.

A Detailed Development Plan for the construction of a new public road and utilities has been submitted (MAS-25-002_GEO-25-007_NROD-25-012) concurrently with the Master Plan. The staff report will be part of the Planning Commission hearing and can be approved at the same time as the Master Plan.

Summary of Master Plan Elements

- Creation of 4 development parcels
    - Parcel A: Retail,
    - Parcel B: Multi-Family,
    - Parcel C: New Public Road (including frontage improvements on Molalla Avenue)
    - Parcel D: Quick Serve Restaurant
- Review of Transportation Impact Analysis for the full site
- Review of public road and utility location, site grading.
- Conditional Use Review for two drive-thru facilities (Parcels A and D)
- Parking Maximum Adjustment (Parcels A and D)
- Clarifying the future DDP process for parcel building out
    - 20-year Master Plan (TLs 3330,3400,3200,3201)
    - Can use the code effective at the time of Master Plan submittal, or the current code at the time of DD submittal, for each parcel.
    - Specific uses are not tied to the Master Plan Approval, but any revision must

be reviewed to see if it affects any Master Plan conditions of approval.
- No Master Plan adjustments are being requested. Each DDP must meet the Type II development process or return to the Planning Commission for a Master Plan adjustment request.

At the March 23, 2026, hearing, the applicant requested a continuance to continue working with city staff on the details related to the shared use path on Parcel B. During that discussion, staff examined Parcel B more closely and determined that the applicant has designed the parking lot on Parcel B farther into the hillside than is permitted within the OCMC 17.44 Geologic Hazard buffer area. Although Parcel B is not being reviewed as a Detailed Development Plan (DDP) in this package, the applicant will need to redesign Parcel B when submitting a future Type II DDP. Conditions have been included to identify required revisions to comply with OCMC 17.44 for Parcel B. The revised staff report includes additional findings regarding the location and timing of the shared-use path to ensure it is placed in a safe area visible from the development on Parcel B when constructed.

At the April 13, 2026 meeting, both staff and the applicant presented additional information to address the location and timing of the shared- use path and the Geologic Hazard Overlay District*, i*ncluding a discussion *of OCMC 17.44.060(L).* The Planning Commission closed the record, allowed the applicant to submit final written arguments in support of their application as allowed by ORS 197.797, and continued the hearing to April 20, 2026, for deliberations and a decision.

BACKGROUND:
Please refer to the staff report for background information.

OPTIONS:

BUDGET IMPACT:
1. Approve the proposal with conditions (staff recommendation) with the revised enhancement landscaping condition #14 as presented on 4.13.26
2. Approve the proposal with modified conditions and provide revised findings
3. Deny the proposal and provide revised findings.

REVISED TYPE III STAFF RECOMMENDATION
April 6, 2026

MASTER PLAN (GDP) FRAMEWORK PLAN, PARKING ADJUSTMENT, AND CONDITIONAL USE FOR DRIVE THRU LOCATIONS

FILE NUMBER: **GLUA-25-00025**: **CU-25-00001, MAS-25-00001, PARK-25-00001**

Application Submitted:06/27/2025
Application Incomplete: 7/26/2025
Application Complete:12/18/2025
120-Day Decision Deadline:04/17/2026
120-Day Deadline Extension 05/17/2026

APPLICANT: Cypress Acquisitions, LLC
8144 Walnut Hill Lane, Suite 1200
Dallas, TX 75231

OWNER:

TL 3200, 3201, 3300, & 3400:	Walmart Inc. 2608 SE J St. Bentonville, AR 72716-5510
TL 500, 501	Rocky Younger PO Box 1337 Oregon City, OR 97045
TL 602	Les Schwab 20900 Cooley Rd Bend, OR 97701

REQUEST: Masterplan General Development Plan Approval
Conditional Use Approval for Drive-Through Use
Maximum Parking Adjustment

LOCATION: 1367 Molalla Ave
Oregon City, OR 97045
3-2E-05DB TL 3200, 3201, 3300, &
3400, 500, 501, 602

REVIEWER: Christina Robertson-Gardiner, Senior Planner AICP
Erik Nichols, Project Engineer

ZONING: Mixed Use Corridor (MUC-2)

DECISION: Approval with Conditions

PROCESS: Type III decisions involve the greatest amount of discretion and evaluation of subjective approval standards, yet are not required to be heard by the city commission, except upon appeal. Applications evaluated through this process include conditional use permits. The process for these land use decisions is controlled by ORS 197.763. Notice of the application and the planning commission hearing is published and mailed to the applicant, recognized neighborhood association and property owners within three hundred feet of the subject property. Notice must be issued at least twenty days pre-hearing, and the staff report must be available at least seven days pre-hearing. At the evidentiary hearing held before the planning commission, all issues are addressed. The decision is final unless appealed and description of the requirements for perfecting an appeal. The decision of the planning commission is appealable to the city commission within fourteen days of the issuance of the final decision. The city commission hearing on appeal is on the record and no new evidence shall be allowed. Only those persons or a city-recognized neighborhood association who have participated either orally or in writing have standing to appeal the decision of the planning commission. Grounds for appeal are limited to those issues raised either orally or in writing before the close of the public record. A city-recognized neighborhood association requesting an appeal fee waiver pursuant to OCMC 17.50.290.C must officially approve the request through a vote of its general membership or board at a duly announced meeting prior to the filing of an appeal. The city commission decision on appeal from the planning commission is the city's final decision and is appealable to the Land Use Board of Appeals (LUBA) within twenty-one days of when it becomes final.

CHAPTERS

CHAPTER 17.29 MUC MIXED USE CORRIDOR DISTRICT
CHAPTER 17.50 ADMINISTRATION AND PROCEDURES
CHAPTER 17.56 CONDITIONAL USES
CHAPTER 17.52 OFF-STREET PARKING AND LOADING
CHAPTER 17.65 MASTER PLANS AND PLANNED UNIT DEVELOPMENTS

Staff Summary
The following is an executive summary of the major elements of the Master Plan. Additional findings and background are found throughout the document.

The Applicant is proposing a Master Plan to create future development parcels for a site zoned Mixed Use Corridor 2. Once approved, each parcel will be submitted for a separate Type II Administrative Detailed Development Plan (DDP) Review when market conditions are ready for each development. The buildings and their locations on the three development parcels are subject to change unless otherwise specified by condition in this application.

While the applicant could have created the development parcels and built the public road through an Administrative Type II Site Plan design review, the Master Plan process will provide the applicant with the needed clarity for phasing and site-wide impact analysis, and ensure that the same code is used for review at the time of each Detailed Development (DDP) application. Staff has found that, as conditioned, the application meets all relevant Master Plan transportation and utility impact review criteria.

Two requests in the proposal specifically require Planning Commission review: drive-through facilities and adjustments to the parking maximums for parcels A and D. Staff has found that both requests are reasonable, well-designed, and can meet the criteria for approval with the enclosed conditions.

The Planning Commission should focus its deliberation on these two questions:

1. Has the applicant adequately demonstrated a need for an adjustment to the maximum parking standard on parcels A and D, and have any adverse effects been mitigated?
2. Has the applicant designed drive-through facilities on Parcels A and D that are safe, contain adequate queue storage, and have any adverse effects been mitigated?

A Detailed Development Plan for the construction of a new public road and utilities has been submitted (MAS-25-002_GEO-25-007_NROD-25-012) concurrently with the Master Plan. The staff report will be part of the Planning Commission hearing and can be approved at the same time as the Master Plan.

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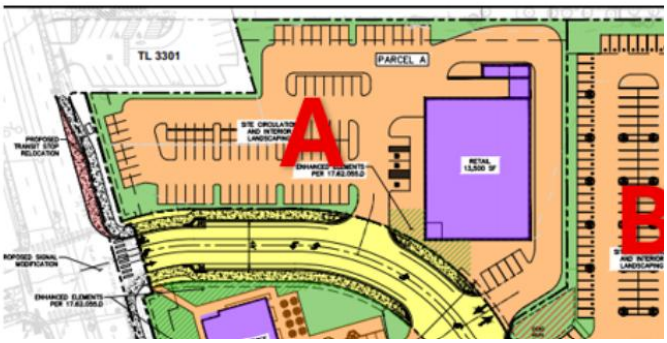
- Conditional Use Review for two drive-thru facilities (Parcels A and D)
- Parking Maximum Adjustment (Parcels A and D)
- Clarifying Future DDP process for parcel building out
    - 20-year Master Plan (TLs 3330,3400,3200,3201)
    - Can use the code effective at the time of Master Plan submittal, or the current code at the time of DD submittal, for each parcel.
    - Specific uses are not tied to the Master Plan Approval, but any revision must be reviewed to see if it affects any Master Plan conditions of approval.

- No Master Plan adjustments are being requested. Each DDP must meet the Type II development process or return to the Planning Commission for a Master Plan adjustment request.

Parcel A Redesign

The applicant initially proposed a small specialty grocer for Parcel A. However, as they were submitting the full application, the tenant of Parcel A withdrew, forcing the applicant to quickly reformat the approach to Parcel A.

Luckily, the existing building's size and location allowed for a conversion into a multi-tenant commercial space without a major redesign. The planned loading and unloading area for the grocery store could easily be adapted into a drive-thru queue space for a restaurant tenant at the back of the building. The submitted application features this redesign and requests a drive-thru facility on Parcel A.

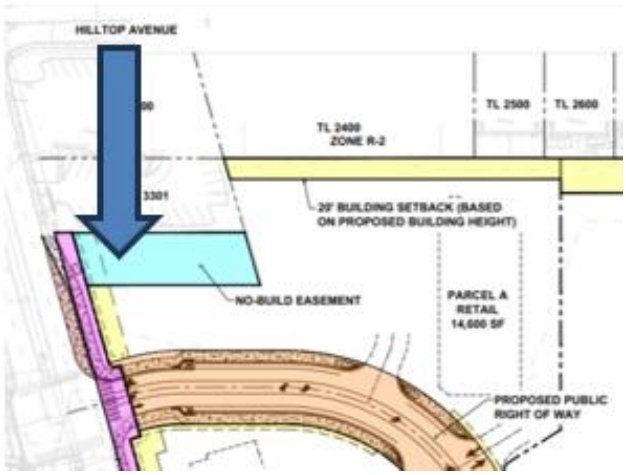


Previous Design- Specialty Grocer



Revised Design- Multi-Tenant Commercial

No Build Easement



At first, the applicant explored placing the revised building at the corner of Molalla Avenue and the new road, but discovered that a no-build easement heavily restricted this area and limited space for drive-thru queues and direct access to parking. Staff believes that the design is a reasonable approach for the lot, and since no tenants have been identified for this parcel, a parking maximum for **use** is not warranted. Instead, staff views the approach as allowing additional parking in the no-build/constrained area of the parcel, subject to enhanced landscaping (Condition of Approval; #14) along Molalla Avenue, which will require removing 7-8 parking spaces along the Molalla Avenue frontage. The new building on Parcel A fronts directly onto the new road and will feature a direct pedestrian connection. The transportation analyses reviewed both the impact of the specialty grocery and the multi-tenant commercial, and both met the city's operational standards as conditioned. If, after the Master Plan is approved, a specialty grocery returns to Parcel A, it can still be implemented through the Type II DDP process and does not require a Type III Amendment to the Master Plan.

Parcel C – Public Road
A new public road is being proposed to connect the site to both Molalla Avenue and Beavercreek Road with signalized intersections. This road has been included in the city's Transportation System Plan (TSP). The properties adjacent to Beavercreek Road are part of the initial Master Plan (Fig. 6) to allow for road construction, but are not included in the 20-year extension. The owners of these lots (tax lots 500, 501, and 602) have a private easement indicating that the lots involved in the full master plan will develop the road for them. Once constructed, tax lots 500, 501, and 602, which front Beavercreek Road, will no longer be subject to the Master Plan and may be developed through the standard Site Plan and Design Review Process when market conditions are ready. The Detailed Development Plan review for this road is documented in the separate staff report MAS-25-002_GEO-25-007_NROD-25-012.

Transportation Analysis
Staff finds that the applicant has demonstrated that the proposal provides a safe buildout scenario, that the transportation impacts have been assessed in accordance with the city-adopted transportation impact guidelines, and that adequate conditions can be met to ensure compliance. Transportation System Development Fees (SDC), which support the construction of projects identified in the city's Transportation System Plan (TSP), will be paid at the time of each detailed development plan, including a proportional share of the planned improvements at OR-213/Beavercreek Road for a new dedicated right turn lane from Beavercreek. The shared use path project, S28, may be built with the DDP for Parcel C in total or in part as part of Parcel C boundary only and a future DDP in Parcel B. Frontage improvements to Molalla Avenue may be built with each DDP or Parcel C only.

Conditional Use Review for Two Drive-Thru Facilities (Parcels A and D)
Compared to the neighboring General Commercial District, the Mixed-use Corridor zone requires Planning Commission review for drive-through facilities. The Planning Commission can consider each development separately, conduct a context-sensitive review, and place reasonable conditions on the proposal. Staff notes that the two drive-through facility locations have been thoughtfully designed to ensure safety and prevent queues from blocking public roads. The associated uses are permitted in the zone; the drive-throughs are located on the side and rear; and the buildings are not exclusively dedicated to drive-through traffic. The applicant has also

proposed additional landscaping along Molalla Avenue to enhance the pedestrian experience for Parcel D, and staff has conditioned additional landscaping on Parcel A and D, which staff believes will improve the area and mitigate any potential visual impacts from the drive-through proposal. An opening-day pedestrian and vehicle circulation safety plan for Parcel D has been added as a condition, given that the early months of operation will be busy.

Parking Maximum Adjustment (Parcels A and D)
Parking Adjustments are identified as a Type III Planning Commission review, as the city's urban form varies greatly from the urban downtown core to the more suburban Hilltop areas. A public hearing allows the Planning Commission to consider a proposal in context with abutting neighbors and the vision for development in the surrounding area. Because the new public road separates Parcels A and D, a shared parking approach is unlikely and impractical. If both parcels were on the same side of the street, staff would be more open to pursuing shared parking and opposing the maximum parking adjustment of parking. Allowing an increase in the maximum parking for Parcel D ensures sufficient customer parking for higher-traffic restaurants that lack a larger street connection to the neighborhood, which do not have abundant on-street parking, nor do they have access rights for customers to use nearby commercial development for parking.

When Parcel A was initially proposed as a small specialty grocery, it made sense to ensure that the maximum number of spaces was allowed on-site. With Parcel A being redesigned as a mix of tenants to be determined, the request for a maximum of 102 spaces on Parcel A does not seem as critical. Parcel A is constrained by a non-build easement on a portion of the Molalla Avenue easement, which makes placing the building at the corner of the new public street at Molalla Avenue problematic.

The proposed building location on Parcel A fronts the new public road and offers direct access, but it is more than 25 feet away from the intersection at Molla Avenue. A condition of approval has been added allowing the building on Parcel A to be positioned as proposed, contingent on adding an enhanced landscaping strip along Molalla Avenue. This will remove the Molalla Avenue frontage from Parcel A, no longer making it a corner lot, either through the creation of a tract or recording a specific easement. The improved landscaping on Parcel A will match the upgraded landscaping planned for Parcel D, ensuring a smoother transition along Molalla Avenue and serving as a gateway to the development, which helps reduce potential negative effects on pedestrians. Fully denying the parking maximum request will leave part of the lot unbuilt and available for future development; however, it remains unclear whether a large private, landscaped area near Molalla Avenue would offer any clear community benefits beyond the already conditioned enhanced landscaping strip.

If the applicant provides additional findings demonstrating that the full 102 parking spaces are needed for Parcel A, the Planning Commission can choose to remove the enhanced landscaping condition and direct staff to provide additional findings and conditions showing that there is adequate mitigation for the proposed parking adjustment.

Conditions of Approval

(P) = Verify that condition of approval has been met with the Planning Division.
(DS) = Verify that condition of approval has been met with the Development Services Division.
(B) = Verify that condition of approval has been met with the Building Division.
(F) = Verify that condition of approval has been met with Clackamas Fire Department.

1. Per OCMC 17.65.020.A, unless further amended and extended by the Planning Commission, this Master Plan, which includes Tax Lots 3330, 3400, 3200, and 3201, shall control development on the site until March 23, 2046. Tax Lots 500, 501, and 602 are not part of the 20-year Master Plan but are included initially to allow for the DDP construction of the Public Road, which will connect with Beavercreek Road. Future DDP applications are to be processed as Type I or II review as directed by the Oregon City Municipal Code, and the applicant may choose to use either the 2025 code adopted at the time of the Master Plan Amendment submittal (June 27, 2025) or the current code. (P)
2. The applicant's proposed building layouts and sizes are subject to change during the DDP process and should not be viewed as amendments to the Master Plan unless the final size or scope of the buildings surpasses what was initially proposed or is limited by additional conditions specified in the Master Plan. The final design will be assessed during the Type II Detailed Development Plan review. This means the applicant can build a smaller development or a proposal with fewer trips, as long as the design fulfills the approval criteria of the Detailed Development Plan and the relevant Master Plan conditions. (P)
3. The project's overall floor area ratio (FAR) is 0.73, exceeding the minimum requirement for this zone. For each DDP application, the applicant shall indicate how the proposal will meet or exceed the zone's minimum FAR of 0.25 for the whole site (parcels A, B & D). (P)
4. The applicant shall ensure that the following Master Plan residential standards found in OCMC 17.65.050C (8) & (9) are met at the time of Detailed Development Review of Parcel B.(P)
5. The findings of the City's review of the TIA show that the proposed development does not fail the City's transportation systems and that the overall concept of the proposed development can meet the City's standards. Additional reviews and conditions will be required for each DDP, tailored to each parcel (e.g., driveway locations, spacing, sizing, queuing).
    a. The proposed public street between Molalla Avenue and Beavercreek Road shall be constructed prior to occupancy of the first developed parcel and follow standards within OCMC 17.44. (DS)
    b. The construction of the shared-use path S28 within TL 3200/3400 may be completed with either the DDP for the new roadway in total or in part with Parcel C and completing within the DDP of Parcel B prior to occupancy of Parcel B and follow standards of OCMC 17.44. (DS)
    c. Since the TIA assumes a reduction in vehicle trips due to internal trip capture that would occur as walking and/or biking trips, the TIA shall be revised to discuss the project's internal pedestrian and bicycle circulation needs and how the site plan adequately accommodates active modes. (DS)

d. Minimum AASHTO sight distance requirements shall be met at all site intersections and driveways. Sight distances on the internal local street system shall be approved by the City Engineer prior to final site plan approval (at DDP). (DS)
e. A proportionate share fee contribution of $404 per p.m. peak hour trip shall be collected for planned improvements at OR-213/Beavercreek Road. The fee amount will be determined as part of future detailed development plan applications. (DS)
f. The opening months of the quick service restaurant on Parcel D will be busier than the proposed and reviewed long-term operational impact. At the time of the DDP review, the applicant will be required to implement an on-site and off-site opening-day pedestrian and vehicular circulation and safety plan.to address additional traffic congestion and concerns regarding vehicle queuing.

6. The proposed 12" water main, connecting Molalla Avenue to Beavercreek Road, shall be constructed with the new public road street improvements. (DS)
7. The City's identified sanitary extension within Parcel B shall be completed prior to Parcel B's occupancy. The proposed sewer line within the new public road shall be constructed with the new public road improvements. (DS)
8. Public stormwater facilities shall only treat stormwater from publicly maintained rights-of-way (i.e. public streets). The applicant shall either separate the public stormwater runoff from the private runoff with separate publicly maintained facilities (e.g. streetside planters or other separate facilities) and privately maintain facilities for private stormwater runoff; or the development can enter into an agreement with the City to privately maintain a combined pond. Stormwater associated with the new public road shall be constructed with the new public road improvements. All stormwater improvements shall comply with OCMC 17.44 for each DDP. (DS)
9. Grading and erosion control permitting will be required for all construction activities meeting the thresholds and standards noted in the City's Stormwater and Grading Design Standards, OCMC 15.48, and OCMC 17.47. Grading within the City's Geological Hazards Overlay Zone shall comply with OCMC 17.44 for each DDP. If the applicant wishes to grade or prepare Parcel's A, B, and D prior to the future development's DDPs, a grading and erosion control permit is required. If the applicant chooses to complete mass grading prior to permit of final engineering plans of the new public road, a separate grading permit and mass grading plan will be required. (DS)
10. The applicant will be required to meet the conditions of approval for OCMC 17.44 within the Geological Hazards Overlay Zone as part of each DDP within the mapped Geological Hazards Overlay Zone. (DS)
11. Parcel B's future DDP application shall be required to make significant changes to its site plan in order to meet the City's Geological Hazard Code 17.44 within the mapped landslide and steep slope areas within the Geologic Hazards Overlay Zone for allowable earth disturbance and dwelling unit density. (DS)
12. The proposed public improvements identified with this GDP are generally consistent with the City's water, sewer, stormwater, and transportation standards. Further refinement to these facilities will be conditioned and reviewed as part of each parcel's DDP to ensure that they meet City standards and design policies. (DS)
13. The proposed drive-thru facility Conditional Use Permits on Parcels A and D are approved. As the applicant has provided enhanced landscaping, extensive on-site queue storage, and demonstrated that car stacking will not impact the operation of any public roads, no time

limit for periodic review has been established. Additionally, the drive-thru facility on Parcel A may be used by one or more tenants if, through the Detailed Development Review Process, it can be demonstrated that there is adequate queue storage for an additional tenant. However, if the city finds that one or more conditions attached to the grant of the conditional use permit have not been fulfilled, and the unfulfilled condition is substantially related to the issuance of the permit, the city may pursue the revocation of the conditional use permit through 17.56.060 - Revocation of conditional use permits. (P)

14. The Parking Maximum Adjustment is approved for Parcels A and D, subject to enhanced landscaping along Molalla Avenue, as further defined in Condition of Approval #15. (P)

15. Two enhanced landscaping locations are required to be installed before receiving a Certificate of Occupancy for their respective parcels. The enhanced landscaping on Parcels A and D is shown in Figures 8 and 9 of the staff report. The following enhanced landscaping areas (both proposed and conditioned) shall meet the landscaping standards of OCMCM 17.62.050, can be included in the minimum landscaping requirements of the parcel, and include the following elements:

    a. Native trees and shrubs are required to be planted at a rate of two trees and thirty shrubs per 1,000 square feet of enhanced landscape area. Fractions thereof of trees/plants shall be rounded down. The trees do not need to be evenly spaced, and 1/2 of them must meet a minimum of 45 feet at full height. Oregon White Oaks are encouraged where applicable and represent at least five of the required trees in the combined parcel areas A and D areas.
    b. Plant Diversity. Shrubs shall consist of at least four different species on each parcel. If fifteen trees or more are planted on each parcel's enhancement landscaping area, no more than one-third of the trees may be of the same genus. Up to twenty-five percent of the shrub plantings do not need to be native shrubs. (P)

16. Parcel A is not designed to be a corner lot because of the non-build easement on a substantial portion of the Molalla Avenue frontage. At the time of the DDP for Parcel A, the applicant shall ensure the enhanced landscaping areas further described in Condition of Approval #14 are part of a separate landscape tract or specified landscape easement, which can be removed upon redevelopment. Monument signs are allowed within this tract or easement. (P)

17. The proposed location of the shared use path (S28) is located below the development on Parcel B in a narrow bench of the hillside that is not visible to the general public which will, as designed and built, create an attractive nuisance and public safety concerns and conflicts with the community's comprehensive plan policies to support design that is to strengthen wellbeing, quality of life, and livability across all Oregon City neighborhoods by creating places that are safe and comfortable with convenient access to community services. The applicant shall resubmit a revised design at the time of DDP development for either Parcel C or Parcel B. The revised design of S28 requires a minimum paved 7-foot-wide path that is ADA accessible, lit to the standards of 16.12.032.D, at a similar grade and visible from the development on Parcel B, and designed to connect to the northern property line, which will be extended at a future time to Hilltop Avenue. (DS)

18. The Master Plan parcels may be separated and or sold as part of the Master Plan implementation, which does not remove those parcels from the 20-year Master Plan unless an amendment to the boundary is requested. (P)

I. BACKGROUND:

1. Existing Conditions

The subject property is comprised of an assemblage of properties in the main development area, which includes TL 3200, 3201, 3300, & 3400, Map 3 2E 05DB (On-Site) and a proposed public road through TL 500 & 501, Map 3 2E 05D (Off-site) that connects the on-site properties to Beavercreek Rd. The on-site properties are currently vacant and include a mixture of grasslands, scrub brush, and scattered groves of trees, with more concentrated tree canopy along the north and south edges and in the southeast corner. The east side of the on-site properties extends into Newell Creek Canyon, is heavily forested, and lies within a geologic hazard area.

Past uses on TL 3200, 3201, and 3300 include a former wrecking yard whose operations started in 1953 and continued until late 2001, when the wrecking yard operations ceased. Environmental studies on these properties indicated low concentrations of petroleum hydrocarbons and/or metals in near-surface and shallow soils, and that groundwater underlying the former wrecking yard was not impacted with contaminants of concern. TL 3400 previously included a gas station and tavern in the vicinity of its southwest corner, which has been removed. Environmental remediation occurred at the former gas station site, and ODEQ issued a “No Further Action” letter indicating that ODEQ should be notified prior to installation of any groundwater supply wells and any construction or excavation in or around the former gas station pocket of contamination.

The on-site properties generally slope to the south, with a portion of the west end of the site sloping to the southwest. The east end of the property includes a steep slope extending into Newell Creek Canyon and is heavily forested.

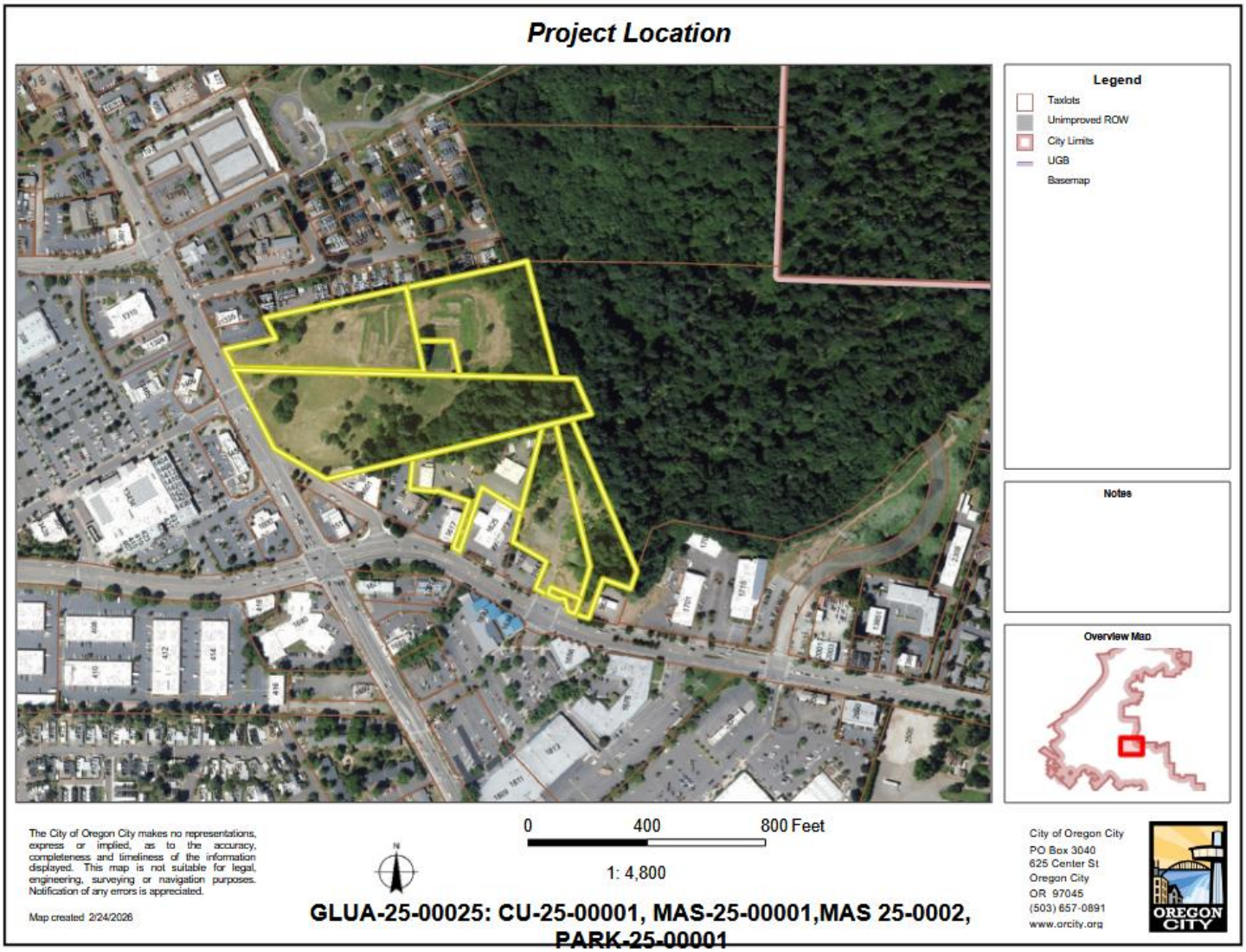


Figure 1. Vicinity Map & Existing Conditions – Aerial Image



Figure 2: Street View from Molalla Avenue

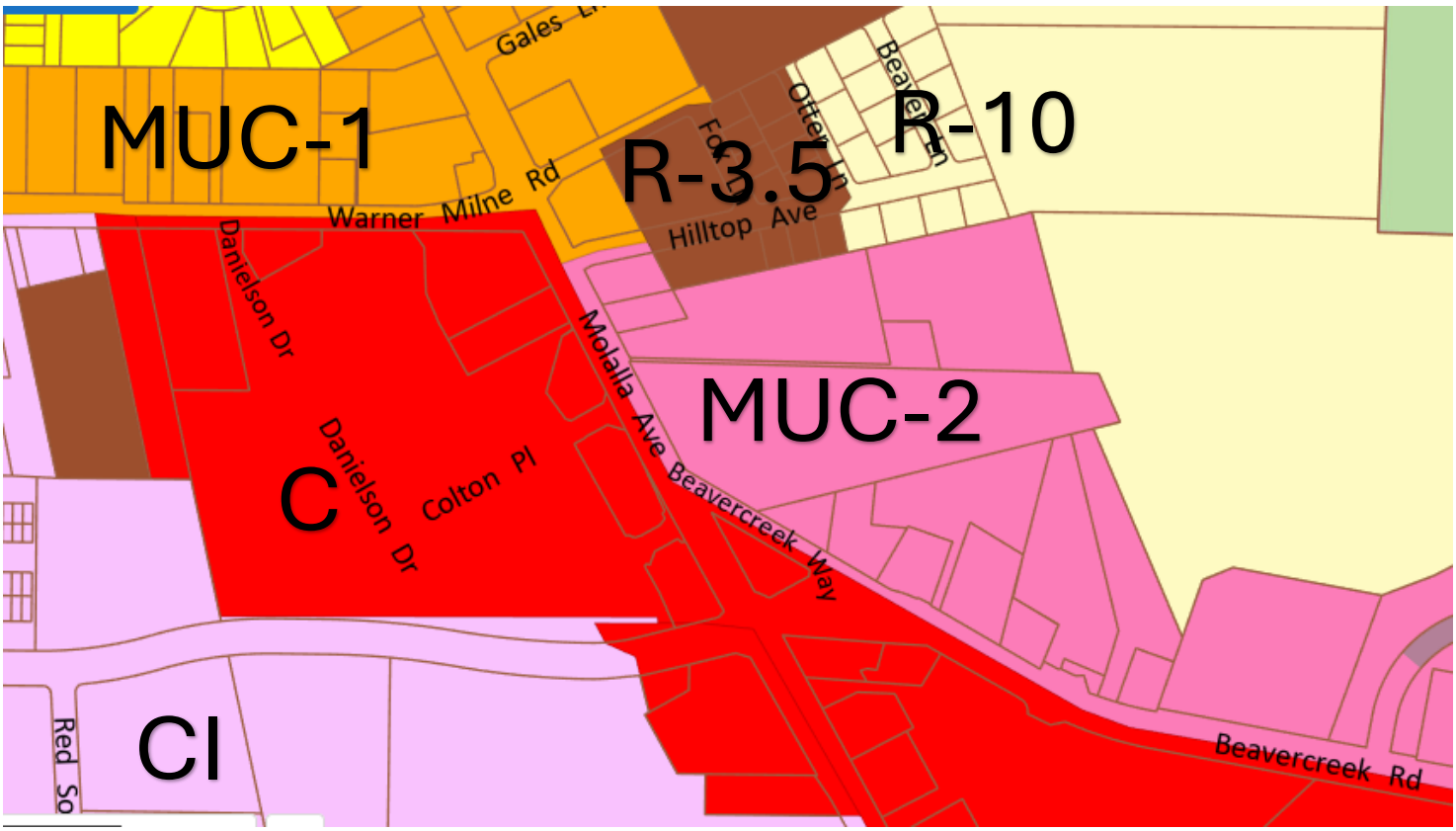


Figure 3. Adjacent Zoning. Mixed Use Corridor (MUC-1) and (MUC-2), Low Density Residential R-10, Medium Density Residential R3.5, Campus Industrial CI, General Commercial-C.

2. Project Description

The project proposes to develop the on-site properties into a mixed-use development via the Oregon City Masterplan process. Three parcels are proposed in addition to a public street extending from the existing signal at Molalla Ave through the on-site properties and through TL 500/501 to the existing signal at Beavercreek Rd. Uses on the parcels include an approximately 13,500 sf retail building on Parcel A, an approximately 208-unit multi-family residential component on Parcel B, and a Quick Service Restaurant on Parcel D. Parcel C is proposed as a public road through the site. The Quick Service Restaurant and retail building in Parcel A include a drive-through facility, which requires Conditional Use Approval.

Parcels A and D will also seek an adjustment to the maximum parking ratio. The project seeks Type III Masterplan General Development Plan approval and Type II Detailed Development Plan approval for the proposed public roadway and utility improvements in both on- and off-site areas, and for rough grading of the entire on-site area.

Overall phasing on the Masterplan includes the proposed public roadway and utility improvements, as phasing approach to grading.

The remaining parcels are proposed as separate phases, though their development will be market-driven and could be developed separately or simultaneously with each other

Summary of Master Plan Elements (GDP)

- Creation of 4 development parcels
  - Parcel A: Retail,
  - Parcel B: Multi-Family,
  - Parcel C: New Public Road,
  - Parcel D: Quick Serve Restaurant
- Review of Transportation Impact Analysis for the full site
- Review of public road and utility location, site grading.
- Conditional Use Review for two drive-thru facilities (Parcels A and D)
- Parking Maximum Adjustment (Parcels A and D)
- Clarifying Future DDP process for parcel building out
  - 20-year Master Plan (TLs 3330,3400,3200,3201)
  - Can use the code effective at the time of Master Plan submittal, or the current code at the time of DD submittal, for each parcel
  - Specific uses are not tied to the Master Plan Approval, but any revision must be reviewed to see if it affects any Master Plan conditions of approval.
  - No Master Plan adjustments are being requested. Each DDP must meet the Type II development process or return to the Planning Commission for a Master Plan adjustment request.

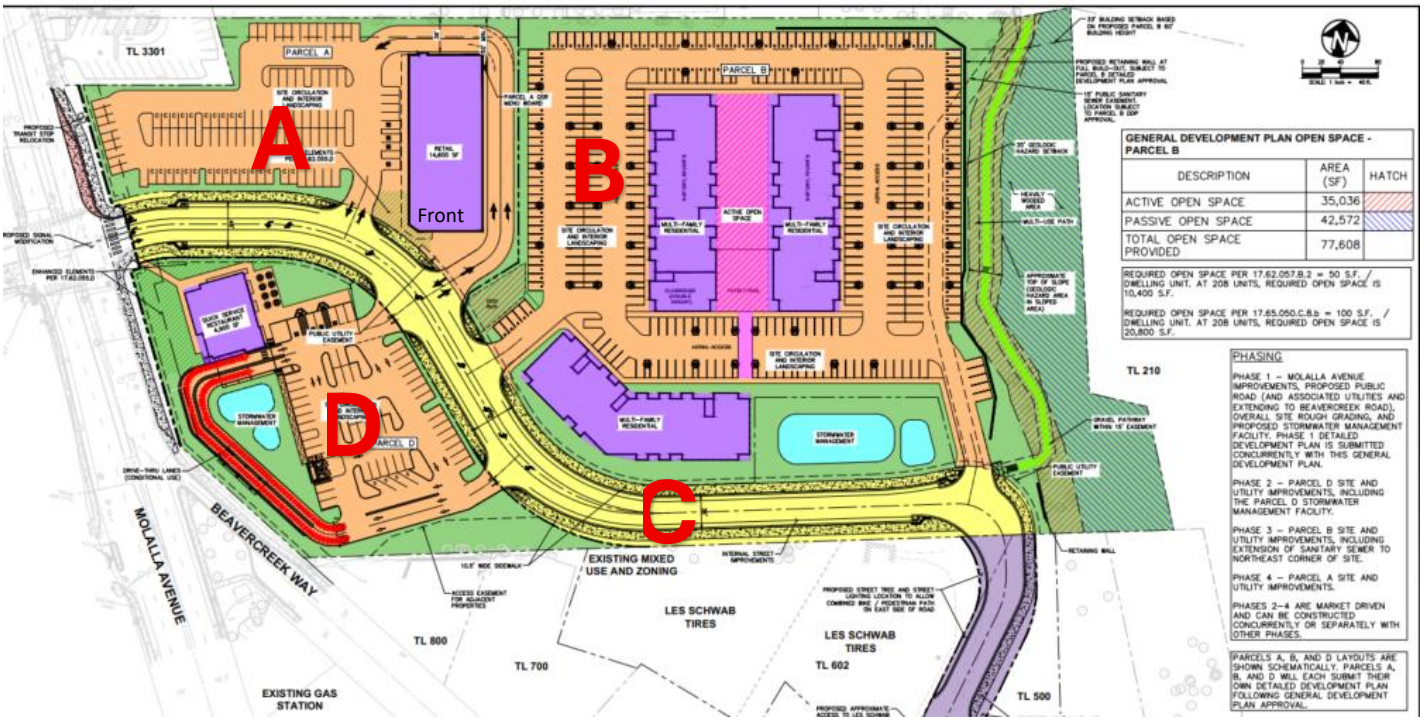


Figure 4: Proposed Master Plan **Parcel A**: Retail**, Parcel B**: Multi-Family, **Parcel C**: New Public Road, **Parcel D:** Quick Serve Restaurant

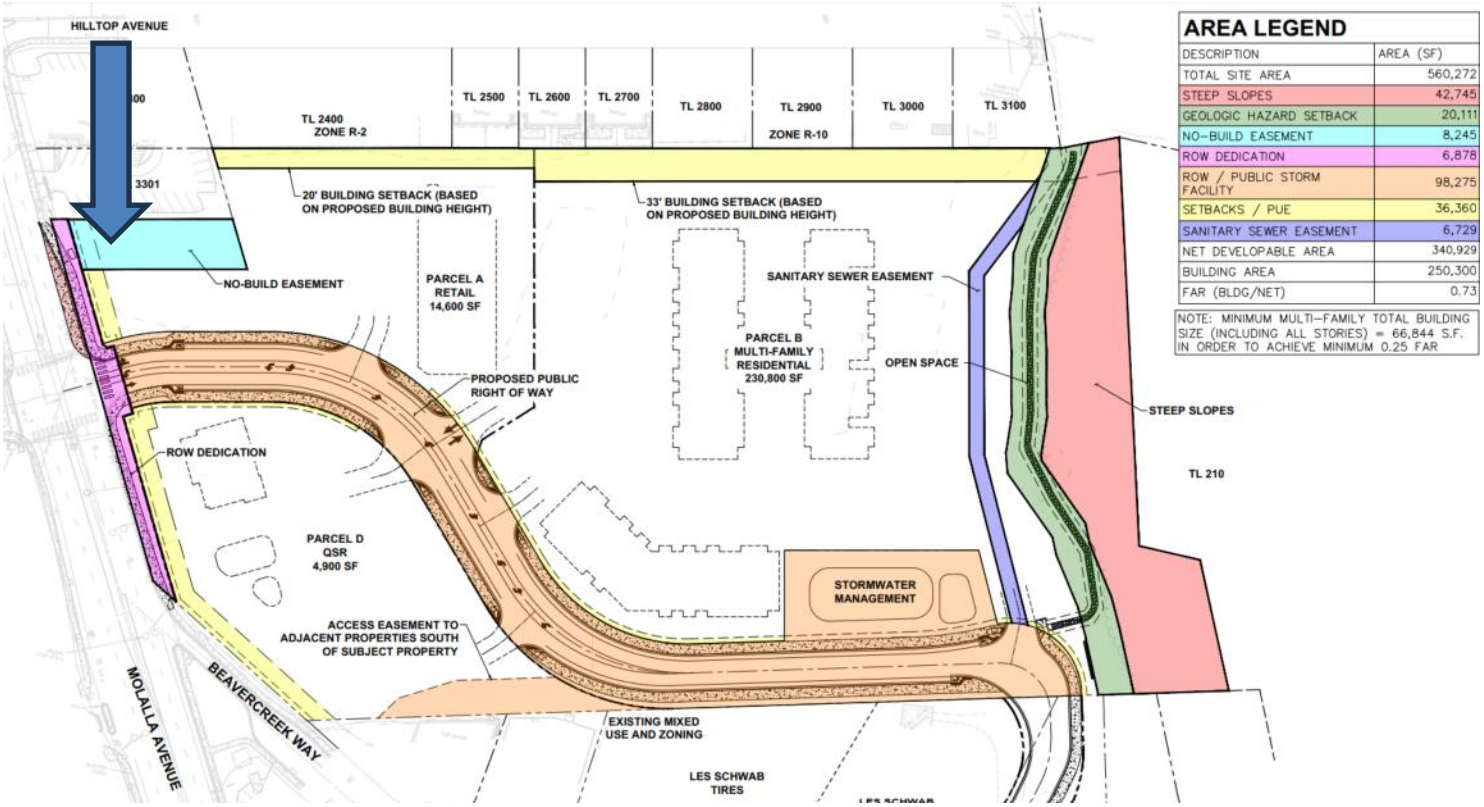


Figure 5: Site Setbacks and Constraints (note the no-build easement in blue on Parcel A)

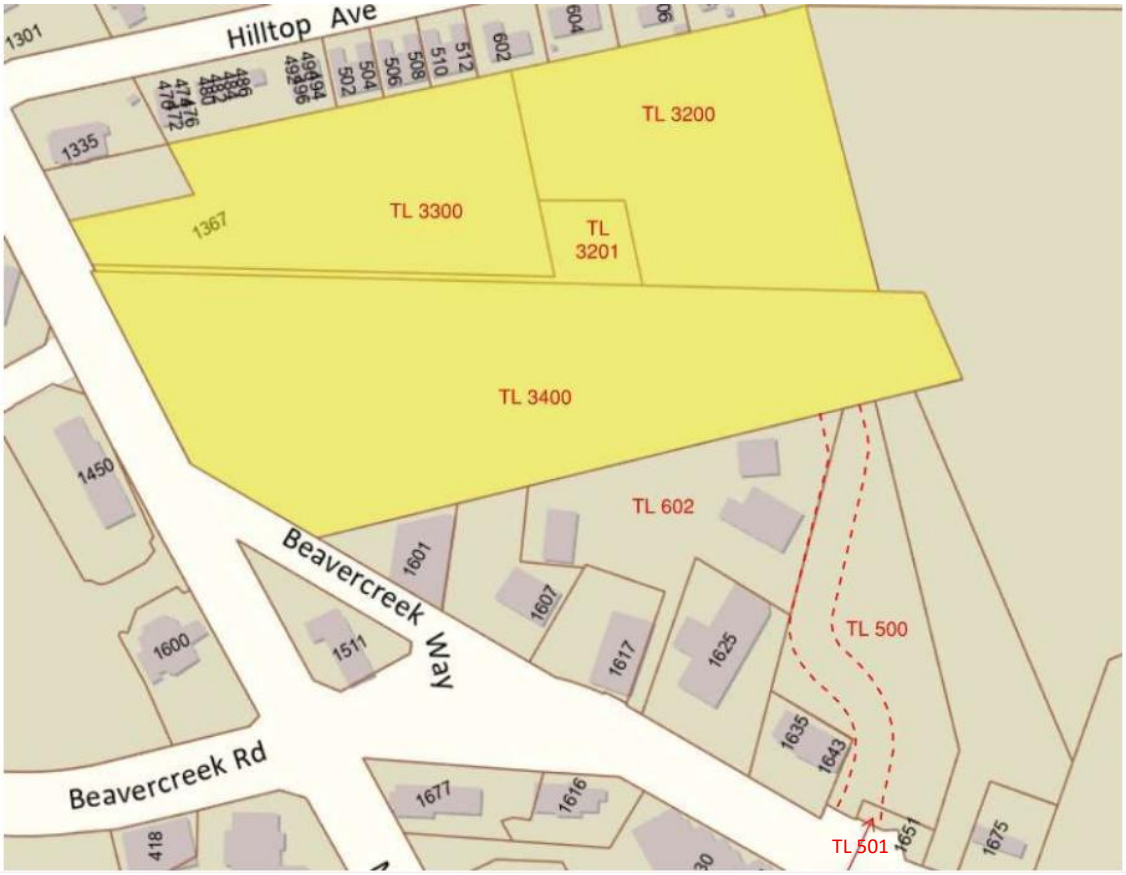


Figure 6: Associated Tax Lots-Tax Lots 500, 501and 602 are not part of the 20-year Master Plan but are included initially to allow for the DDP construction of the Public Road, which will connect with Beavercreek Road.

3. **Permits and Approvals:** The applicant is responsible for obtaining approval and permits from each applicable governmental agency and department in Oregon City, including but not limited to the Engineering and Building Divisions.

4. **Public Comment**
   Public comments submitted include (Exhibit 3):

   Rocky Younger - Mr. Younger owns tax lots 500 and 501, which are part of the application for the purpose of building the Parcel C Road to the intersection of Beavercreek Road. Once completed, it will not be part of the 20-year Master Plan. A private easement was recorded, which requires the owner of the Master Plan lots to build out the full road for tax lots 500 and 501. The city is not a party to the easement, and it is not part of any city review criteria. Mr. Younger is tracking the land use review to ensure that the easement language is being fulfilled by the city's staff report and conditions. He has submitted the private easement to the record with this comment.

Metro - On March 20 and March 23, the City received testimony from Metro expressing concerns about how this development would impact Metro's Newell Creek Canyon Nature Park and Natural Area located on Tax Lot 210, east of the subject development.

Metro's Easement

Metro has expressed concerns that the proposed development adversely impacts Metro's access to its TL 210 which it claims is guaranteed by a private easement. The City's role here is not to interpret or protect easement rights between private property owners. Rather, its sole role is to review applications for compliance with the applicable approval criteria. No law or other criterion demands that the City guarantee this privately negotiated access.

That said, nothing in this approval shall preclude Metro from obtaining access to its TL 210, Metro Newell Creek Canyon Nature Park. This access may occur upon the public road proposed on TL 500 or include the provision of any stubbed improvements at the northeast corning of TL 500 as necessary to accommodate gated access. The owner of TL 500 is encouraged to seek and obtain a driveway access permit allowing for gated access to TL 210 as may be required to fulfill any easement obligations it may have.

Location of Shared Use Path

Approval of a general development plan requires a finding that the application is in compliance with the Oregon City Comprehensive Plan. OCMC 17.65.050.C.6. The City's Transportation System Plan is an ancillary component part of the Comprehensive Plan. The City's TSP project S28 identifies a shared use path running north and south along the east side of this property. The purpose of this path is to connect development on this property and throughout the Hilltop Area to the Newell Creek Nature Park, whose access is located one block north of the subject property. This multimodal path will provide direct access to the 208-unit multi-family residential component on Parcel B as well as serve as a resource for employees and customers of the adjacent businesses.

Goal 1 of Chapter 3 of the Comprehensive Plan provides:

> "Provide a safe, comfortable, and accessible transportation network that serves all modes of travel, including non-motorized modes."

The proposed location of the shared use path as proposed is below the development Parcel B below the top of the hillside and will not be visible to the general public. This is a problem because its lack of visibility will compromise its accessibility but more importantly, could create nuisance concerns. For this reason, the City finds that the proposed path location will not result in a pedestrian connection that is safe and comfortable for public use. In order to satisfy the TSP as well as the Comprehensive Plan, revised conditions of approval are proposed which require that a revised design for the multiuse path be submitted as part of the DDP for Parcel B. The revised design shall include a minimum paved 7-foot width that is ADA accessible and lighted to satisfy OCMC 16.12.032.D standards and most importantly, it is at a similar grade such that it is visible from the development at Parcel B. Added benefits of this approach move the path further away from mapped geologic hazards, avoid providing ADA access for complicated grade changes, can take advantage of

parking lot lighting from the Parcel B development and will reduce maintenance concerns. With these conditions, the development will provide a safe and comfortable pedestrian / bicycle connection in compliance with the TSP that is will strengthen the wellbeing of future residents and users of this development.

Revisions to and proposed new conditions include New Condition 17.

Storm Water Drainage
With respect to Metro's comment on Storm water discharge, the applicant must follow the Oregon City Stormwater and Grading Design Standards. These standards require volume control and water quality. Condition #2 of the DDP decision for Parcel C requires the applicant to follow the Stormwater and Grading Design Standards prior to receiving a permit. Furthermore, the applicant is connecting to a 48" outfall pipe which conveys water onto Metro's property. Oregon Drainage Law states that stormwater discharges should be conveyed in the direction of the existing topography in the undisturbed state of the land. The existing land drains towards Metro's property. The Stormwater and Grading Design Standards and Oregon Drainage Law ensure stormwater is not conveyed at any higher volume or velocity that in the existing condition. This will be addressed during detailed design permit review as Conditioned.

None of the comments provided indicates that an approval criterion has not been met or cannot be met through the Conditions of Approval attached to this Staff Report.

II. ANALYSIS AND FINDINGS:

CHAPTER 17.29 MUC MIXED USE CORRIDOR DISTRICT
17.29.010 Designated.
The mixed-use corridor (MUC) district is designed to apply along selected sections of transportation corridors such as Molalla Avenue, 7th Street, Beavercreek Road, and along Warner-Milne Road. Land uses are characterized by high-volume establishments such as retail, service, office, multi-family residential, lodging, recreation and meeting facilities, or a similar use as defined by the Community Development Director. A mix of high-density residential, office, and small-scale retail uses are encouraged in this district. Moderate density (MUC-1) and high density (MUC-2) options are available within the MUC zoning district. The area along 7th Street is an example of MUC-1, and the area along Warner-Milne Road is an example of MUC-2.

17.29.020 - Permitted uses—MUC-1 and MUC-2.
A. Banquet, conference facilities and meeting rooms.
B. Bed and breakfast/boarding houses, hotels, motels, and other lodging facilities.
C. Child care centers and/or nursery schools.
D. Indoor entertainment centers and arcades.
E. Health and fitness clubs.

F. Medical and dental clinics, outpatient; infirmary services.
G. Museums, libraries and cultural facilities.
H. Offices, including finance, insurance, real estate and government.
I. Outdoor markets, such as produce stands, craft markets and farmers markets that are operated on the weekends and after six p.m. during the weekday.
J. Postal services.
K. Parks, playgrounds, playfields and community or neighborhood centers.
L. Repair shops, for radio and television, office equipment, bicycles, electronic equipment, shoes and small appliances and equipment.
M. Multi-family residential, triplexes and quadplexes.
N. One or two dwelling units in conjunction with a nonresidential use, provided that the residential use occupies no more than fifty percent of the total square footage of the development.
O. Restaurants, eating and drinking establishments without a drive-through.
P. Services, including personal, professional, educational and financial services; laundry and dry-cleaning.
Q. Retail trade, including grocery, hardware and gift shops, bakeries, delicatessens, florists, pharmacies, specialty stores, marijuana, and similar, provided the maximum footprint for a standalone building with a single store or multiple buildings with the same business does not exceed sixty thousand square feet.
R. Seasonal sales.
S. Residential care facilities, assisted living facilities; nursing homes and group homes for over fifteen patients licensed by the state.
T. Studios and galleries, including dance, art, photography, music and other arts.
U. Utilities: Basic and linear facilities, such as water, sewer, power, telephone, cable, electrical and natural gas lines, not including major facilities such as sewage and water treatment plants, pump stations, water tanks, telephone exchanges and cell towers.
V. Veterinary clinics or pet hospitals, pet day care.
W. Home occupations.
X. Research and development activities.
Y. Temporary real estate offices in model dwellings located on and limited to sales of real estate on a single piece of platted property upon which new residential buildings are being constructed.
Z. Transportation facilities.
AA. Live/work dwellings.
BB. Accessory dwelling unit in conjunction with a legally established non-conforming single-family dwelling.
CC. Duplex.
DD. After-hours public parking.

Finding: Permitted. The proposed development uses include multi-family residential (17.29.020.M), retail less than 60,000 sf in building area (17.29.020.Q), and restaurant uses (17.29.020.O). Drive-through facilities are s a conditional use. The conditional use is further described in subsequent responses. Seasonal sales are also a permitted use in this zone, which may arise from time to time on the retail pad.
17.29.030 - Conditional uses—MUC-1 and MUC-2 zones.
The following uses are permitted in this district when authorized and in accordance with the process and standards contained in OCMC 17.56:

A. Drive-through facilities;
B. Emergency service facilities (police and fire), excluding correctional facilities;
C. Gas stations;
D. Outdoor markets that do not meet the criteria of OCMC 17.29.020.I;
E. Public utilities and services including sub-stations (such as buildings, plants and other structures);
F. Public and/or private educational or training facilities;
G. Religious institutions;
H. Retail trade, including gift shops, bakeries, delicatessens, florists, pharmacies, specialty stores and any other use permitted in the neighborhood, historic or limited commercial districts that have a footprint for a standalone building with a single store in excess of sixty thousand square feet in the MUC-1 or MUC-2 zone;
I. Hospitals;
J. Parking not in conjunction with a primary use on private property, excluding after-hours public parking;
K. Passenger terminals, excluding bus stops;
L. Shelters.

Finding: Conditionally approved. The proposed standalone restaurant (parcel D) and retail parcel tenant (parcel A) propose drive-through facilities. A drive-through is a conditional use in the MUC-2 zone and will be reviewed by the Planning Commission as a part of this project's General Development Plan process. Further analysis can be found in the 17.56 Conditional Use section of the staff report.

17.29.040 - Prohibited uses in the MUC-1 and MUC-2 zones.
The following uses are prohibited in the MUC district:
A. Distributing, wholesaling and warehousing;
B. Outdoor storage;
C. Outdoor sales that are not ancillary to a permitted use on the same or abutting property under the same ownership;
D. Correctional facilities;
E. Heavy equipment service, repair, sales, storage or rentals (including but not limited to construction equipment and machinery and farming equipment);
F. Kennels;
G. Motor vehicle and recreational vehicle sales and incidental service;
H. Motor vehicle and recreational vehicle repair/service;
I. Self-service storage facilities;
J. Marijuana production, processing, wholesaling, research, testing, and laboratories;
K. Mobile food units, except with a special event permit.

Finding: Not Applicable. The proposed uses for this project are either approved outright or will be reviewed as a conditional use and do not fall within the prohibited uses identified in this section.
17.29.060 - Dimensional standards—MUC-2.
A. Minimum lot area: None.
B. Minimum floor area ratio: 0.25.

Finding: Complies with Condition. The project's overall floor area ratio (FAR) is 0.73, exceeding the minimum requirement for this zone. For each DDP application, the applicant shall indicate how the proposal will meet or exceed the 0.25 minimum floor area requirement of the zone.

C. Minimum building height: Twenty-five feet or two stories except for accessory structures or buildings under one thousand square feet.
D. Maximum building height: Sixty feet.
E. Minimum required setbacks if not abutting a residential zone: None.
F. Minimum required interior and rear yard setbacks if abutting a residential zone: Twenty feet, plus one foot additional yard setback for every two feet of building height over thirty-five feet.
G. Maximum Allowed Setbacks.
1. Front yard: Five feet.
2. Interior side yard: None.
3. Corner side yard abutting street: Twenty feet.
4. Rear yard: None.
Finding: Reviewed at Detailed Development Plan. Each parcel will seek Detailed Development Plan approval following this General Development Plan decision and will elaborate on their respective building heights in those applications; however, each building shall be in compliance with this section, as no dimensional standard adjustments are being requested in the GDP Master plan application. Nothing in the submittal indicates that the applicant will not be able to meet the standards during the DDP review.

H. Maximum site coverage of building and parking lot: Ninety percent.

Finding: Reviewed at Detailed Development Plan: Proposed Total Site Coverage for each of the parcels is shown below, subject to Detailed Development Plan approval for each parcel:

Parcel	Tot Parcel Area (sf)	Building & Parking Lot Area (sf)	Site Coverage (%)
A	85,346	74,500	87+/-
B	288,563	185,000	64+/-
D	87,773	55,000	63+/-

These values are approximate and show broad compliance with the criterion; however, each parcel will provide detailed information with their own Detailed Development Plan applications

I. Minimum landscaping requirement (including parking lot): Ten percent.

Finding: Reviewed at Detailed Development Plan: Proposed landscaping for each of the parcels is shown below, subject to Detailed Development Plan approval for each parcel:

Parcel	Tot Parcel Area (sf)	Proposed Landscape Area (sf)	Landscape Coverage (%)
A	85,346	11,000	13+/-
B	288,563	108,000	37+/-
D	87,773	34,000	39+/-

These values are approximate and show broad compliance with the criterion; however, each parcel will provide detailed information with its own Detailed Development Plan applications

J. Residential minimum net density of 17.4 units per acre, except that no minimum net density shall apply to residential uses proposed above nonresidential uses in a mixed-use configuration or to live/work dwellings.

Finding: Reviewed at Detailed Development Plan: Parcel B includes multi-family residential use with 208 total units. The total area of Parcel B is 288,617 sf. Of that total area, the area east of the geologic hazard area 35-ft setback line, building setback line along the north property line, the area covered by a PUE, and that area included within the proposed public sanitary sewer easement are excluded. The net developable area then becomes 199,641 sf or 4.58 acres, resulting in a net residential density of 45.3 units per acre, which exceeds the minimum density identified in this criterion

17.29.070 - Floor area ratio (FAR).

Floor area ratios are a tool for regulating the intensity of development. Minimum FARs help to achieve more intensive forms of building development in areas appropriate for larger-scale buildings and higher residential densities.

A. The minimum floor area ratios contained in OCMC 17.29.050 and 17.29.060 apply to all nonresidential and mixed-use building development, except stand-alone commercial buildings less than ten thousand square feet in floor area.

B. Required minimum FARs shall be calculated on a project-by-project basis and may include multiple contiguous blocks. In mixed-use developments, residential floor space will be included in the calculations of floor area ratio to determine conformance with minimum FARs.

C. An individual phase of a project shall be permitted to develop below the required minimum floor area ratio provided the applicant demonstrates, through covenants applied to the remainder of the site or project or through other binding legal mechanism, that the required density for the project will be achieved at project build out.

Finding: Complies with Condition. The project's overall floor area ratio (FAR) is 0.73, exceeding the minimum requirement for this zone. For each DDP application, the applicant shall indicate how the proposal will meet or exceed the 0.25 minimum floor area requirement of the zone.

CHAPTER 17.44 – GEOLOGIC HAZARDS

17.44.010 – Intent and Purpose.

The intent and purpose of the provisions of this chapter are:

A. To ensure that activities in geologic hazard areas are designed based on detailed knowledge of site conditions in order to reduce the risk of private and public losses;

B. To establish standards and requirements for the use of lands within geologic hazard areas;

C. To provide safeguards to prevent undue hazards to property, the environment, and public health, welfare, and safety in connection with use of lands within geologic hazard areas;

D. To mitigate risk associated with geologic hazard areas, not to act as a guarantee that the hazard risk will be eliminated, nor as a guarantee that there is a higher hazard risk at any location. Unless

otherwise provided, the geologic hazards regulations are in addition to generally applicable standards provided elsewhere in the Oregon City Municipal Code.

Finding: Complies with Condition. The applicant's proposed development contains a geologic hazards overlay zone on the eastern portion of the property in the form of steep slopes and landslide materials. The figures below identify the darker geological hazard with their lighter buffer areas:



Figure 7: Steep Slope Area with 50 ft. buffer

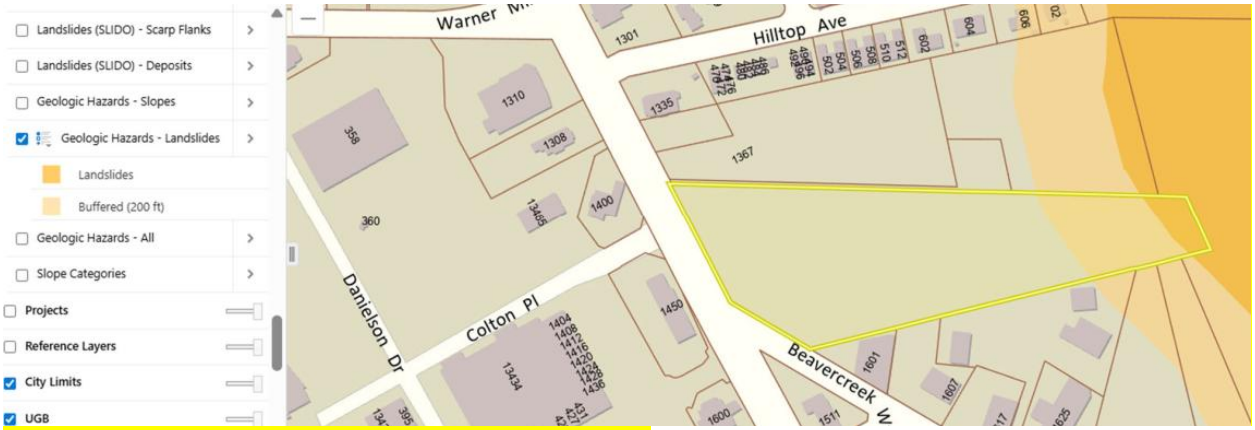


Figure 8: Mapped Landslide Area with 200 ft. buffer.

Development within the shaded areas is limited per the code standards within Chapter 17.44. Most of the property is not impeded by the geological hazards overlay zone and would develop under typical standards noted within this report. Furthermore, development can occur, although in a more restrictive manner, within the portion of the site containing the mapped geological hazard areas within the geologic hazard overlay zone. The applicant will be required to meet the conditions of approval for OCMC 17.44 as part of each DDP within the mapped Geological Hazard Overlay Zone.

The City has provided more in-depth findings and conditions regarding the impacts within the geologic hazards overlay zone to the future phases of this development under OCMC 17.65.050.C within this staff report.

CHAPTER 17.50 – ADMINISTRATION AND PROCEDURES

17.50.010 Purpose.
This chapter provides the procedures by which Oregon City reviews and decides upon applications for all
permits relating to the use of land authorized by ORS 92, 197 and 227. These permits include all form of land divisions, land use, limited land use and expedited land division and legislative enactments and amendments to the Oregon City Comprehensive Plan and Titles 16 and 17 of this code. Pursuant to ORS 227.175, any applicant may elect to consolidate applications for two or more related permits needed for a single development project. Any grading activity associated with development shall be subject to preliminary review as part of the review process for the underlying development. It is the express policy of the City of Oregon City that development review not be segmented into discrete parts in a manner that precludes a comprehensive review of the entire development and its cumulative impacts.

17.50.050 – Pre-application conference.
A. Pre-application Conference. Prior to a Type II – IV or Legislative application, excluding Historic Review, being deemed complete, the applicant shall schedule and attend a pre-application conference with City staff to discuss the proposal, unless waived by the Community Development Director. The purpose of the pre-application conference is to provide an opportunity for staff to provide the applicant with information on the likely impacts, limitations, requirements, approval standards, fees and other information that may affect the proposal.
1. To schedule a pre-application conference, the applicant shall contact the Planning Division, submit the required materials, and pay the appropriate conference fee.
2. At a minimum, an applicant should submit a short narrative describing the proposal and a proposed site plan, drawn to a scale acceptable to the City, which identifies the proposed land uses, traffic circulation, and public rights-of-way and all other required plans.
3. The Planning Division shall provide the applicant(s) with the identity and contact persons for all affected neighborhood associations as well as a written summary of the pre-application conference.

Finding: Complies as Proposed. The applicant held a pre-application conference (PA 25-16) for this proposal on April 22, 2025

17.50.055 - Neighborhood association meeting.
Neighborhood Association Meeting. The purpose of the meeting with the recognized neighborhood association is to inform the affected neighborhood association about the proposed development and to receive the preliminary responses and suggestions from the neighborhood association and the member residents.
A. Applicants applying for annexations, zone change, comprehensive plan amendments, conditional use, Planning Commission variances, subdivision, or site plan and design review (excluding minor site plan and design review), general development master plans or detailed development plans applications shall schedule and attend a meeting with the City-recognized neighborhood association in whose territory the application is proposed no earlier than one year

prior to the date of application. Although not required for other projects than those identified above, a meeting with the neighborhood association is highly recommended.
B. The applicant shall request via email or regular mail a request to meet with the neighborhood association chair where the proposed development is located. The notice shall describe the proposed project. A copy of this notice shall also be provided to the chair of the citizen involvement committee.
C. A meeting shall be scheduled within thirty days of the date that the notice is sent. A meeting may be scheduled later than thirty days if by mutual agreement of the applicant and the neighborhood association. If the neighborhood association does not want to, or cannot meet within thirty days, the applicant shall host a meeting inviting the neighborhood association, citizen involvement committee, and all property owners within three hundred feet to attend. This meeting shall not begin before six p.m. on a weekday or may be held on a weekend and shall occur within the neighborhood association boundaries or at a city facility.
D. If the neighborhood association is not currently recognized by the City, is inactive, or does not exist, the applicant shall request a meeting with the citizen involvement committee.
E. To show compliance with this section, the applicant shall submit a copy of the email or mail notice to the neighborhood association and CIC chair, a sign-in sheet of meeting attendees, and a summary of issues discussed at the meeting. If the applicant held a separately noticed meeting, the applicant shall submit a copy of the meeting flyer, postcard or other correspondence used, and a summary of issues discussed at the meeting and submittal of these materials shall be required for a complete application.

Finding: Complies as Proposed. The applicant met with the Hillendale Neighborhood Association on October 7, 2025

17.50.070 Completeness review and one hundred twenty-day rule.
A. Upon submission, the Community Development Director shall date stamp the application form and verify that all of the appropriate application review fee(s) have been submitted. Upon receipt of all review fees and an application form, the Community Development Director will then review the application and all information submitted with it and evaluate whether the application is complete enough to process. Within thirty days of receipt of the application and all applicable review fees, the Community Development Director shall complete this initial review and issue to the applicant a written statement indicating whether the application is complete enough to process, and if not, what information shall be submitted to make the application complete.
B. The applicant has one hundred eighty days from the date the application was made to submit the missing information or the application shall be rejected and the unused portion of the application fee returned to the applicant. If the applicant submits the requested information within the one hundred eighty-day period, the Community Development Director shall again verify whether the application, as augmented, is complete. Each such review and verification shall follow the procedure in subsection A of this section.
The application will be deemed complete for the purpose of this section upon receipt by the Community Development Director of:
1. All the missing information;
2. Some of the missing information and written notice from the applicant that no other information will be provided; or
3. Written notice from the applicant that none of the missing information will be provided.

C. Once the Community Development Director determines the application is complete enough to process, or the applicant refuses to submit any more information, the City shall declare the application complete. Pursuant to ORS 227.178, the City will reach a final decision on an application within one hundred twenty calendar days from the date that the application is determined to be or deemed complete unless the applicant agrees to suspend the one hundred twenty-calendar-day timeline or unless state law provides otherwise. The one hundred twenty-day period, however, does not apply in the following situations:
1. Any hearing continuance or other process delay requested by the applicant shall be deemed an extension or waiver, as appropriate, of the one hundred twenty-day period.
2. Any delay in the decision-making process necessitated because the applicant provided an incomplete set of mailing labels for the record property owners within three hundred feet of the subject property shall extend the one hundred twenty-day period for the amount of time required to correct the notice defect.
3. The one hundred twenty-day period does not apply to any application for a permit that is not wholly within the City's authority and control.

4. The one hundred twenty-day period does not apply to any application for an amendment to the City's comprehensive plan or land use regulations nor to any application for a permit, the approval of which depends upon a plan amendment.
D. A one hundred day-period applies in place of the one hundred twenty-day period for affordable housing projects where:
1. The project includes five or more residential units, including assisted living facilities or group homes;
2. At least fifty percent of the residential units will be sold or rented to households with incomes equal to or less than sixty percent of the median family income for Clackamas County or for the state, whichever is greater; and
3. Development is subject to a covenant restricting the owner and successive owner from selling or renting any of the affordable units as housing that is not affordable for a period of sixty years from the date of the certificate of occupancy.
E. The one hundred twenty-day period specified in OCMC 17.50.070.C or D may be extended for a specified period of time at the written request of the applicant. The total of all extensions may not exceed two hundred forty-five calendar days.
F. The approval standards that control the City's review and decision on a complete application are those which were in effect on the date the application was first submitted.

Finding: Complies. The application was deemed complete on December 18, 2025. The 120-day decision date for this application is April 7, 2025, and was extended by the applicant to May 17, 2026

17.50.080 Complete application—Required information.
Unless stated elsewhere in OCMC 16 or 17, a complete application includes all the materials listed in this
subsection. The Community Development Director may waive the submission of any of these materials if not deemed to be applicable to the specific review sought. Likewise, within thirty days of when the application is first submitted, the Community Development Director may require additional information, beyond that listed in this subsection or elsewhere in Titles 12, 14, 15, 16, or

17, such as a traffic study or other report prepared by an appropriate expert. In any event, the applicant is responsible for the completeness and accuracy of the application and all of the supporting documentation, and the City will not deem the application complete until all information required by the Community Development Director is submitted. At a minimum, the applicant shall submit the following:
A. One copy of a completed application form that includes the following information:
1. An accurate address and tax map and location of all properties that are the subject of the application;
2. Name, address, telephone number and authorization signature of all record property owners or contract owners, and the name, address and telephone number of the applicant, if different from the property owner(s);
B. A complete list of the permit approvals sought by the applicant;
C. A complete and detailed narrative description of the proposed development;
D. A discussion of the approval criteria for all permits required for approval of the development proposal that explains how the criteria are or can be met or are not applicable, and any other information indicated by staff at the pre-application conference as being required;
E. One copy of all architectural drawings and site plans shall be submitted for Type II—IV applications.
One paper copy of all application materials shall be submitted for Type I applications;
F. For all Type II—IV applications, the following is required:
1. An electronic copy of all materials.
2. Mailing labels or associated fee for notice to all parties entitled under OCMC 17.50.090 to receive mailed notice of the application. The applicant shall use the names and addresses of property owners within the notice area indicated on the most recent property tax rolls.
3. Documentation indicating there are no liens favoring the City on the subject site.
4. A receipt from the county assessor's office indicating that all taxes for the lot or parcels involved are paid in full for the preceding tax year.
5. A current preliminary title report or trio for the subject property(ies);
G. All required application fees;
H. Annexation agreements, traffic or technical studies (if applicable);
I. Additional documentation, as needed and identified by the Community Development Director.

Finding: Complies The application was deemed complete on December 18, 2025.

17.50.090 - Public notices.
All public notices issued by the City announcing applications or public hearings of quasi-judicial or legislative actions, shall comply with the requirements of this section.
A. Notice of Type II Applications. Once the Community Development Director has deemed a Type II application complete, the City shall prepare and send notice of the application, by first class mail, to all record owners of property within three hundred feet of the subject property and to any city-recognized neighborhood association whose territory includes the subject property. The applicant shall provide or the City shall prepare for a fee an accurate and complete set of mailing labels for these property owners and for posting the subject property with the City-prepared notice in accordance with OCMC 17.50.100. The City's Type II notice shall include the following information:
1. Street address or other easily understood location of the subject property and city-assigned planning file number;

2. A description of the applicant's proposal, along with citations of the approval criteria that the City will use to evaluate the proposal;
3. A statement that any interested party may submit to the City written comments on the application during a fourteen-day comment period prior to the City's deciding the application, along with instructions on where to send the comments and the deadline of the fourteen-day comment period;
4. A statement that any issue which is intended to provide a basis for an appeal shall be raised in writing during the fourteen-day comment period with sufficient specificity to enable the City to respond to the issue;
5. A statement that the application and all supporting materials may be inspected, and copied at cost, at City Hall during normal business hours;
6. The name and telephone number of the planning staff person assigned to the application or is otherwise available to answer questions about the application;
7. The notice shall state that a city-recognized neighborhood association requesting an appeal fee waiver pursuant to OCMC 17.50.290.C must officially approve the request through a vote of its general membership or board at a duly announced meeting prior to the filing of an appeal.

Finding: Complies. A public notice was sent to all properties within 300 feet of the site and signs were placed on the property within 20 days of the scheduled hearing. Copies of the public notice and affidavit of sign posting are in the record.

B. Notice of Public Hearing on a Type III or IV Quasi-Judicial Application. Notice for all public hearings concerning a quasi-judicial application shall conform to the requirements of this subsection. At least twenty days prior to the hearing, the City shall prepare and send, by first class mail, notice of the hearing to all record owners of property within three hundred feet of the subject property and to any city-recognized neighborhood association whose territory includes the subject property. The City shall also publish the notice on the City website within the City at least twenty days prior to the hearing. Pursuant to OCMC 17.50.080.H, the applicant is responsible for providing an accurate and complete set of mailing labels for these property owners and for posting the subject property with the City-prepared notice in accordance with OCMC 17.50.100. Notice of the application hearing shall include the following information:
1. The time, date and location of the public hearing;
2. Street address or other easily understood location of the subject property and city-assigned planning file number;
3. A description of the applicant's proposal, along with a list of citations of the approval criteria that the City will use to evaluate the proposal;
4. A statement that any interested party may testify at the hearing or submit written comments on the proposal at or prior to the hearing and that a staff report will be prepared and made available to the public at least seven days prior to the hearing;
5. A statement that any issue which is intended to provide a basis for an appeal to the City Commission shall be raised before the close of the public record. Issues must be raised and accompanied by statements or evidence sufficient to afford the City and all parties to respond to the issue;
6. The notice shall state that a city-recognized neighborhood association requesting an appeal fee waiver pursuant to OCMC 17.50.290.C must officially approve the request through a vote of its general membership or board at a duly announced meeting prior to the filing of an appeal;

7. A statement that the application and all supporting materials and evidence submitted in support of the application may be inspected at no charge and that copies may be obtained at reasonable cost at the planning division offices during normal business hours; and
8. The name and telephone number of the planning staff person responsible for the application or is otherwise available to answer questions about the application.

17.50.100 - Notice posting requirements.
Where this chapter requires notice of a pending or proposed permit application or hearing to be posted on the subject property, the requirements of this section shall apply.
A. City Guidance and the Applicant's Responsibility. The City shall supply all of the notices which the applicant is required to post on the subject property and shall specify the dates the notices are to be posted and the earliest date on which they may be removed. The City shall also provide a statement to be signed and returned by the applicant certifying that the notice(s) were posted at the correct time and that if there is any delay in the City's land use process caused by the applicant's failure to correctly post the subject property for the required period of time and in the correct location, the applicant agrees to extend the applicable decision-making time limit in a timely manner.
B. Number and Location. The applicant shall place the notices on each frontage of the subject property. If the property's frontage exceeds six hundred feet, the applicant shall post one copy of the notice for each six hundred feet or fraction thereof. Notices do not have to be posted adjacent to alleys or unconstructed right-of-way. Notices shall be posted within ten feet of the street and shall be visible to pedestrians and motorists. Notices shall not be posted within the public right-of-way or on trees. The applicant shall remove all signs within ten days following the event announced in the notice.
Finding: Complies. A public notice was sent to all properties within 300 feet of the site, and signs were placed on the property within 20 days of the scheduled hearing. Copies of the public notice and affidavit of sign posting are in the record.

CHAPTER 17.52 OFF-STREET PARKING AND LOADING
This application was submitted on June 27, 2025, prior to the adoption of the recent Climate-Friendly & Equitable Communities (CFEC) Code changes. The following chapter and analysis do not include those revisions. Additionally, as part of the master plan, future DDPs may choose to use the code effective at the time of GDP master plan adoption, or the code in place at the time of Detailed Development Plan submission.

17.52.010 - Applicability.
The construction of a new structure or parking lot, or alterations to the size or use of an existing structure, parking lot or property use shall require site plan review approval and compliance with this chapter. This chapter does not apply to single-family detached residential dwellings, duplexes, townhouses, and cottage clusters.

Finding: Applies. The proposal includes a new or expansion to an existing parking lot.

17.52.015 - Planning commission adjustment of parking standards.

A. Purpose. The purpose of permitting a planning commission adjustment to parking standards is to provide for flexibility in modifying parking standards in all zoning districts, without permitting an adjustment that would adversely impact the surrounding or planned neighborhood. Adjustments provide flexibility to those uses which may be extraordinary, unique, or provide greater flexibility for areas that can accommodate a denser development pattern based on existing infrastructure and ability to access the site by means of walking, biking or transit. An adjustment to a minimum parking standard may be approved based on a determination by the planning commission that the adjustment is consistent with the purpose of this code, and the approval criteria can be met.
B. Procedure. A request for a planning commission parking adjustment shall be initiated by a property owner or authorized agent by filing a land use application. The application shall be accompanied by a site plan, drawn to scale, showing the dimensions and arrangement of the proposed development and parking plan, the extent of the adjustment requested along with findings for each applicable approval criteria. A request for a parking adjustment shall be processed as a Type III application as set forth in Chapter 17.50.
C. Approval criteria for the adjustment are as follows:
1. Documentation: The applicant shall document that the individual project will require an amount of parking that is different from that required after all applicable reductions have been taken.

Finding: Complies with Condition. While each parcel will seek its own individual Detailed Development Plan (DDP) approval, this Masterplan application seeks adjustment to the required parking criteria as shown below, so that the individual parcel DDP applications will already have received a decision on anticipated parking counts.

Parcel	Proposed Use	Required Parking	Required Criteria	Proposed Parking	Parking Adj Needed?
A	**Retail**	**55 (min); 68 (max)**	**4.10/1ksf (min); 5.00/1ksf (max)**	**102 (7.0/1ksf)**	**Yes**
B	**Multi-Family Residential**	**208 (min); 520 (max)**	**1.00/unit (min); 2.5/unit (max)**	**320**	**No**
D	**Restaurant**	**20 (min); 25 (max)**	**4.10/1ksf (min); 5.00/1ksf (max)**	**58 (11.8/1ksf)**	**Yes**

The figure below will be referenced in the approval criteria findings in this section; it is added at the beginning for reference and is referenced in the conditions of approval.

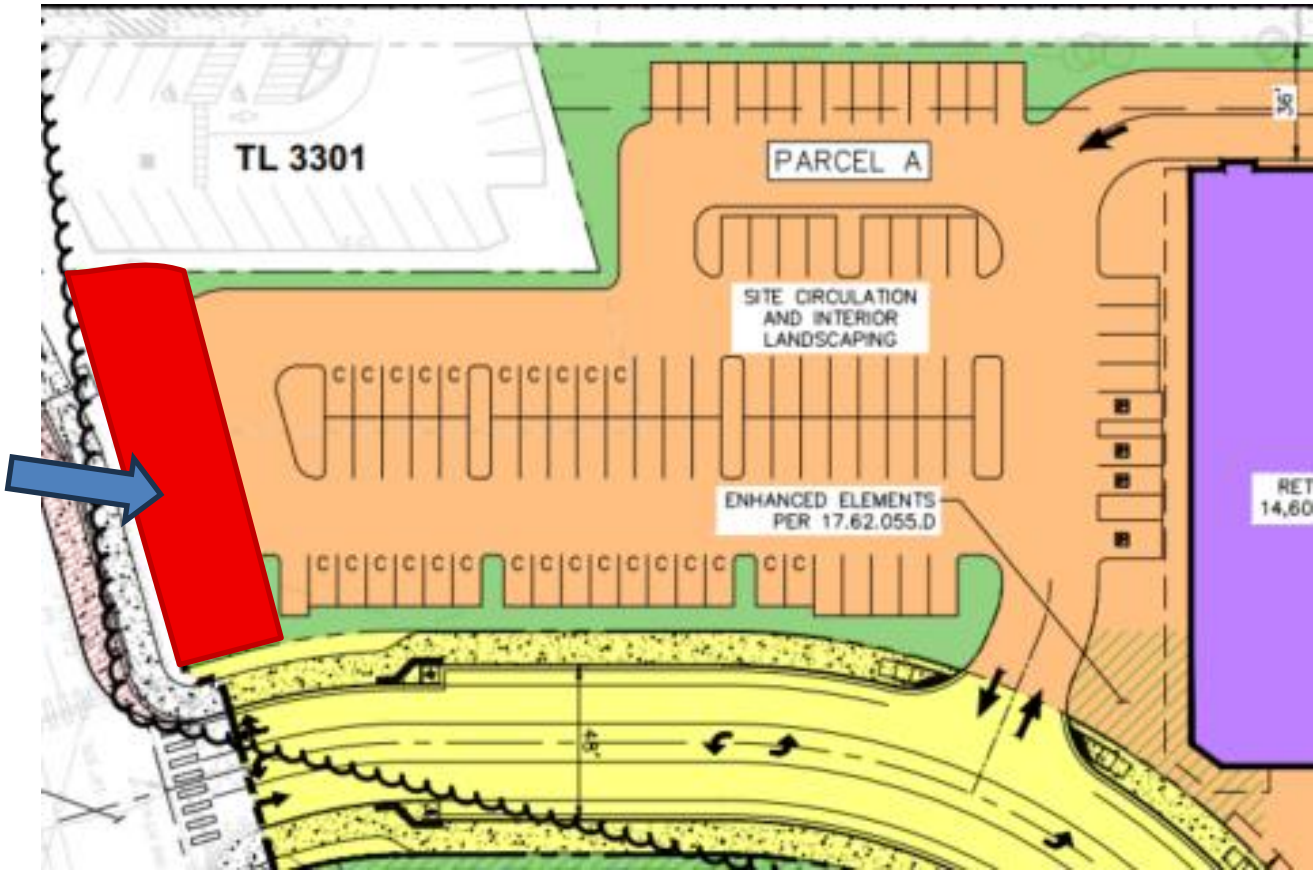


Figure 9 illustrates in red the location of additional enhanced landscaping and the removal of parking to comply with the mitigation requirements for the parking adjustment of Parcel A. This change will eliminate 7-9 parking spaces from the proposed total of 102 spaces.

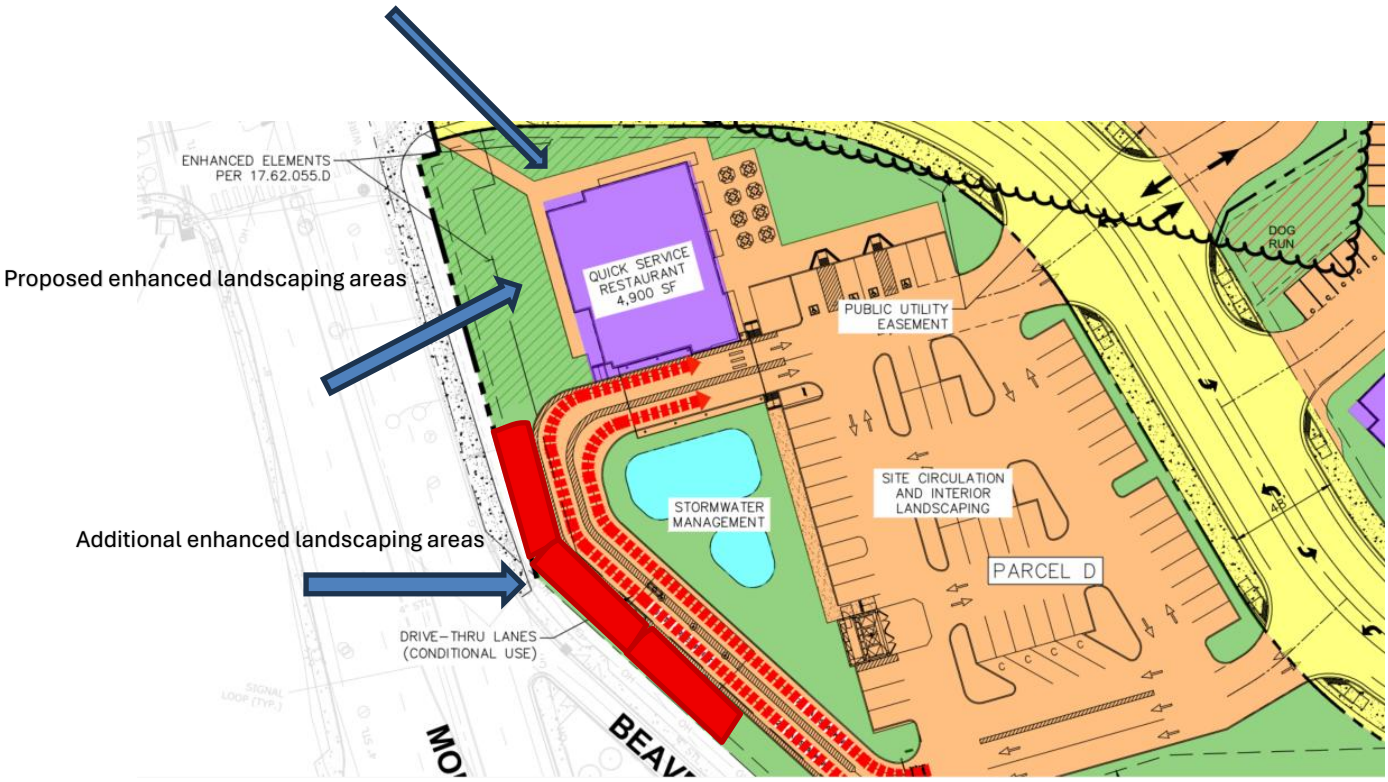


Figure 10 illustrates the locations of the proposed and conditioned (in red) enhanced landscaping to comply with the mitigation requirements for the parking adjustment and the drive-through facility on Parcel D.

2. Parking analysis for Surrounding Uses and on-street parking availability: The applicant shall show that there is a continued fifteen percent parking vacancy in the area adjacent to the use during peak parking periods and that the applicant has permission to occupy this area to serve the use pursuant to the procedures set forth by the Community Development Director.
a. For the purposes of demonstrating the availability of on street parking as defined in OCMC 17.52.020.B.3., the applicant shall undertake a parking study during time periods specified by the Community Development Director. The time periods shall include those during which the highest parking demand is anticipated by the proposed use. Multiple observations during multiple days shall be required. Distances are to be calculated as traversed by a pedestrian that utilizes sidewalks and legal crosswalks or an alternative manner as accepted by the Community Development Director.
b. The onsite parking requirements may be reduced based on the parking vacancy identified in the parking study. The amount of the reduction in onsite parking shall be calculated as follows:
i. Vacant on-street parking spaces within three hundred feet of the site will reduce onsite parking requirements by 0.5 parking spaces; and
ii. Vacant on-street parking spaces between three hundred and six hundred feet of the site will reduce onsite parking requirements by 0.2 parking spaces.

Finding: Complies with Condition. The above analysis requirement implies a request for a reduction in parking by evaluating surrounding parking availability, including on-street parking. This project's proposed parking adjustments exceed the maximum required parking, rather than seeking a reduction in parking requirements due to on-street parking or shared parking from another use. Oregon City Municipal Code (OCMC) Table 17.52.020 identifies parking requirements

and groups retail stores, shopping centers, and restaurants in the same category, limiting the maximum parking ratio to 5.0 per thousand square feet. It does not differentiate between use sizes or types within the three applicable uses described (for example: retail store vs grocery store or specialty retail; sit-down restaurants vs quick-service restaurants that generate higher traffic/parking impacts; or larger regional shopping centers vs neighborhood shopping centers). As such, variations in use can have a significant impact on the number of required parking spaces for a given user, which may not fit within the limits of Table 17.52.020.

A Type III parking adjustment review is site-specific and can be context-based. The applicant has provided the following information for the two parcels requesting an adjustment to the parking maximum. Staff generally agrees with the approach contingent on the adoption of an enhanced landscaping condition to provide additional buffering, ensuring that the pedestrian experience is not reduced along Molalla Avenue and that the transit corridor remains a prominent pedestrian connection.

Parcel A Discussion

This project's proposed public street does not include on-street parking. Existing uses north of this parcel preclude shared parking by virtue of adjacent limited parking capacity of the existing QSR, and street connectivity to Hilltop Ave. Additionally, counting on-street parking from Hilltop Ave would preclude parking in front of these existing Hilltop uses by those same uses. There is no on-street parking on Molalla Ave. The shopping center on the west side of Molalla Ave is not likely to be utilized by Parcel A customers given the distance from the Parcel A building entrance and the need to cross Molalla Ave.

A maximum parking ratio of 5.0 may work for larger retail or shopping centers, but the proposed retail use is relatively small at 14,600 sf

The applicant seeks an increase in maximum parking as proposed in the above table. Parking ratios have varied between approximately 5.0 – 7.0 in similar combined retail shops/QSR uses. In locations where their parking ratios have been lower, parking has spilled over to adjacent shopping center parking to make up for demand at this retailer. With this project, the retail shops and QSR combination is a stand-alone location without the ability to share parking with another use or shopping center. If the parking ratio is limited to 5.0, customers would attempt to utilize adjacent parking from Parcel B, thereby reducing available parking for adjacent residential use. Customers may also attempt to utilize parking from Parcel D across the street, reducing available parking for Parcel D and creating an unsafe street crossing situation.

Staff believes that the design is a reasonable approach for the lot, and since no tenants have been identified for this parcel, a parking maximum for use is not warranted. Instead, staff views the approach as allowing additional parking in the no-build/constrained area of the parcel, subject to enhanced landscaping (Condition of Approval; #14) along Molalla Avenue, which will require removing 7-8 parking spaces along the Molalla Avenue frontage. The new building on Parcel A fronts directly onto the new road and will feature a direct pedestrian connection. The transportation analyses reviewed both the impact of the specialty grocery and the multi-tenant commercial, and both met the city's operational standards as conditioned. If, after the Master Plan

is approved, a specialty grocery returns to Parcel A, it can still be implemented through the Type II DDP process and does not require a Type III Amendment to the Master Plan.

Parcel D Discussion:
Required parking for this proposed use is grouped with retail store and shopping center uses and does not recognize the parking demands of a quick service restaurant. Existing development north of the site is comprised of another Quick Service Restaurant (QSR) at the northeast corner of the subject property and single- and multi-family residential, with no connected access to these properties. The adjacent QSR is situated 4'-5' higher in elevation than the subject property and already has limited parking. The adjacent QSR parking ratio is approximately 12.5/1ksf, consistent with the project's requested parking ratio. The adjacent QSR, as with the proposed QSR, is a stand-alone restaurant and not part of a shopping center development where shared parking can occur. Our proposed QSR cannot share parking with other uses without crossing either a major arterial street (Molalla Ave) or our proposed Collector street, thus limiting practical shared parking opportunities. If the parking ratio is limited to 5.0, customers may attempt to utilize parking from Parcels A or B across the street, reducing available parking for these parcels and creating an unsafe street crossing situation. The applicant seeks an increase in maximum parking as proposed in the above table. Based on other locations for this QSR, parking ratios have varied between approximately 12.6 – 20.0. In locations where their parking ratios have been the highest, parking was shared with adjacent development so identifying the exact parking count is difficult to do. This project does not seek an extreme parking ratio. Instead, it seeks a parking ratio consistent with adjacent uses in similar conditions. If the parking ratio is limited to 5.0, customers would attempt to utilize adjacent parking from Parcel B, thereby reducing available parking for adjacent residential use. Customers may also attempt to utilize parking from Parcel D across the street, reducing available parking for Parcel D and creating an unsafe street crossing situation.

3. Function and Use of Site: The applicant shall demonstrate that modifying the amount of required parking spaces will not significantly impact the use or function of the site and/or adjacent sites.

Finding: Complies as Conditioned. Because the new public road separates Parcels A and D, it is unlikely and not very feasible to approach the development with a shared parking approach. If the two parcels were on the same side of the street, staff would be more inclined to pursue a shared parking lot approach. Allowing an increase in the maximum parking for Parcels A and D ensures enough customer parking without relying on shared parking with adjacent uses. Both parcels have standalone lots, so sharing with other on-site uses isn't feasible. Sharing would take parking from Parcel B's residential use or require customers to cross a collector road, adding nearly 600 feet of travel. Increasing maximum parking supports the development's function by preventing parking conflicts among Parcels A, D, and B.

When Parcel A was initially proposed as a small specialty grocery, it made sense to ensure that the maximum number of spaces be allowed on-site. With the redesign of Parcel A to a mix of tenants to be determined, the request for the maximum of 102 spaces on Parcel A does not seem as critical. Parcel A is constrained by a non-build easement on a portion of the Molalla Avenue easement,

which makes placing the building at the corner of the new public street at Molalla Avenue problematic. The proposed location fronting the new public road does provide direct access, but it is more than 25 feet from the intersection. A condition of approval has been added that allows the building on Parcel A to be located as proposed, subject to additional enhanced landscaping along the Molalla Avenue frontage, as shown in Figure 9, which will remove Molalla Avenue frontage from Parcel A either through the creation of a tract or specified easement. The improved landscaping on Parcel A will align with the upgraded landscaping planned for Parcel D, creating a softer transition along Molalla Avenue and reducing potential negative effects on pedestrians.

If the applicant provides additional findings demonstrating that the full 102 parking spaces are needed for Parcel A, the Planning Commission can choose to remove the enhanced land use condition and direct staff to provide additional findings showing that there is adequate mitigation for the proposed parking and the setback location of Building A.

4. Compatibility: The proposal is compatible with the character, scale and existing or planned uses of the surrounding neighborhood.

Finding: Complies as Proposed. Per 17.29.010 **,**The mixed-use corridor (MUC) district is designed to apply along selected sections of transportation corridors such as Molalla Avenue, 7th Street, Beavercreek Road, and along Warner-Milne Road. Land uses are characterized by high-volume establishments such as retail, service, office, multi-family residential, lodging, recreation and meeting facilities, or a similar use as defined by the community development director. A mix of high-density residential, office, and small-scale retail uses are encouraged in this district. Moderate density (MUC-1) and high density (MUC-2) options are available within the MUC zoning district.

The subject property is an infill development within the hilltop commercial area. The proposed increase in maximum parking aligns well with the surrounding uses, including adjacent quick-service restaurant (QSR) locations and shopping center parking.

5. Safety: The proposal does not significantly impact the safety of adjacent properties and rights-of-way.

Finding: Complies as Proposed. The proposed maximum parking adjustment results in a safer development proposal than one in which inadequate parking exists. As noted above, given the stand-alone nature of the subject parcels, any shared parking that may be necessary to satisfy the parking needs of Parcels A & D would result in taking parking away from adjacent residential use or require customers to cross a Collector street or Major Arterial to patron the subject uses.

Enhanced landscaping will provide additional buffering to ensure that the pedestrian experience is not reduced along Molalla Avenue and that the transit corridor remains a prominent pedestrian connection.

6. Services: The proposal will not create a significant impact to public services, including fire and emergency services.

Finding: Complies as Proposed. The proposed increase to the maximum allowable parking will have no negative impact on public services, including fire or emergency services. Additional space created by the added parking allows more room for emergency services, access, and circulation within Parcels A and D. Public and private utility demands are unaffected by the requested parking increase.

CHAPTER 17.56 CONDITIONAL USES

17.56.010 - Permit—Authorization—Standards—Conditions.
A conditional use listed in this title may be permitted, enlarged or altered upon authorization of the Planning Commission in accordance with the standards and procedures of this title. A conditional use permit listed in this section may be permitted, enlarged or altered upon authorization of the Planning Commission or City Commission in accordance with the standards and procedures of this section. Any expansion to, alteration of, or accessory use to a conditional use shall require Planning Commission or City Commission approval of a modification to the original conditional use permit unless authorized in this chapter.

A. Conditional uses, because of their public convenience and necessity and their effect upon the neighborhood shall be permitted only upon the approval of the Planning Commission or City Commission after due notice and public hearing, according to procedure as provided in OCMC 17.50. The applicant shall provide evidence substantiating that all the requirements of this title relative to the proposed use are satisfied, and demonstrate that the proposed use also satisfies the following criteria:
1. The use is listed as a conditional use in the underlying district;
Finding: Applicable. The proposed Masterplan includes two drive-throughs which are identified as a Conditional Use in the MUC-2 zone (OCMC 17.29.030)

2. The characteristics of the site are suitable for the proposed use considering size, shape, location, topography, existence of improvements and natural features;

Finding: Complies as proposed.
The applicant has provided the following findings:
Parcel A & D
The characteristics of the site are suitable for the proposed drive-through facility as the proposed configuration of the drive-through facility is designed in such a way that other site design code elements can still be maintained, drive-through facilities exist immediately north and west of the site, the proposed parcel size can easily accommodate the drive-through facility and allow adequate queuing without impacting site circulation on public roads, and the site topography is gentle enough to accommodate the proposed drive-through while still allowing space for the access easement required for the properties south of the subject property as identified in the Beavercreek Access Management Plan

The property appears to be suitable for the proposed uses. The applicant has proposed several public improvements that are generally consistent with the City's standards (see below for GDP and DDP requirements for public improvements under OCMC 16.12.). The proposed development does not contain severe slopes or other unique features that would require atypical roadway patterns reducing the safety of pedestrian, bicycle, vehicles (i.e. freight or emergency) from accessing the area. The property has an area identified as a geological hazard but impacts to the mapped area appear to be minimal and will be further reviewed with each DDP that impacts it. A small portion of the site near Beavercreek Road contains is part of the City's NROD area and the Applicant has noted that they will mitigate per the City's OCMC 17.49 requirements for any impacts there.

Overall, City Staff do not consider that the proposed development is unsuitable to the site based on the site's existing features. Specific conditions on how the site can meet City standards are noted within this report or will be further reviewed/conditioned with each parcel's DDP.

3. Development shall demonstrate compliance with OCMC 16.12;

Finding: Complies with Condition. The applicant has proposed to construct multiple public facilities to serve this development and the surrounding area. The following are the City's findings and conditions for the public improvements associated with this development:

Transportation

A new roadway connecting Molalla Avenue to Beavercreek Road is identified. Both Molalla Avenue and Beavercreek Road are Major Arterial Roads with the new road connecting them proposed as a collector road. The applicant has requested modifications to the City's standard cross-section for a collector road using the City's modification process under OCMC 16.12 in their DDP. The reduced collector road cross-section generally removes the standard on-street parking, standard third lane east of the proposed commercial development driveways, and a sidewalk through TL 500/501 connecting to Beavercreek Road. Both Molalla Avenue and Beavercreek Road do not contain parking lanes and the applicant's modification request with the DDP explains how sufficient parking with each parcel will be provided. The Applicant's TIA and City staff support these modifications. The portion of the new roadway the runs through TL 500/501 is consistent with the City's Beavercreek Road Access Plan (i.e. Short Term Access Plan) and the City's TSP project S28 by providing an expanded sidewalk on one side of the road to facilitate pedestrian and bicycle connections away from major roadways. When future properties develop to the west, the sidewalk on the west will be provided which is a typical process for half-street like roadways. The public roadway is a necessary facility for public transportation, site access, and emergency services. The proposed public street between Molalla Avenue and Beavercreek Road shall be constructed prior to occupancy of the first developed parcel.

TSP Project S28 is a shared-use path that is intended to connect the Hilltop Avenue neighborhood with the commercial facilities on Beavercreek Road and onward. As noted above, the applicant has proposed that they will construct an expanded sidewalk as a shared-use path along the new road within TL500/501. They propose to continue the shared-use path north towards Hilltop Avenue by leaving the new street alignment and provide a natural path on the eastern edge of the property (TL3200/3400). The Applicant's proposed nature trail and stairway to access the trail from the new

road, is not consistent with the City's accessway standards for offsite pedestrian and bicycle access. Furthermore, the Applicant's proposed alignment does not provide a usable safe shared use path as required by Chapter 1 Goal 3 parts 3.5 and 3.6, Chapter 3 Goal 1, and Chapter 4, Goal 1 part 1.3 of the Comprehensive Plan to address community safety of residents and provisions of multi-modal opportunities. As previously mentioned, the purpose of project S28 is to connect the development and Hilltop neighborhood to pedestrian and bicycle facilities within Beavercreek Road and provide a safe alternative to using vehicular transportation to access Beavercreek Road. Shared use paths which are used as transportation systems are constructed of paved materials, most commonly asphalt. Trails that are fully enveloped within a park are typically paved or unpaved depending on the plan for the park. Since this is a transportation connection from one roadway to another (Hilltop Avenue to Beavercreek Road), the shared use path must be fully paved. Additionally, the path must be located in a safe useable area. The Applicant proposed the path to be located approximately 10 feet below Parcel B's proposed parking lot in elevation with no connection to Parcel B. The path is also proposed to be located within a geologic hazards overlay zone within two proposed steep slopes. No evidence has been provided that the path will be safe from a security perspective or a landslide perspective or useable by Parcel B. Therefore, the path shall be relocated to be along the edge of Parcel B's parking lot for accessibility and security reasons to meet the safety standard. The applicant has proposed design and construction of the shared-use path with the new road's DDP. The City takes no exception to the shared-use path timeline and final design will be addressed with the Applicant's DDP for the new road. However, the City has provided a Condition which allows the path to be built in pieces within the public road DDP and the parcel B DDP if the applicant chooses. Conditions of approval and findings for the S28 shared-use path are identified with the applicant's DDP for the new road. The construction of the shared-use path S28 within TL 3200/3400 may be completed with either the DDP for the new roadway or prior to occupancy of Parcel B.

As part of OCMC 16.12, applicants must address the City's Mobility Standards and provide a traffic impacts analysis (TIA). The analysis evaluates impacts to existing Street Systems and details how the new development can meet City Standards. The City and it's transportation consultant have reviewed the provided TIA and note the following:

- Based on the most recent five years of available crash data (2019 to 2023), critical crash rate calculations, and ODOT SPIS lists, the OR-213/Beavercreek Road intersection was flagged for safety concerns. The TIA notes that since 2023, safety improvements such as signal modifications and improved signage have been completed at this location. As such, no safety mitigations are recommended at this time.
- The development is expected to generate 339 (157 in, 182 out) a.m. peak hour trips, 190 (107 in, 83 out) p.m. peak hour trips, and 2,788 weekday trips. This includes a conservative internal trip capture reduction of 5% in the a.m. peak hour and 25% in the p.m. peak hour, a pass-by rate of 40% for both the a.m. and p.m. peak hours for the Strip Retail (822) land use, and a pass-by rate of 55% for both the a.m. and p.m. peak hours for the Restaurant (934) and Coffee Shop with Drive Through Window (937) land uses.
- Different trip distributions were applied for the commercial and residential land uses.

    - *Commercial Trips (Retail and Fast Food):* Approximately 35% of site trips are expected to travel to/from destinations to the south along Molalla Avenue and Beavercreek Road, and approximately 65% are expected to travel to/from destinations to the north along Molalla Avenue.
    - *Residential Trips:* Approximately 55% of site trips are expected to travel to/from destinations to the south along Molalla Avenue and Beavercreek Road, and approximately 45% are expected to travel to/from destinations to the north along Molalla Avenue.
- Left turn lane warrants were evaluated at future site access intersections. No left turn lane warrants were met.
- All study intersections are expected to meet performance standards under all analysis scenarios.
- A queuing analysis showed queue lengths at the Molalla Avenue/Shared Business Driveway (Safeway) intersection are expected to exceed the available storage for the northbound left turning movement under both background and build conditions in the p.m. peak hour. The 95th percentile queue is expected to exceed the available storage by only one vehicle in the p.m. peak hour only. No mitigation is recommended at this time as it is a background condition.

The findings of the City's review of the TIA show that the proposed development does not fail the City's transportation systems and that the overall concept of the proposed development can meet the City's standards. Additional reviews/conditions will be required with each DDP that are more specific with each parcel (e.g. driveway locations, spacing, sizing, queuing). The City notes the following Conditions of Approval with this GDP:

- Since the TIA assumes a reduction in vehicle trips due to internal trip capture that would occur as walking and/or biking trips, the TIA shall be revised to discuss the project's internal pedestrian and bicycle circulation needs and how the site plan adequately accommodates active modes.
- Minimum AASHTO sight distance requirements shall be met at all site intersections and driveways. Sight distances on the internal local street system shall be approved by the City Engineer prior to final site plan approval (at DDP).
- A proportionate share fee contribution of $404 per p.m. peak hour trip shall be collected for planned improvements at OR-213/Beavercreek Road. The fee amount will be determined as part of future detailed development plan applications.
- Upon development opening, short-term traffic operations will likely exceed the study's reported operations, which may result in traffic congestion and concerns regarding vehicle queuing. Future detailed development plan applications shall address this with their applications.

- Roadway striping improvements on Molalla Avenue and the new public road will be required as part of the DDP which builds the new public road.
- Traffic Signal improvements on Molalla Avenue and the new public road will be required as part of the DDP which builds the new public road.

It should be noted that both the October 2025 and March 2026 versions of the study find that the existing transportation system will adequately accommodate the proposed master plan uses. The October 2025 analysis included a high-volume grocery store with a higher trip count than the currently proposed development in Parcel A. The October 2025 trip count represents a reasonable worst-case development for that parcel from a transportation impact standpoint. If the development for Parcel A changes and is consistent with either the trip count from October 2025 or March 2026 TIA, a new GDP TIA will not be required.

Water

The Applicant has also proposed to provide an expanded water system with this development. The City's Water Master Plan identifies a new 12" water main connecting Molalla Avenue with Beavercreek Road to provide additional system looping. The City will review technical design and specific connection points with the applicant's DDP and technical design review. The proposed 12" water main, connecting Molalla Avenue to Beavercreek Road, shall be constructed prior to the occupancy of the first developed parcel.

Sanitary Sewer

The applicant has proposed a new sanitary sewer main to be installed within the new road. This sewer is needed to serve the developments on Parcels A, B, and D. The proposed layout appears to meet City standards but further technical review and conditions will be considered as part of the DDP and technical permitting. The City's Sewer Master Plan identifies a new sanitary sewer to connect the City's existing system on HIlltop Avenue to the sewer system on Beavercreek Road by gravity. The Applicant has noted that the portion within TL 3200/3400 will be constructed with Parcel B. The City takes no exception to that proposal. The City's identified sanitary extension within Parcel B shall be completed prior to Parcel B's occupancy. The proposed sewer line within the new roadway shall be constructed prior to the occupancy of the first developed parcel.

Stormwater

The applicant has proposed a private and public stormwater design for this development. The proposed application notes a stormwater pond as part of Parcel D for the Quick Service Restaurant (QSR) development. That pond will take in only stormwater runoff from that parcel. The City takes the exception to that approach and will review that design in more detail with Parcel D's DDP. That pond will be constructed as part of Parcel D's development.

The applicant also proposes to construct a second stormwater pond that will treat the runoff from Parcel A, B, and the proposed public roadway. The applicant has proposed to dedicate this pond to the City for public ownership and maintenance. The applicant's stormwater report notes that the combined stormwater collection area to be treated for Parcels A and B is approximately 4 times the size of the proposed public roadway. The proposed Pond is primarily designed to treat the private properties within this development. Typically, with commercial properties (shopping centers,

apartment complexes, industrial complexes, etc.) the stormwater facilities are privately owned and maintained, and the burden is not placed on the City to maintain. With only a fifth of stormwater flows to this pond originating from the public right-of-way, and with commercial developments (like this one) privately maintaining their own stormwater facilities, the proposed pond should not be a public facility maintained by the City. Public stormwater facilities shall only treat stormwater from publicly maintained rights-of-way (i.e. public streets). The applicant shall either separate the public stormwater runoff from the private runoff with separate publicly maintained facilities (e.g. streetside planters or other separate facilities) and privately maintain facilities for private stormwater runoff; or the development can enter into an agreement with the City to privately maintain a combined pond.

The proposed public improvements identified with this GDP are generally consistent with the City's water, sewer, stormwater, and transportation standards. Further refinement to these facilities will be conditioned and reviewed as part of each parcel's DDP to ensure that they meet City standards and design policies.

Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.

4. The proposed use will not alter the character of the surrounding area in a manner which substantially limits, impairs or precludes the use of surrounding properties for the primary uses listed in the underlying district;

Finding: Complies with Condition
The applicant has provided the following findings:

Parcel A
The proposed drive-through is situated approximately 36' away from the north property line and approximately 60' – 90' away from the nearest residential use north of the subject property. The drive-through menu board and ordering speaker will be situated on the back (east) side of the building at least 50' south of the north edge of the Parcel A building. The Parcel A drive-through facility will not substantially limit, impair or preclude the continuing use of these residential properties. The proposed Parcel A drive-through facility is comparable in nature to the existing drive-through facility at the adjacent QSR at the northwest corner of the site, which is situated approximately 60' from the adjacent residential use, and will not substantially limit, impair or preclude the continuing operation of the existing QSR use.

Parcel D
The proposed drive-through is situated 350'-530' away from the nearest residential use north of the subject property and is separated by a proposed public street that has no direct connection to the abutting residential properties. The drive-through facility will not substantially limit, impair or preclude the continuing use of these residential properties. The proposed drive-through facility is comparable in nature to the existing drive-through facility at the adjacent QSR at the northwest corner of the site and will not substantially limit, impair or preclude the continuing operation of the existing QSR use. The proposed drive-through facility does not limit, impair or preclude uses in the existing shopping center west of the site. The proposed drive-through facility is comparable in

nature to several of the tenants in this shopping center who also have drive-through facilities. Similarly, the commercial uses south of the subject property are not impacted by the proposed drive-through use. Their uses can continue to operate regardless of the proposed drive-through use. In fact, the proposed drive through lane is configured in a manner that allows future access to properties south of Parcel D in compliance with the Beavercreek Access Management Plan

Staff generally agrees with the approach contingent on the adoption of an enhanced landscaping condition to provide additional buffering, ensuring that the pedestrian experience is not reduced along Molalla Avenue and that the transit corridor remains a prominent pedestrian connection.

5. The proposal satisfies the goals and policies of the City comprehensive plan which apply to the proposed use.

Finding: Complies with Conditions.
The applicant has provided the following findings:

HEALTHY AND WELCOMING COMMUNITIES
Goal 1 – Community Engagement
By virtue of the Conditional Use process before Planning Commission, Comprehensive Plan Goal 1 and its associated policies are satisfied. The proposed drive-through facilities are located in an area of the site with prior development activity (former gas station was located in this portion of the subject property).

Goal 2 – Historic, Artistic, and Cultural Resources Based on coordination with the State Historic Preservation office (SHPO), SHPO has no record of identified archeological objects or sites and no Native American cairn, burial, human remains, sacred objects or objects of cultural patrimony in or adjacent to the project area and does not have any concerns with the project proceeding as planned. The Confederated Tribes of Grand Ronde requested an archeological survey of the site be performed. This survey will be performed prior to detailed construction plan preparation and the results of the survey incorporated into the design in the event they impact the proposed drive-through facility. Comprehensive Plan Goal 2 and its associated applicable policies are met.

Goal 3 – Livability and Access to Community Services
This goal is focused on community-based organizations, access to health care, civic engagement, community safety, and unhoused residents. Policy 3.4 describes the need to support and promote the availability of affordable, healthy food for neighborhoods and describes a strategy of allowing and encouraging the development of small retail centers in residential neighborhoods that provide goods and services for local residents and workers. The Comprehensive Plan identifies the subject property as a Mixed Use Corridor (MUC). The proposed drive-through facilities do not impact access to community services. Restaurants are an allowed use in the Mixed Use Corridor (MUC) Plan District. The proposed drive-through supports the underlying Plan designation.

DIVERSE ECONOMY
Goal 1 – Varied Goods and Services and Employment Options
The proposed drive-through facilities do not negatively impact any of the stated Comprehensive

Plan Policies. The proposed drive-through facilities allow an outright permitted use in this zone to operate in a manner that will bring them to the community and provide another food option.
Goal 2 – Housing Options
The proposed drive-through facility does not impact this goal as it does not impact housing options.
Goal 3 – Implementation of 2040 Vision and Urban Growth Boundary
The proposed drive-through facilities are part of a development that lies within the Urban Growth Boundary and lies within a Comprehensive Plan designation that allows restaurants.
Goal 4 – Supportive Community Features and Sustainable Site/Building Design
The proposed drive-through facility is part of a larger development that incorporates sustainable stormwater design and complies with applicable site and building code elements that have been adopted by the city and therefore have been deemed to satisfy this goal.
Goal 5 – Periodically Amend the Urban Growth Boundary
The proposed drive-through facility does not impact this goal as it lies within the existing Urban Growth Boundary

CONNECTED INFRASTRUCTURE
Goal 1 – Transportation Network Serving Multiple Modes of Travel
The proposed drive-through facilities do not negatively impact the goal of providing multiple modes of travel within the city. It focuses on the specific transportation impacts of the proposed masterplan development and will help support a safe and effective transportation network by being long enough to house drive-through traffic within the site and avoid spilling onto the proposed public street.

Goal 2 – Adequate Public Facilities
The proposed drive-through facilities do not negatively impact the goal of providing public utilities and transportation facilities within the city.

Goal 3 – Comprehensive Public Facilities
The proposed drive-through facilities do not negatively impact the goal of providing comprehensive public utilities facilities within the city. The proposed drive-through facility does not increase the demand for these services.
Goal 4 – Energy Conservation, Sustainability, and Resiliency
The proposed drive-through facilities will follow the same sustainable site improvements, including stormwater quality treatment and detention as the rest of the site improvements.
PROTECTED ENVIRONMENT
Goal 1 – Accessible Recreation
The proposed drive-through facility will have no negative impact on the recreation opportunities within the city.
Goal 2 – Protection of Natural Resources
The proposed drive-through facilities will follow the same sustainable site improvements, including stormwater quality treatment and detention as the rest of the site improvements. Parcel A or D do not include protected natural resources or ecosystems.

Goal 3 – Minimize Impacts of Natural Hazards
The proposed drive-through facility will have no impact on natural hazard events or the city's ability to respond to same.

Goal 4 – Willamette River Greenway The proposed drive-through facility has no impact to the Willamette River Greenway.

Staff generally agrees with the approach for the drive-thrus contingent on the adoption of an enhanced landscaping condition to provide additional buffering, ensuring that the pedestrian experience is not reduced along Molalla Avenue and that the transit corridor remains a prominent pedestrian connection.

The proposed shared use path provides for access and livability; however, its proposed location does not provide the security needs to sustain livability as the current location will be very difficult to police and ensure safety. Furthermore, the path is not connect to Parcel B limiting access to that transportation service which is intended to be provided by the TSP.

The proposed shared use path provides a multimodal need to the region, but its location prevents the path from providing this alternative transportation to the development.

The shared use path is proposed to be located in an area of geologic hazards overlay zone. The location does not protect the resource causing the need to see the shared use path relocated at time of DDP.

The shared use path is proposed to be located in an area of geologic hazards overlay zone. The location does not minimize impacts to the resource causing the need to see the shared use path relocated at time of DDP.

B. Permits for conditional uses shall stipulate restrictions or conditions which may include, but are not limited to, a definite time limit to meet such conditions, provisions for a front, side or rear yard greater than the minimum dimensional standards of the zoning ordinance, suitable landscaping, off-street parking, and any other reasonable restriction, condition or safeguard that would uphold the spirit and intent of the zoning ordinance, and mitigate adverse effect upon the neighborhood properties by reason of the use, extension, construction or alteration allowed as set forth in the findings of the Planning Commission.

Finding: Complete with Condition. The applicant requests no time limit be set on approval of the drive-through facilities as considerable investment in drive-through infrastructure will be made and drive-through facilities are integral to the QSR operations for both Parcels A and D. As proposed, the drive-through facilities already exceed minimum setback requirements for such improvements, and adverse impacts to neighborhood properties are not expected, given location and orientation of the Parcel A menu board and speaker, and the adjacent commercial uses south of the proposed

Parcel D drive-through and the large distance separating the Parcel D drive-through facility from residential properties to the north of the proposed conditional use. Staff have not added a time limit to the approval. The only conditions related to the conditional use approval pertain to the enhanced landscaping, which must be retained unless revised through a future Type III Conditional Use review.

C. Any conditional use shall meet the dimensional standards of the zone in which it is to be located pursuant to subsection B. of this section unless otherwise indicated, as well as the minimum conditions listed below.

Finding: Complies. The applicant has indicated that the proposed developments on parcels A and D can meet the requirements of the Detailed Development Plan unless further specified in the Master Plan conditions of approval. Final review of the proposal will occur at the Type II Detailed Development Review.

D. In the case of a use existing prior to the effective date of the ordinance codified in this title and classified in this title as a conditional use, any change of use expansion of lot area or expansion of structure shall conform with the requirements for conditional use.

Finding: Not Applicable. The proposed drive-through facilities are not a pre-existing use. Accordingly, this criterion is not applicable.

E. The Planning Commission may specifically permit, upon approval of a conditional use, further expansion to a specified maximum designated by the Planning Commission without the need to return for additional review.

Finding: Complies with Condition. Neither the applicant nor staff expects the need to expand the conditional drive-through for Parcel A or D. However, to ensure clarity in the future, staff has provided a condition that identifies what constitutes an expansion of the drive-through, which requires a Type III Planning Commission review.

17.56.020 - Permit—Application.

A. A property owner or authorized agent shall initiate a request for a conditional use by filing an application with the City Recorder. The applicant shall submit a site plan, drawn to scale, showing the dimensions and arrangement of the proposed development. The application shall be accompanied by the filing fee listed in OCMC 17.50.080 to defray the costs of publication, investigation and processing.

Finding: Complies. An application for Conditional Use Approval, together with the applicable review fee, was included in the overall Masterplan land-use application submitted June 27, 2025 (Ref CU-25-00001).

B. Before the Planning Commission or City Commission may act on a conditional use application, it shall hold a public hearing thereon, following procedure as established in OCMC 17.50.

Finding: Complies. The drive-through proposal is being reviewed through a Type III Planning Commission Hearing.

17.56.025 - Minor modifications to legal conditional uses.

Minor modifications to an approved conditional use permit may be permitted. If permitted, the modification shall be reviewed as a minor site plan and design review. A minor modification to an approved conditional use permit is considered one of the following:

A. Modification to a structure for the purpose of enhancing the aesthetics of the building and there is no increase in the interior usable space;

B. Except for shelters, a maximum addition of up to one thousand square feet to a commercial, office, institutional, public, multi-family, or industrial building provided that the addition is not more than thirty-five percent of the original building square footage; or

C. Revisions to parking alignment and/or related vehicle circulation patterns.

Finding: Complies. The applicant acknowledges the requirements to modify a conditional use. The proposed drive-through facilities included in this masterplan application is the initial request. If subsequent modifications are desired, the applicant will seek the applicable procedure for such modification.

17.56.040 - Criteria and standards for conditional uses.

In addition to the standards listed herein in OCMC 17.56.010, which are to be considered in the approval of all conditional uses and the standards of the zone in which the conditional use is located, the following additional standards shall be applicable:

A. Building Openings. The City may limit or prohibit building openings within fifty feet of residential property in a residential zone if the openings will cause glare, excessive noise or excessive traffic which would adversely affect adjacent residential property as set forth in the findings of the Planning Commission.

Finding: Complies

The applicant has provided the following response:

<u>Parcel A Drive-Through</u>

The proposed drive-through is situated approximately 36’ away from the north property line and approximately 60’ – 90’ away from the nearest residential use north of the subject property. The drive-through menu board and ordering speaker will be situated on the back (east) side of the building at least 50’ south of the north edge of the Parcel A building. The Parcel A drive-through facility will not substantially limit, impair or preclude the continuing use of these residential properties. The proposed Parcel A drive-through facility is comparable in nature to the existing drive-through facility at the adjacent QSR at the northwest corner of the site, which is situated approximately 60’ from the adjacent residential use.

<u>Parcel D Drive-Through</u>

The proposed drive-through facility includes a drive-through window on the southerly side of the proposed building. The drive-through window is located more than 225 ft away from the existing MUC-2 property south of the site. No additional building openings are proposed with this drive-through facility. The proposed drive-through facility is expected to include a secondary canopy near the approximate mid-point of the dual drive-through lanes. This canopy is located more than

80 ft away from the existing MUC-2 property to the south of the site. This canopy – as with the rest of the Parcel D improvements - will be further presented/described in the Parcel D Detailed Development Plan.

B. Additional Street Right-of-Way. The dedication of additional right-of-way may be required where the City plan indicates need for increased width and where the street is inadequate for its use; or where the nature of the proposed development warrants increased street width.

Finding: Complies with Condition. The applicant has noted that right-of-way dedication will be provided along Molalla Avenue and for the new street connecting Molalla Avenue with Beavercreek Road. The proposed sizing and alignment appear to be acceptable to the City and would work with this GDP. Specific details and dimensions of the new roadway and public improvements (including modification requests) will be reviewed as part of the development's DDPs. See conditions above regarding right-of way dedications and public improvements under OCMC 16.12.

C. Public Utility or Communication Facility. Such facilities as a utility substation, water storage tank, radio or television transmitter, tower, tank, power transformer, pumping station and similar structures shall be located, designed and installed with suitable regard for aesthetic values. The base of these facilities shall not be located closer to the property line than a distance equal to the height of the structure. Hydroelectric generation facilities shall not exceed ninety megawatts of generation capacity.

Finding: Not Applicable. No public utility or communication facilities such as substations, storage tanks, radio or television or other noted above is proposed.

D. Schools. The site shall be located to best serve the intended area, shall be in conformance with the City plan, shall have adequate access, and shall be in accordance with appropriate State standards.

E. Helipad Landing Facility.
1. Size of runways and landing areas;
2. Approaches and obstructions within the runways and landing areas;
3. Fencing and/or screening to provide visual and noise buffering and to deflect winds or blast due to aircraft operation;
4. Fire protection measures and equipment;
5. Night illumination adequate for operations, and its effects upon surrounding property;
6. Landing markers;
7. Structural adequacy of runways, pads and other structures;
8. Paving and ground cover materials in relation to noise and down wash.
Finding: Not Applicable. The conditional use proposal is for two drive-through facilities**.**

F. Residential Care Facilities.
1. In addition to the general provisions of OCMC 17.56.020, any application shall include a description of the proposed use, including the number of residents and the nature of the condition

or circumstances for which care, or a planned treatment or training program will be provided, the number of staff and the estimated length of stay per resident and the name of the agency responsible for regulating or sponsoring the use.
2. Approval of a conditional use application for a residential care facility shall include the following minimum standards where applicable:
a. The proposed facility shall maintain all applicable licenses required by the appropriate agencies for the use described in the application.
b. All residential care facilities shall be subject to design review. Special considerations for this use are:
i. Compatibility in appearance with the surrounding area;
ii. Provisions of usable on-site open space appropriate to the needs of the residents and the nature of the care, treatment or training provided;
iii. Clearly defined property boundaries.
Finding: Not Applicable. The conditional use proposal is for two drive-through facilities**.**

G. Bed and Breakfast Inns.
1. The bed and breakfast inn shall maintain all applicable licenses required by governmental agencies for the use described in the application.
2. All bed and breakfast inns shall be subject to design review. Special considerations for this use are:
a. Compatibility of the structure in appearance with the surrounding area;
b. Compatibility of the parking facilities in appearance and circulation of traffic with the surrounding area. Parking facilities shall also comply with Chapter 17.52;
c. Compatibility of the signage in appearance with the surrounding area. Signage shall also comply with Chapter 15.28;
d. The number of rooms to be used as overnight public accommodations shall not exceed four rooms in an underlying residential zone, or seven rooms in an underlying nonresidential zone;
e. The owner/operators shall reside in the bed and breakfast inn, or in a residence adjacent to the bed and breakfast inn; and
f. The Planning Commission may allow up to an additional six non-guests to be served along with the guests at a meal.
Finding: Not Applicable. The conditional use proposal is for two drive-through facilities**.**

H. Shelters.
1. Shelters shall be processed as a Type IV review.
2. The shelter shall maintain a written community engagement plan include the following information:
a. Description of purpose and scope of services of the shelter;
b. Population to be housed at the shelter and the process and criteria for the selection of guests;
c. Bed capacity for nightly guests;
d. Hours of operations and curfew, if applicable;
e. 24 hour contact information; and
f. Explanation of how the shelter will address concerns/complaints.
3. Shelters shall hold a meeting with the community prior to commencing operation, and a minimum of once a year each year thereafter. The purpose of the meeting is to discuss the community engagement plan and provide an opportunity for greater communication. Mailed notice

of the meeting shall be provided to property owners within 300 feet, the neighborhood association, and the City. The meeting shall be open to the public.
Finding: Not Applicable. The conditional use proposal is for two drive-through facilities**.**

17.56.060 - Revocation of conditional use permits.
The Planning Commission or the City Commission may initiate administrative action under Chapter 17.50 to revoke any conditional use permit previously issued by the City or, with regard to lands annexed by the City, those such permits issued by the county. The Planning Commission or the City Commission, may revoke such permit upon determining:
A. One or more conditions attached to the grant of the conditional use permit have not been fulfilled; and
B. The unfulfilled condition is substantially related to the issuance of the conditional use permit.

Finding: Complies. The applicant acknowledges the City Commission's authority to revoke conditional use approvals. Staff has not identified any conditions related to this standard.

17.56.070 - Periodic review of conditional use permits.
A. The City Commission may provide for the periodic review of some or all of the conditional use permits previously issued by the City, or, with regard to lands annexed by the City, those such permits issued by the county. In providing for such review, the City Commission may designate classes of such previously issued permits for which periodic review shall be undertaken.
B. Such review shall be accomplished as an administrative action under Chapter 17.50 and shall be limited to the question of whether additional conditions should be imposed on a conditional use in the light of changing circumstances and more efficient implementation of the City's comprehensive plan.
C. Notwithstanding the provisions of Chapter 17.58, any additional conditions shall be met as a requirement for continued operation of the conditional use.

Finding: Complies. The applicant acknowledges the City Commission's periodic review authority for conditional use approvals. Staff has not identified any conditions related to this standard.

CHAPTER 17.65 MASTER PLANS AND PLANNED UNIT DEVELOPMENT
17.65.010 Purpose and intent.
It is the intent of this chapter to foster the growth of major institutions, phased residential, commercial or mixed-use development, and other large-scale development, while identifying and mitigating the impacts of such growth on surrounding properties and public infrastructure. The City recognizes the valuable housing options, services and/or employment opportunities that these developments bring to Oregon City residents. The master plan or planned unit development process is intended to facilitate an efficient and flexible review process for major developments, support innovative and creative land development, and to provide long-term assurance to plan for and execute developments in a phased manner. To facilitate this, the master plan process is structured to allow an applicant to address larger development issues, such as adequacy of infrastructure and transportation capacity, and reserve capacity of the infrastructure and transportation system before expenditure of final design costs. The master plan or planned unit development process is further intended to promote efficiency in land development, maintenance,

street systems and utility networks while providing site layouts that integrate usable and attractive open spaces, site circulation, and the general wellbeing of site users. For the purposes of this chapter, planned unit developments are considered the same as master plans.

17.65.020 What is included in a master plan or planned unit development.
A. A master plan or planned unit development is a two-step process that includes a general development plan and a detailed development plan. A general development plan incorporates the entire area where development is planned for up to the next twenty years from the date of final approval, including the identification of one or more development phases. The general development plan may encompass land that is not currently under the applicant's control, but which eventually may be controlled by the applicant during the duration of the master plan. The plan shall have no effect for lands not currently controlled by the applicant. "Controlled" shall be defined as leased or owned by the applicant. A detailed development plan is the phase or phases of the general development plan that are proposed for development within two years.
B. A master plan or planned unit development identifies the current and proposed uses of the development, proposed project boundaries, and proposed public and private infrastructure needed to serve the development. If approved, the general development plan may be used to allow existing legal non-conforming uses. If conditions of approval from a previous land use decision have not been completed, they shall be modified through the general development plan or completed with new development.
C. A master plan or planned unit development identifies future development impacts, thresholds for mitigation and mitigation improvements and implementation schedules. A threshold for mitigation is the point that determines when or where a mitigation improvement will be required. Examples of "thresholds" include vehicle trips, square feet of impervious surface area, water usage measured in gallons per minute, construction of a building within a general development plan and construction of a building within a certain distance of a residential lot.
Mitigation improvements are necessary when a threshold for mitigation is reached. Examples include road dedication, intersection improvement, road widening, construction of a stormwater or water quality facility, installation of vegetative buffering and wetland restoration or enhancement.
Finding: Complies. The applicant acknowledges the purpose and intent of the masterplan process and chooses to request General Development Plan approval for the overall property and Detailed Development Plan approval for the proposed street improvements and rough grading of the site. Detailed Development Plan approval for Parcels A, B & D will be sought separately from this application.

17.65.030 - Applicability of the Master Plan or Planned Unit Development Regulations.
A. Required for Large Institutional Uses. If the boundaries of an institutional development exceed ten acres in size, the proposed development shall be master planned using the regulations of this chapter. No land use review other than a Type I or II Minor Site Plan and Design Review shall be issued for any institutional development in excess of ten acres in total acreage unless it is accompanied by or preceded by a master plan approval under this chapter. This requirement does not apply to modifications to existing institutional developments unless the modification results in a cumulative square footage increase of over ten thousand total building square feet in an existing institutional development over ten acres.

B. When Required as Part of Previous Land Use Review. The master plan or planned unit development regulations may be used to fulfill a condition of approval from a previous land use decision-requiring master planning for a development.
C. When identified in the Oregon City Comprehensive Plan. The master plan regulations are required for all properties identified for master planning in the land use section of the Oregon City Comprehensive Plan.
D. Voluntarily. An applicant may voluntarily submit a master plan or planned unit development as part of a land use review, including for residential projects.

Finding: Complies. The applicant voluntarily requests General Development Plan approval for the overall property and Detailed Development Plan approval for the proposed street and utility main improvements and rough grading of the site. Detailed Development Plan approval for Parcels A, B & D will be sought separately from this application.

17.65.040 - Procedure.
A. Preapplication Review. Prior to filing for either general development plan or detailed development plan approval, the applicant shall file a pre-application conference pursuant to OCMC 17.50.030.

Finding: Complies. A pre-application conference was held April 22, 2025.

B. General Development Plan. An application for a general development plan describing the long-term buildout of the site shall be reviewed through a Type III procedure. An applicant shall have an approved general development plan before any detailed development plan may be approved unless both are approved or amended concurrently. Amendments to an approved general development plan shall be reviewed under a Type III procedure pursuant to OCMC 17.65.080.

Finding: Complies. An application for A Type III Master Plan -General Development Plan, Conditional Use, and Parking Adjustment was submitted. A detailed development plan was also submitted and is attached as a separate staff report, which can be approved along with the Master Plan at the Planning Commission meeting. Future detailed development plans will be reviewed through a Type II review unless a modification is requested that requires a Type III Master Plan Amendment.

C. Detailed Development Plan. An application for a detailed development plan, is processed through a Type II procedure, as long as it is in conformance with the approved general development plan. Amendments to an approved detailed development plan shall be processed pursuant to OCMC 17.65.080. Once a development has an approved detailed development plan, OCMC 17.62 Site Plan and Design Review is not required.

Finding: Complies. The applicant seeks Detailed Development Plan approval for the proposed street improvements and rough grading of the site (MAS-25-002_GEO-25-007_NROD-25-012), which will be concurrently reviewed with the Master Plan. Detailed Development Plan approval for Parcels A, B & D will be sought separately from this application.

D. Concurrent Review. An applicant may concurrently apply for a general development plan and a detailed development plan. Such a concurrent application is reviewed through the highest procedure that applies to any element of the combined application.

Finding: Complies. The applicant seeks Detailed Development Plan approval for the proposed street improvements and rough grading of the site (MAS-25-002_GEO-25-007_NROD-25-012), which will be concurrently reviewed with the Master Plan. Detailed Development Plan approval for Parcels A, B & D will be sought separately from this application.

E. Relationship to Other Reviews. It is the express policy of the City that development review not be segmented into discrete parts in a manner that precludes a comprehensive review of the entire development and its cumulative impacts.

Finding: Complies. The applicant presents the enclosed application packages for a comprehensive review of the entire development and its cumulative impacts.

F. Duration of General Development Plan. A general development plan shall involve a planning period of up to twenty years. An approved general development plan shall remain in effect until development allowed by the plan has been completed through the detailed development plan process, the plan is amended or superseded, or the plan expires under its stated expiration date either as stated in the approved master plan or planned unit development application or decision of approval.

Finding: Complies with Condition. Per OCMC 17.65.020.A, unless further amended and extended by the Planning Commission, this Master Plan, which includes Tax Lots 3330, 3400, 3200, and 3201, shall control development on the site until March 23, 2046. Tax Lots 500, 501 and 602 are not part of the 20-year Master Plan but are included initially to allow for the DDP construction of the Public Road, which will connect with Beavercreek Road. Future DDP applications are to be processed as Type I or II review as directed by the Oregon City Municipal Code, and the applicant may choose to use either the 2025 code adopted at the time of the Master Plan Amendment submittal (June 27, 2025) or the current code.

17.65.050 - General Development Plan.
A. Existing Conditions Submittal Requirements.
1. Narrative Statement. An applicant shall submit a narrative statement that describes the following:
a. Current uses of and development on the site;
b. For institutions, history or background information about the mission and operational characteristics of the institution that may be helpful in the evaluation of the general development plan, and information about current programs or services;
c. A vicinity map showing the location of the general development plan boundary relative to the larger community, along with affected major transportation routes, transit, and parking facilities. At least one copy of the vicinity map shall be eight and one-half inches by eleven inches in size, and black and white reproducible;

d. Land uses that surround the development site. This may also reference submitted maps, diagrams or photographs;
e. Previous land use approvals within the general development plan boundary and related conditions of approval, if applicable;
f. Existing utilization of the site;
g. Site description, including the following items. May also reference submitted maps, diagrams or photographs:
i. Physical characteristics;
ii. Ownership patterns;
iii. Building inventory;
iv. Vehicle/bicycle parking;
v. Landscaping/usable open space;
vi. FAR/lot coverage;
vii. Natural resources that appear on the City's adopted Goal 5 inventory;
viii. Cultural/historic resources that appear on the City's adopted Goal 5 inventory;
ix. Location of existing trees six inches in diameter or greater when measured four feet above the ground. The location of single trees shall be shown. Trees within groves may be clustered together rather than shown individually; and
x. Geologic hazards pursuant to OCMC 17.44.
h. Existing transportation analysis, including the following items. May also reference submitted maps, diagrams or photographs.
i. Existing transportation facilities, including highways, local streets and street classifications, and pedestrian and bicycle access points and ways;
ii. Transit routes, facilities and availability;
iii. Alternative modes utilization, including shuttle buses and carpool programs; and
iv. Baseline parking demand and supply study (may be appended to application or waived if not applicable).
i. Infrastructure facilities and capacity, including the following items:
i. Water;
ii. Sanitary sewer;
iii. Stormwater management; and
iv. Easements.

Finding: Complies. The applicant has provided all needed information in their submission. Many of the plans are shared with the Concurrent DDP application. While all items have been provided, they are not necessarily fully meeting code and standards. Conditions of Approval will be provided to ensure the development meets all requirements during DDP development and permitting. Specific items of adjustment will be needed for Geologic hazards pursuant to OCMC 17.44, existing transportation facilities, and infrastructure facilities and capacity of Water, Sanitary Sewer, Stormwater management and Easements.

2. Maps and Plans.
a. Existing conditions site plan. Drawn at a minimum scale of one-inch equals one hundred feet (one inch equals one hundred feet) that shows the following items. At least one copy shall be eight and one-half inches x eleven inches in size, and black and white reproducible.
i. Date, north point, and scale of drawing.

ii. Identification of the drawing as an existing conditions site plan.
iii. Proposed development boundary.
iv. All parking, circulation, loading and service areas, including locations of all carpool, vanpool and bicycle parking spaces as required in Chapter 52 of this title.
v. Contour lines at two-foot contour intervals for grades zero to ten percent, and five-foot intervals for grades over ten percent.
b. A site plan or plans, to scale, for the general development plan site and surrounding properties containing the required information identified in OCMC 17.62.040.b, Vicinity map. Depicting the location of the site sufficient to define its location, including identification of nearest cross streets. At least one copy of the vicinity map shall be eight and one-half inches by eleven inches in size, and black and white reproducible.
c. Aerial photo. Depicting the subject site and property within two hundred fifty feet of the proposed development boundaries. At least one copy of the aerial photo shall be eight and one half inches by eleven in size, and black and white reproducible.

Finding: Complies. *The applicant has provided all needed information in their submission. Many of the plans are shared with the Concurrent DDP application.*

B. Proposed Development Submittal Requirements.
1. Narrative statement. An applicant shall submit a narrative statement that describes the following:
a. The proposed duration of the general development plan.
b. The proposed development boundary. May also reference submitted maps or diagrams.
c. A description, approximate location, and timing of each proposed phase of development, and a statement specifying the phase or phases for which approval is sought under the current application. May also reference submitted maps or diagrams.
d. An explanation of how the proposed development is consistent with the purposes of Section 17.65, the applicable zone district or districts, and any applicable overlay district.
e. A statement describing the impacts of the proposed development on inventoried Goal 5 natural, historic or cultural resources within the development boundary or within two hundred fifty feet of the proposed development boundary.
f. An analysis of the impacts of the proposed development on the surrounding community and neighborhood, including:
i. Transportation impacts as prescribed in subsection g below;
ii. Internal parking and circulation impacts and connectivity to sites adjacent to the development boundary and public right-of-ways within two hundred fifty feet of the development boundary;
iii. Public facilities impacts (sanitary sewer, water and stormwater management) both within the development boundary and on City-wide systems; including a phasing plan for all onsite and off-site public improvements, including but not limited to transportation, schools, parks, open space, trails, sewer, water and stormwater, with an analysis off the capacity and improvements required as a result of fully implementing the plan. This analysis shall reference any adopted parks and recreation, public facilities plans and concept plans and identify specific funding mechanisms to address the adequacy of public facilities.
systems; including a phasing plan for all onsite and off-site public
iv. Neighborhood livability impacts;

v. Natural, cultural and historical resource impacts within the development boundary and within two hundred fifty feet of the development boundary.
g. A summary statement describing the anticipated transportation impacts of the proposed development. This summary shall include a general description of the impact of the entire development on the local street and road network, and shall specify the maximum projected average daily trips, projected AM and PM peak hour traffic and the maximum parking demand associated with build-out each phase of the master plan or planned unit development.
h. In addition to the summary statement of anticipated transportation impacts, an applicant shall provide a traffic impact study as specified by City requirements. The transportation impact study shall either:
i. Address the impacts of the development of the site consistent with all phases of the general development plan; or
ii. Address the impacts of specific phases if the City engineer determines that the traffic impacts of the full development can be adequately evaluated without specifically addressing subsequent phases.
i. If an applicant chooses to pursue option h.1., the applicant may choose among three options for implementing required transportation capacity and safety improvements:
i. The general development plan may include a phasing plan for the proposed interior circulation system and for all on-site and off-site transportation capacity and safety improvements required on the existing street system as a result of fully implementing the plan. If this option is selected, the transportation phasing plan shall be binding on the applicant.
ii. The applicant may choose to immediately implement all required transportation safety and capacity improvements associated with the fully executed general development plan. If this option is selected, no further transportation improvements will be required from the applicant. However, if a general development plan is later amended in a manner so as to cause the projected average daily trips, the projected a.m. or p.m. peak hour trips, or the peak parking demand of the development to increase over original projections, an additional transportation impact report shall be required to be submitted during the detailed development plan review process for all future phases of the development project and additional improvements may be required.
iii. The applicant may defer implementation of any and all capacity and safety improvements required for any phase until that phase of the development reaches the detailed development plan stage. If this option is selected, the applicant shall submit a table linking required transportation improvements to vehicle trip thresholds for each development phase.
j. For residential and mixed-use projects:
i. Proposed minimum lot area, width, frontage and yard requirements.
ii. Proposed project density in number of units per acre.
iii. Proposed residential types and number of each.

Finding: Complies. The applicant has provided all needed information in their submission. Many of the plans are shared with the Concurrent DDP application. While all items have been provided, they are not necessarily fully meeting code and standards. Conditions of Approval will be provided to ensure the development meets all requirements during DDP development and permitting. Specific items of adjustment relate to transportation impacts, public facility impacts, and neighborhood livability impacts.

2. Maps and Diagrams. The applicant shall submit, in the form of scaled maps or diagrams, as appropriate, the following information:
a. A preliminary site circulation plan showing the approximate location of proposed vehicular, bicycle, and pedestrian access points and circulation patterns, parking and loading areas or, in the alternative, proposed criteria for the location of such facilities to be determined during detailed development plan review.
b. The approximate location of all proposed streets, alleys, other public ways, sidewalks, bicycle and pedestrian access ways and other bicycle and pedestrian ways, transit streets and facilities, neighborhood activity centers and easements on and within two hundred fifty feet of the site. The map shall identify existing subdivisions and development and un-subdivided or unpartitioned land ownerships adjacent to the proposed development site and show how existing streets, alleys, sidewalks, bike routes, pedestrian/bicycle access ways and utilities within two hundred fifty feet may be extended to and/or through the proposed development.
c. The approximate location of all public facilities to serve the proposed development, including water, sanitary sewer, stormwater management facilities.
d. The approximate location, footprint and building square footage of buildings within of each phase of proposed development, and/or proposed lot patterns for each phase of future development.
e. The approximate locations of proposed parks, playgrounds or other outdoor play areas; outdoor common areas and usable open spaces; and natural, historic and cultural resource areas or features proposed for preservation. This information shall include identification of areas proposed to be dedicated or otherwise preserved for public use and those open areas to be maintained and controlled by the owners of the property and their successors in interest for private use.

Finding: Complies. The applicant has provided all needed information in their submission. Many of the plans are shared with the Concurrent DDP application. While all items have been provided, they are not necessarily fully meeting code and standards. Conditions of Approval will be provided to ensure the development meets all requirements during DDP development and permitting. Specific items of adjustment relate to location of streets, sidewalks, bicycle and pedestrian accessways, public facilities, and the location of Parcel B buildings and parking areas.

C. Approval Criteria for a General Development Plan. The Planning Commission may approve an application for general development plan only upon finding that the following approval criteria are met.
1. The proposed General Development Plan is consistent with the purposes of OCMC 17.65.

Finding: Complies. The Applicant is proposing a Master Plan to create future development parcels for a site zoned Mixed Use Corridor 2. Once approved, each parcel will be submitted for a separate Type II Administrative Detailed Development Plan (DDP) Review when market conditions are ready for each development. The buildings and their locations on the three development parcels are subject to change unless otherwise specified by condition in this application.

While the applicant could have created the development parcels and built the public road through an Administrative Type II Site Plan design review, the Master Plan process will provide the applicant with the needed clarity for phasing and site-wide impact analysis, and ensure that the same code is used for review at the time of each Detailed Development (DDP) application.

2. Development shall demonstrate compliance with OCMC 12.04 16.12, 17.62, if applicable, and 16.08, if applicable.

Finding: Complies with Conditions. The proposed General Development Plan identifies the proposed uses and street patterns of the subject property which has been vacant for nearly twenty-five years. The proposed development will include mixed uses comprised of multi-family residential, retail, and restaurant uses with various adjustments requested born out of the site's geometry and need for a public roadway through the site. The proposed masterplan will be developed in phases, with Phase 1 being the public street and utility improvements together with rough grading of the site. Parcels A, B, and D include retail, multi-family residential, and restaurant uses and will be constructed based on market demand following their individual Detailed Development Plan approval processes. Construction of the individual parcel uses may be concurrent with each other or may be separate. The master plan process is useful for implementing such a development plan by promoting efficiency in the overall development process and infrastructure needed to support the entire development. DDPs relating to the new public road, shared use path, public utilities, and improvements within Molalla Avenue and Beavercreek Road will be required to be in compliance with OCMC 12.04 and 16.12.

3. Public services for transportation, water supply, police, fire, sanitary waste disposal, storm-water disposal, and any other needed public services and facilities including schools and parks for proposed residential uses, are capable of serving the proposed development, or will be made capable by the time each phase of the development is completed.

Finding: Complies with Condition. As noted above under the public improvements requirements for OCMC 16.12, the applicant has proposed several public facilities with this development including a new roadway connecting Molalla Avenue and Beavercreek Road, a water main consistent with the City's Water Master Plan, a new sanitary sewer consistent with the City's Sewer Master Plan, and stormwater facilities. The overall plan appears to be consistent with the City's goals and standards, however specific design details and conditions for each of these facilities will be a part of the site's DDP. A majority of which is concurrently being reviewed as part of the proposed Parcel C's DDP. Some improvements such as portions of the public road, the shared use path, and the stormwater facilities will need significant revision to meet the standards of OCMC 16.12 as well as OCMC 17.44.

The proposed public improvements identified with this GDP are generally consistent with the City's water, sewer, stormwater, and transportation standards. Further refinement to these facilities will be conditioned and reviewed as part of each parcel's DDP to ensure that they meet City standards and design policies.

Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.

4. The proposed General Development Plan protects any inventoried Goal 5 natural, historic or cultural resources within the proposed development boundary consistent with the provisions of applicable overlay districts.

Finding: Complies with Condition. No historic records have been identified onsite. The proposed development is adjacent to and overlooks the Newell Creek Canyon, an inventoried Goal 5 natural resource within the city of Oregon City. The property's eastern edge is included in a geologic hazards overlay zone. The applicant's geotechnical analysis recommends a 35-ft setback from the top of bank overlooking Newell Creek Canyon to construct a future parking lot, trail, stormwater facility and roadway.

The Applicant's proposed geohazard setback identified on the plans are not consistent with the City's mapped geological hazard area. The Applicant's setback had been previously proposed with past plans for development of this site when applicable code standards allowed greater disturbances within the City's landslide buffer area with mitigation recommendations from a licensed geotechnical engineer. However, the City amended and updated its Geological Hazard code in 2021 with more restrictive measures within the landslide buffer. OCMC 17.44.060.I states that:

> *For properties with slopes of twenty-five to thirty-five percent between grade breaks or are located within any portion of a mapped landslide and buffer zone:*
>
> *1. For those portions of the property with slopes of twenty-five to thirty-five percent or located within any portion of a mapped landslide and buffer zone, the maximum residential density shall be limited to two dwelling units per acre; provided, however, that where the entire site is less than one-half acre in size, a single dwelling shall be allowed on a lot or parcel existing as of January 1, 1994 and meeting the minimum lot size requirements of the underlying zone;*
>
> *2. An individual lot or parcel with slopes between twenty-five and thirty-five percent or located within any portion of a mapped landslide and buffer zone, shall have no more than fifty percent or four thousand square feet of the surface area, whichever is smaller, graded or stripped of vegetation or covered with structures or impermeable surfaces.*

The potential future development of Parcel B including the location and grading of the shared use path, the proposed stormwater management area, and grading associated with the new public road appear to exceed the maximum allowable disturbance within the City's mapped landslide area.

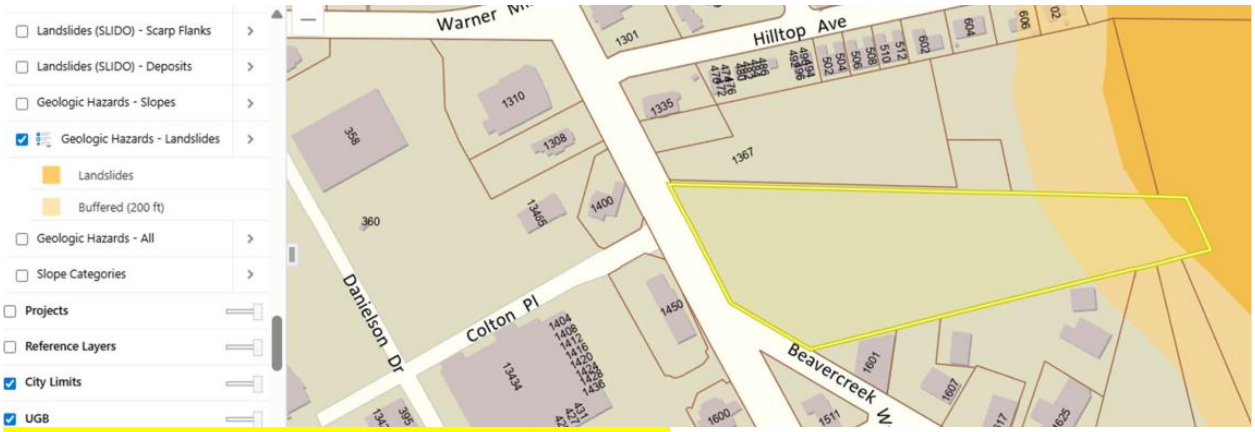


Figure 11: Mapped Landslide areas with 200 ft buffer.

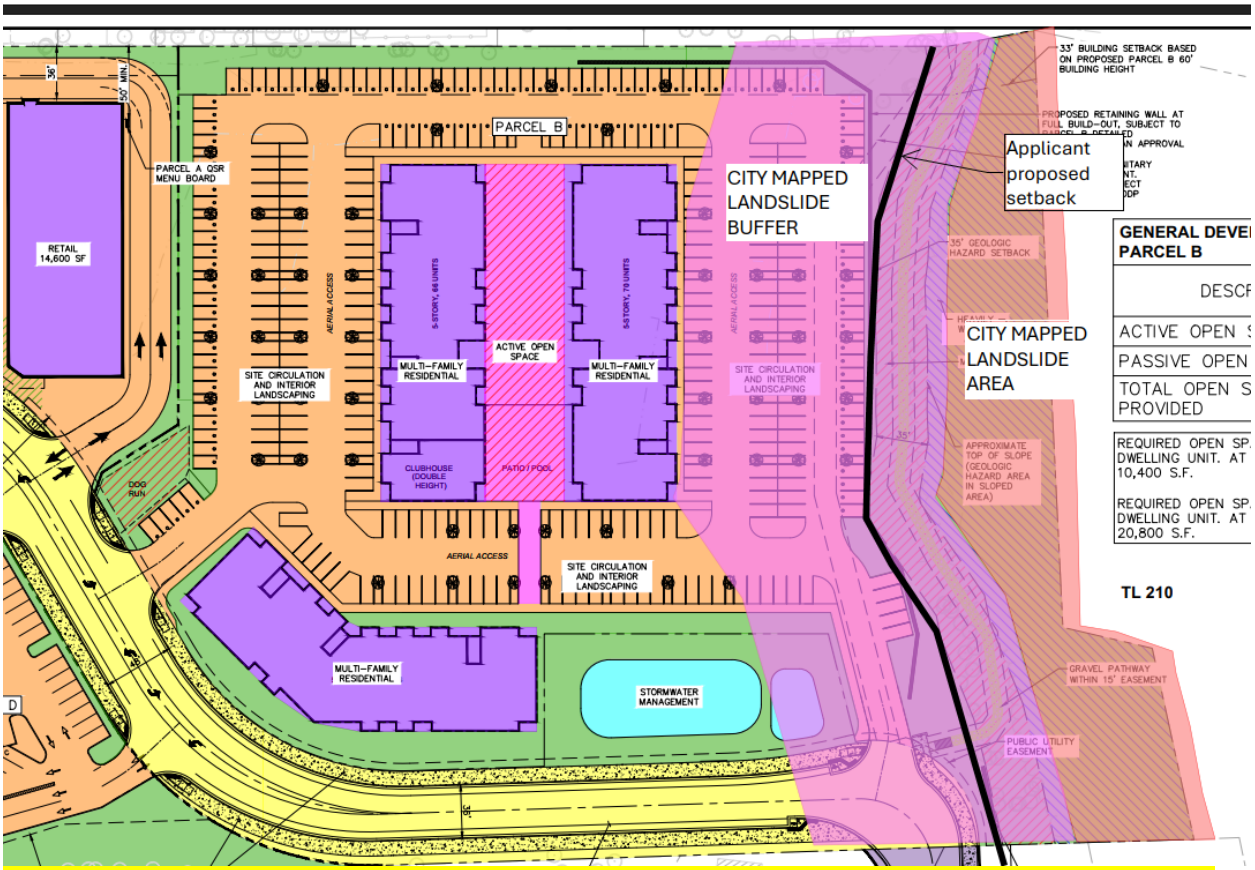


Figure 12: The above picture is an approximation of the Geologic Hazards Overlay Zone landslide and buffer area.

With the City's Geological Hazard updates in 2021, the proposed development's parking, stormwater management area, shared use path, grading, and potentially the dwelling unit density **do not** currently meet code within the buffer area. The proposed development exceeds the maximum of 4,000 sf of surface area graded or stripped of vegetation or covered with structures or impermeable surfaces (i.e. earth disturbance) (which can be assessed per existing parcel as of

1994) and potentially the 2 dwelling unit per acre standard(depending on the final location of the proposed building). Parcel B will require design changes from the proposed to meet the City's Geological Hazard Code within OCMC 17.44 at the time of its DDP. Grading of the site and new public road may need revised to further provide minimal disturbance and be closer to existing grade to meet the 4,000 sf standard on each parcel.

The applicant has proposed to install the TSP S28 shared use path and a potential retaining wall within parcel B within the Geologic Hazards Overlay Zone. The location and grading required for the proposed location of the shared use path and wall does not conform to the Geologic Hazard code grading standards within a landslide buffer as it will have 4,000 sf of surface area graded or stripped of vegetation or covered with structures or impermeable surfaces (i.e. disturbed) . The shared path will need to be relocated to meet this standard. The applicant will be required to meet the conditions of approval for OCMC 17.44 under the Geological Hazard Overlay as part of each DDP within the mapped Geological Hazard Overlay Area. Parcel B's proposed DDP shall be required to make significant changes to its site plan in order to meet the City's Geological Hazard Code within the mapped landslide and steep slope areas for allowable earth disturbance and dwelling unit density.

Additionally, the project's overall stormwater discharge location lies within a Natural Resource Overlay District (NROD) which also drains through the Newell Creek Canyon. The project minimizes impacts to the NROD buffer due to the required public street connection to Beavercreek Rd and mitigates the impact that it does have. The project's stormwater facilities provide both water quality and detention treatment to reduce impacts to the downstream drainage through Newell Creek Canyon. The Geohazard, Stormwater, and Natural Resources Overlay District review can be conducted using the Type II DDP process. No Master Plan or other Type III amendments are required for implementation.

Grading and erosion control permitting will be required for all construction activities meeting the thresholds and standards noted in the City's Stormwater and Grading Design Standards, OCMC 15.48, and OCMC 17.47. Grading within the City's Geological Hazard Area shall comply with OCMC 17.44 for each DDP. If the applicant wishes to grade or prepare Parcel's A, B, and D prior to the future development's DDPs, a grading and erosion control permit is required.

Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.

5. The proposed General Development Plan, including development standards and impact mitigation thresholds and improvements, adequately mitigates identified impacts from each phase of development. For needed housing, as defined in ORS 197.303(1), the development standards and mitigation thresholds shall contain clear and objective standards.

Finding: Complies as conditioned . Oregon City's 2021 Housing Needs Analysis identified the need for 7,435 new dwelling units over the next 20 years. The proposed multi-family residential component of the General Development Plan helps the city achieve their goal of providing more

housing. The proposed roadway and signal improvements, together with cost participation in the city's planned Beavercreek Road/Hwy 213 improvements, will mitigate the project's development impact. The roadway and utility improvements are proposed to be constructed with the initial phase of development, with the uses generating the actual impact to follow, thereby providing impact mitigation before the proposed demand.

The proposed impacts to the City's Mapped Geological Hazard Area currently do not comply with OCMC 17.44.060.I. as noted above; however, with conditions the development can comply. The Applicant's Geotechnical Report has provided mitigation recommendations to develop within the City's landslide buffer area. However, although the proposed mitigations may be technically appropriate to reduce potential dangers within the buffer, they are not consistent with the City's code which states that no development shall have more than 4,000 sf surface area graded or stripped of vegetation or covered with structures or impermeable surfaces (i.e. disturbed) within the landslide area or its buffer. The City typically provides a condition of approval noting that developments shall comply with the standards under OCMC 17.44 with the expectation to have site plans refined during technical permitting with each DDP. However, during additional review of the shared use path location, the City has identified that the revisions needed to comply with the code during DDP significantly alters the proposed GDP site plan, particularly with Parcel B. Therefore, a condition has been provided to more explicitly state how complying with City Code 17.44 can be achieved. The City still considers this development to be approvable with the conditions noted above under OCMC 17.65.050.C.4.

Rough Proportionality Findings

The applicant has raised concerns over conditions of approval requiring the building of a shared use path and provide public access and maintenance easement over the same claiming a violation of the Takings Clause of the Fifth Amendment of the United States Constitution and/or Article I, section 18, of the Oregon Constitution which requires the following:

1) An "essential nexus" between "legitimate state interests" and the City's requirement for improvements, as required by *Nollan v. California Coastal Commission*, 483 U.S. 825 (1987);

2) The obligation to provide a public easement would not be "roughly proportional" to the potential impacts of the applicant's proposed development, as required by *Dolan v. City of Tigard*, 512 U.S. 374 (1994); or

3) Monetary contributions to improve the path must comply with Nollan and/or Dolan, as required by *Koontz v. St. Johns Water Management District*, 133 S. Ct. 2586 (2013).

The City must demonstrate that the requirements would comply with applicable law. However, because "the basic thrust of the fifth amendment [of the U.S. Constitution] and art. I, § 18 [of the Oregon Constitution], is generally the same . . ." in this context, *Suess Builders Co. v. City of Beaverton*, 294 Or. 254, 259 n. 5 (1982), this analysis will focus on the federal Takings Clause.

A. Essential Nexus (Nollan)

In *Nollan*, the U.S. Supreme Court held that a permit condition subject to scrutiny under the Takings Clause must have an "essential nexus" to "legitimate state interests." *Nollan*, 483 U.S. at 837. The Court did not decide "what constitutes a 'legitimate state interest' or what type of connection between the [condition] and the state interest . . ." is sufficient, but it noted that long-standing precedent had established that "a broad range of governmental purposes and regulations satisfies these requirements." Id. at 834-35. The purported state interest at issue in *Nollan*, the Court decided, "did not meet even the loosest standard." *Dolan*, 512 U.S. at 386 (citing *Nollan* at 838).

Here, the "essential nexus" is clear. All of the path provision-related requirements are based on legitimate City-approved and applicable standards. Approval of a general development plan requires a finding that the application is in compliance with the Oregon City Comprehensive Plan. OCMC 17.65.050.C.6. The City's Transportation System Plan is an ancillary component part of the Comprehensive Plan. The City's TSP project S28 identifies a shared use path running north and south along the east side of this property. The purpose of this path is to connect development on this property and throughout the Hilltop Area to Beavercreek Road, the Newell Creek Nature Park, whose access is located one block north of the subject property, and Mountainview Cemetery, without requiring travel along Molalla Avenue, a 4-lane arterial that is one of the busiest streets within the City.

Further, all master plan development must be consistent with OCMC 16.12, which sets minimum transportation improvements. The adopted purpose for these standards is to ensure improvements that benefit the public, including future users of the development of adequate public off-street pedestrian and bicycle accessways. OCMC 16.12.010. OCMC 16.12.032 requires that pedestrian / bicycle accessways provide "direct, safe and convenient connections between residential areas, retail and office areas, ...neighborhood activity centers and which minimize out of direction travel." See also Comprehensive Plan Goal 1 of Chapter 3. A safe and convenient accessway is one that is visible from and integrated with adjacent uses. These accessways are required through private property at intervals not exceeding 300 feet or where otherwise convenient. The minimum construction standards demand a "seven-foot wide paved surface," must be lighted and ADA compliant. OCMC 16.12.023(A), (D) and (E). Notably, in order for these accessways to "safe" and "convenient," they must be visible.

The path requirements will be located directly on the property subject to development and would be intended to mitigate the impacts of development at that location (see *Dolan* and *Koontz* discussions below).

These requirements would clearly satisfy the *Nollan* "essential nexus" requirement.

B. Rough Proportionality (Dolan) including Monetary Contributions (*Koontz*)

In *Dolan*, the Court held that requirements imposed on a development must be "roughly proportional" to the impacts of that development. *Dolan* at 391. That standard, the Court wrote, is an "intermediate standard" between "very generalized statements as to the necessary connection," on one hand, and, on the other, a requirement that the government "demonstrate

that its exaction is directly proportional to the specifically created need." *Id*. at 389-90. "Rough proportionality" lies somewhere between those extremes of "too lax" and a level of "exacting scrutiny" that the Constitution does not require. *Id*. As the Court explained, "[n]o precise mathematical calculation is required, but the city must make some sort of individualized determination that the required [exaction] is related both in nature and extent to the impact of the proposed development." *Id*. at 391.

In addition, benefits that will accrue to a development as a result of government-imposed requirements need not be ignored. "[T]he *Dolan* analysis allows consideration and appropriate weighing of whether and to what extent a condition serves needs of the development upon which it is imposed, as distinct from serving only general public needs in response to the public impacts of the development." *Art Piculell Group v. Clackamas County*, 142 Or. App. 327, 337 n.4, 922 P.2d 1227 (1996).

Dolan thus requires that the City (1) enumerate the potential impacts of the proposed development here and (2) demonstrate that the potential requirements would be related to those impacts "in nature and extent."

In *Koontz*, the Supreme Court did not create any new balancing tests or require any new analyses specific to the imposition of monetary contributions such as those required for multimodal path improvements required here. Instead, the Court merely held "that the government's demand for property from a permit applicant must satisfy the requirements of *Nollan* and *Dolan* . . . even when its demand is for money." *Koontz*, 133 S. Ct. at 2603. As a result, if a requirement for a monetary contribution would satisfy the "essential nexus" and "rough proportionality" requirements of those cases, such a requirement would not violate the Takings Clause.

The Potential Impacts of the Development

A. Impact determination

The pedestrian / bicycle demand created by this development is not easy to determine at the GDP phase of development because the ultimate uses are not known. For example, if a bicycle shop is established in the multi-tenant building, it is likely to attract more bicyclists than if it is hardware store. What is known is the proposal includes 14,600 square feet of retail, 204 apartment units and 4,900 sf of fast foot restaurant with drive though. It is likely that these uses will have broad appeal and will attract citywide use. The one-block proximity of this development to the Newell Canyon Natural Area, a popular walking and cycling area, shows that it will attract multimodal uses to a greater degree than other areas of the City.

One way to quantify the level of pedestrian / bicycle use generation anticipated is to take some reference from the applicant's traffic study, which provides some sense of the use-created demand.

Excerpting a portion of the applicant's TIA estimating daily trip generation is as follows:

Land Use	Size	Daily Trips
Mid-Rise Apartments	210 du	710
Retail	14,600 sf	2,174
Restaurant	4,900 sf	2,096

Although these are vehicle trips and the pedestrian / bicycle generation would be far lower, this does give a sense of the number of individuals using the site. These daily trips would include trips both coming to and leaving from subject development so it might be reasonable to cut these projections in half if counting the number of individuals using the site. However, such an approach would also assume that each vehicle includes only one person, which seems unlikely, given the suburban location. According to ODOT and the Oregon Household Survey about 12% of adults in Oregon bike, walk or roll to their destinations. Although in suburban areas that amount is reduced to 5 or 10%, in areas where a car is not required, that number jumps to 52%. Although Oregon City is suburban, the subject property is within walking or cycling of many uses necessary for daily living including shopping, the community college and high school and well as medical and other office services. Assuming that only 8% of the non-residential-related uses are accessed by bicycle or on foot, this would reveal 341.6 non-vehicular trips and some percentage of these are likely to use the new multi-modal path. All of the non-residential uses will be staffed with employees who would likely use the path for recreation during a break or to access Newell Creek for lunch. The highest use of this path will be the residents of the 210 dwelling units proposed on Parcel B. Although it is not clear whether the proposal will include any multi-bedroom uses suitable for families, it is likely that each unit will accommodate at least two people who are likely to use the pedestrian path, not only to access Newell Creek but also in connecting to other shopping centers along Beavercreek Road. An average of two people from half of the units used the path daily, this would add an additional 210 daily trips relying on the path for access. Taken together this is 560 daily trips on this path.

B. Rate of increase in non-vehicular trip generation

To determine what portion of the existing pedestrian / bicycle trip generation exists that might shoulder some proportional cost of this path, the TIA was consulted. What it shows is very low existing non-vehicular traffic within the area. At most intersections, the bicycle usage during peak hour is zero and the pedestrian generation is less than 15. The intersection experiencing the highest non-motorized traffic generation is Molalla and Beavercreek Road, with a PM daily bicycle count of 2 trips and a pedestrian count of 22. Importantly, none of the uses directly adjacent to this intersection or the other intersections evaluated include any multi-family residential. The 210 proposed units far exceed the number of single family residences within the few block radius of the proposed path.

As the next table shows, the applicant's development proposal is expected to increase the number of non-vehicular trips:

Impact Ratio - Daily Trips			
Daily Property Trips	560	=	96%
Daily Non-Development trips	24		4%

This suggests that nearly all of the non-vehicular trips using this path will come from or provide support for this development.

Rough proportionality and the potential requirements

Because this development is anticipated to substantially contribute to the non-vehicular traffic generated, the conditions of approval require the installation of the multi-use path.
This impact mitigation policy has two primary underpinnings, as explained in OCMC 16.12:

1) "Pedestrian/bicycle accessways are appropriate in areas where public street options are unavailable, impractical or inappropriate....at intervals not exceeding three hundred feet." The distance from Molalla Avenue, the closest non-vehicular access across this property, to the rear of this property ~ 1,000 feet. A secondary access is necessary. Further, the City recognizes that although upon initially occupancy, this connection to Newell Creek Canyon will not exist. However, this is a long-term goal. Eventually, the impacts of the applicant's proposed development on the entirety of the Impact Area will be mitigated as other properties are developed or redeveloped. It is reasonable for the applicant to install their portion of this needed connection now as it will not be required to shoulder the remainder of the burden when this connection occurs.

2) "Pedestrian/bicycle accessways are intended to provide direct, safe and convenient connections between...uses." Whereas the first policy goal above is concerned with establishing a framework for piecemeal mitigation of the proposed development's impacts along the entire length of the street, here the City is focused on mitigating at least some of those impacts right away. As soon as it is constructed, this path will provide access to Beavercreek Road that is more direct, efficient and safer than access along Molalla Avenue.

In addition to mitigating the impacts of the applicant's proposed development, installation of a safe, visible and convenient path will directly benefit the applicant which will almost certainly lead to a higher property value.

A. Potential requirements for property dedications

As explained above the minimum city standards demand that the applicant provide public access and maintenance for a 7 foot wide pedestrian path which is necessary to mitigate impacts that will be created by the applicant's proposed development. Importantly, the applicant is not being required to dedicate land to accommodate sidewalks on both side of the new road connecting to Beavercreek Road on Tax Lot 500. Therefore, the public access obligation in this area is far less than would be required for a standard local street.

Nevertheless, to evaluate further the reasonableness of a condition of approval, the City also considers the size of the property dedication in light of the size of the entire property. Those calculations for this development proposal follow:

Length of path = 575 feet long

Public easement dedication width = 15 feet containing a 7-foot wide paved trail.

Property dedication area = 8,625 sq. ft.for the easement

Total Site Area = 567,473 sq. ft.

8,625 sq. ft. exaction area / 567,473 sq. ft. total site area	= 1.5%

The applicant could thus be required to dedicate approximately 1.5% of the property in order to mitigate partially the impacts the proposed development will create. By any measure, this would be a reasonable requirement. The "rough proportionality" standard of Dolan would be satisfied with regard to those potential requirements for the public access easement.

B. Potential requirements for monetary contributions

As noted above, the focus of the cost for these improvements focuses solely on that portion of the path from the proposed road on Tax Lot 500 to the northern boundary. This makes sense because the path providing access through Tax Lot 500 is offered in lieu of sidewalks on both sides. The minimum sidewalk width required on both sides of a local street is 5 feet, meaning that a 10 foot total sidewalk area would be required. The cost of building 5-foot sidewalks on both sides of a street would be commensurate, and likely more than, the cost of building a single 7-foot shared use path.

The City does have reliable private-sector construction cost estimates for those improvements. A similar shared use path was built at Serres Farm. The Serres Farm cost estimate used for bonding was $80,000 for 18,672 sf or about $4.30 per sf. Using the same cost of $4.30 per square foot, the path should cost $17,310 (using 4,025 sq. ft for the paved path construction). Doubling this cost since it is not as big of a path, which staff believes $10 per square foot might be reasonable, the cost would be $40,000.

The City concludes that a requirement to expend up to a total of $40,000 to mitigate the impacts and associated sub-impacts of hundreds of new pedestrian and bicycle trips would be reasonable. The "rough proportionality" standard of Dolan is satisfied with regard to those potential requirements for monetary contributions.

Conclusion

The applicant's proposed development will create a number of non-vehicular impacts. The City may require the applicant to mitigate those impacts with targeted measures that could involve property dedications and monetary contributions. Those mitigation measures subject to the Takings Clause would be limited to area located within the property subject to development and will enhance the livability for future residents, customers and employees. The Supreme Court's "essential nexus" and "rough proportionality" requirements of Nollan/Dolan/Koontz are satisfied.

Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.

6. The proposed general development plan is consistent with the Oregon City Comprehensive Plan.

Finding: Complies. As described in the Constitutional Use analysis section of the staff report, the proposed General Development Plan is consistent with the Oregon City Comprehensive Plan. Drive-through locations have been thoughtfully designed to ensure safety and prevent queues from blocking public roads. The associated uses are permitted in the zone; the drive-throughs are located on the side and rear; and the buildings are not exclusively dedicated to drive-through traffic. The applicant has also proposed additional landscaping along Molalla Avenue to enhance the pedestrian experience for Parcel D, and staff has conditioned additional landscaping on Parcel A, which staff believes will improve the area and mitigate any potential visual impacts from the drive-through proposal and continue to support Molalla Avenue to be a major pedestrian connection to transit.

7. The proposed general development plan is consistent with the underlying zoning district(s) and any applicable overlay zone or concept plans.

Finding: Complies as Conditioned. The proposed General Development Plan is consistent with the underlying MUC-2 Zone, Geologic Hazard Overlay (with modifications to Parcel B during DDP), and Natural Resource Overlay. Further detailed analysis will occur at the Detailed Development Plan level for each parcel.

8. For projects with a residential use component, the proposed general development plan includes common open space for the recreational needs of the development's residents.
a. Required open space shall be located either on-site or off-site within one-quarter mile of the development.

Finding: Complies with Condition. Required open space for the Parcel B multi-family component of the General Development Plan is proposed to be located on-site. While Parcel B's Detailed Development Plan will provide detail on the proposed open space, the proposed open space area is shown on the General Development Plan Sheet GDP-C1.0.

b. Minimum required open space shall be 100 square feet per residential unit in the development.

Finding: Complies with Condition. The proposed Parcel B multi-family component of the General Development Plan includes 208 units, resulting in a required open space of 20,800 sf at 100 sf per unit. As shown on General Development Plan set GDP-C1.0, Parcel B includes over 12,000 sf of

open space between the two northerly buildings (subject to Parcel B Detailed Development Plan submittal/approval) and over 20,000 sf of open space between the top of the slope and the geologic hazard setback line. A pedestrian pathway is proposed within this geologic hazard setback. Additionally, over 42,000 sf of forested open space lies on the east edge of Parcel B between the property boundary and the top of slope. Parcel B provides open space far in excess of the minimum required open space.

Note – OCMC 17.62.057.B.2 identifies a smaller open space requirement for mixed-use zones of 50 square feet per residential unit. This results in an open space requirement of 10,400 square feet. The proposed open space will exceed the criteria identified in both 17.65.050.C.8.b and 17.62.057.B.2.

c. The open space area may be in private ownership or proposed for public dedication, at the City's discretion whether to accept.

Finding: Complies with Condition Parcel B open space is currently planned for private ownership. Use of, ownership and maintenance of, and connection to the shared use path can be considered for open space.

d. The open space shall be developed with a unified design to provide for a mix of passive and active uses. Passive uses include, but are not limited to sitting benches, picnicking, reading, bird watching and natural areas. Active uses include, but are not limited to playgrounds, sports fields and courts, running and walking areas.

Finding: Complies with Condition. General Development Plan Sht GDP-C1.0 identifies active open space between the two northerly buildings, and the Geologic Hazard setback area contains a pedestrian pathway. Portions of the Geologic Hazard setback area will be planted with NROD mitigation plantings. The steep slope open space area on the east edge of Parcel B is intended to remain in its natural state**.**

e. Land area to be used for the open space area that is required in this section shall not include required setback areas, required landscaping, streets, rights-of-way, driveways, or parking spaces.

Finding: Complies with Condition. The Geologic Hazard setback area is not a setback required by the city. Instead, it is a setback recommended by the geotechnical engineer to protect against long-term slope stability concerns. Accordingly, it is not considered a building setback for the purpose of this section. However, even if the Geologic Hazard setback area is excluded from open space consideration (not likely, since the project is required to provide a pedestrian pathway), the steep slope area east of the top of slope is more than adequate to satisfy the open space requirements.

f. Unless dedicated to the public, the applicant shall also provide an irrevocable legal mechanism for the maintenance of the open space and any related landscaping and facilities. The applicant shall submit, for City review and approval, all proposed deed restrictions or other legal instruments

used to reserve open space and maintenance of open space and any related landscaping and facilities.

Finding: Complies with Condition. Development of Parcel B will be described in more detail with a separate Detailed Development Plan application. Maintenance of the required open space will be addressed with Parcel B's Detailed Development Plan.

9. For projects with a residential use component, the proposed general development plan includes a mix of residential uses such that no single residential use exceeds seventy-five percent of the total proposed units. The mix of residential uses shall provide variety of dwelling types and sizes that are integrated throughout the site, rather than isolated from one another, with smooth transitions between residential types including appropriate setbacks, landscaping or screening as necessary, while maintaining street and pedestrian connectivity between all residential uses. Tenancy (i.e. ownership versus rental) shall not be a consideration in determination of the mix of residential use. For the purposes of this section, residential uses include single-family detached, duplex, triplex, quadplex, townhouse, cottage cluster, and multi-family.

Finding: Complies with Condition. Development of Parcel B will be described in more detail with a separate Detailed Development Plan application. The multi-family units for Parcel B will include a mixture of unit sizes/configurations consistent with this code section.

17.65.060 - Detailed development plan.
A. Submittal Requirements.
1. A transportation impact study documenting the on- and off-site transportation impacts, as specified in OCMC 17.65.050.B.1.h.i. If such an analysis was submitted as part of the general development plan process, the scope of the report may be limited to any changes which have occurred during the interim and any information listed below which was not a part of the initial study.
The on-site portion of the analysis shall include the location, dimensions and names of all proposed streets, alleys, other public ways, sidewalks, bike routes and bikeways, pedestrian/bicycle access ways and other pedestrian and bicycle ways, transit streets and facilities, neighborhood activity centers, and easements on and within two hundred fifty feet of the boundaries of the site. The map shall identify existing subdivisions and development and un-subdivided or unpartitioned land ownerships adjacent to the proposed development site and show how existing streets, alleys, sidewalks, bike routes, pedestrian/bicycle access ways and utilities within two hundred fifty feet may be extended to and/or through the proposed development.
2. The location within the development and in the adjoining streets of existing and proposed sewers, water mains, culverts, drain pipes, underground electric, cable television and telephone distribution lines, gas lines, and the location of existing aerial electric, telephone and television cable lines, if any, to be relocated within the development.
3. For portions of the project that would otherwise be subject to site plan and design review, a site plan or plans, to scale, containing the required information identified in OCMC 17.62.040.

4. For residential portions of the project not otherwise subject to site plan and design review, a site plan or plans, to scale, showing the proposed land uses and densities, building locations, lot patterns, circulation patterns, and open space locations and uses.
5. Any other information the Community Development Director deems necessary to show that the proposed development will comply with all of the applicable Chapter 17 requirements.
B. Approval Criteria. The Community Development Director shall approve an application for detailed development plan approval only upon findings that:
1. All development standards and impact mitigation meet the requirements of the approved general development plan, including conditions of approval.
2. Any other applicable zoning regulations that are not addressed in the general development plan are met, unless an adjustment to those regulations has been applied for and is approved. The approval standards applicable to adjustments required as part of a master plan or planned unit development are contained in OCMC 17.65.070.
3. The detailed development plan conforms with the base zone standards, applicable residential design standards, and applicable standards contained in Chapters 17.62, 17.52, 16.12, and 16.08 unless adjusted as provided in OCMC 17.65.070

Finding: Complies. A Detailed Development Plan for the construction of a new public road and utilities has been submitted (MAS-25-002_GEO-25-007_NROD-25-012) concurrently with the Master Plan. The staff report will be part of the Planning Commission hearing and can be approved at the same time as the Master Plan. DDPs will be submitted for Parcels A, B, and D when the market is ready for their development.

17.65.070 - Adjustments to development standards.
A. Purpose. In order to implement the purpose of the City's master plan or planned unit development process, which is to foster the growth of major institutions, major residential, commercial or mixed-use development, and other large-scale development, while identifying and mitigating their impacts on surrounding properties and public infrastructure, an applicant may request one or more adjustments to the applicable development regulations as part of the master planning or planned unit development process, and are not required to go through the variance process pursuant to OCMC Chapter 17.60.
B. Procedure. Requests for adjustments shall be processed concurrently with a general development plan. An adjustment request at the detailed development plan review shall cause the detailed development plan to be reviewed as a Type III application.

Findings: Complies. The applicant has not identified any additional requirements needed beyond the Type III Parking adjustment found in OCMCM17.52 of the staff report. Any anticipated modification by the applicant can be processed through a Type II DDP process.

C. Regulations That May be Adjusted. Adjustments may be allowed for the following items:
1. Dimensional standards of the underlying zone of up to twenty percent, except the perimeter of the development shall meet the underlying zone's setbacks when adjacent to residentially zoned property.
2. Site plan and design standards.
3. Residential design standards.

4. Increase in allowed maximum residential density of up to ten percent.
5. Standards for land division approval.
6. Additional uses allowed with residential projects, or residential component of projects:
a. Notwithstanding the use provisions of the underlying zones, neighborhood commercial uses as defined in Chapter 17.24.020, including restaurants and eating and drinking establishments without a drive-through, retail trade, and services, are permitted on up to ten percent of the net developable area. The neighborhood commercial uses shall be planned and constructed so as to support and be compatible with the entire development and shall not alter the character of the surrounding area so as to substantially preclude, impair or limit the use of surrounding properties for the primary uses listed in the underlying district.
b. Public or private parks and playgrounds, community buildings and/or outdoor recreational facilities, such as swimming pools and tennis courts.
c. Indoor recreational facilities, such as racquetball or tennis courts, fitness centers or swimming pools.
d. Common public and private open space including trails.
e. Primary or accessory uses that are not identified as a permitted or conditional use in the underlying zone but which are defined in the code.

Findings: Complies. The applicant has not identified any additional requirements needed beyond the Type III Parking adjustment found in OCMCM17.52 of the staff report. Any anticipated modification by the applicant can be processed through a Type II DDP process.

D. Regulations That May Not be Adjusted. Adjustments are prohibited for the following items:
1. To allow a primary or accessory use that is not identified as a permitted, or conditional use in the underlying zone, with the exception of the additional uses permitted under OCMC 17.65.070.C.6 above;
2. To any regulation that contains the word "prohibited";
3. As an exception to a threshold review, such as a Type III review process; and
4. Minimum density for residential sites may not be reduced.

Finding: Complies. The applicant has not identified any additional requirements needed beyond the Type III Parking adjustment found in OCMCM17.52 of the staff report. Any anticipated modification by the applicant can be processed through a Type II DDP process.

E. Approval Criteria. A request for an adjustment to one or more applicable development regulations under this section shall be approved if the review body finds that the applicant has shown the following criteria to be met.
1. Granting the adjustment will equally or better meet the purpose of the regulation to be modified;
2. If more than one adjustment is being requested, the cumulative effect of the adjustments results in a project that is still consistent with the overall purpose of the zone;
3. City-designated Goal 5 resources are protected to the extent otherwise required by Title 17;
4. Any impacts resulting from the adjustment are mitigated such that the development does not create significant adverse impacts on adjacent properties;
5. If an environmental zone, the proposal has as few significant detrimental environmental impacts on the resource and resource values as is practicable; and

6. The proposed adjustment is consistent with the Oregon City Comprehensive Plan and a concept plan if applicable.

Finding: Complies. The applicant has applied for a separate Planning Commission parking adjustment under OCMC 17.52. Staff has analyzed the criteria and found that the applicant can meet the requirements, subject to the conditions of approval, which include enhanced landscaping at Molala Avenue and enhanced elements at the building on parcel A. Because the applicant separately applied and paid for the parking adjustment, staff have not included this as part of a Master Plan adjustment.

17.65.80 - Amendments to approved plans.

A. When Required. An amendment to an approved general development plan or detailed development plan is required for any use or development that is not in conformance with the applicable plan, as provided below. The approval criteria contained in OCMC 17.65.050 will apply to general development plan amendments, the approval criteria contained in OCMC 17.65.060 will apply to detailed development plan amendments. The thresholds and procedures for amendments are stated below.

B. Type III Procedure. Unless the approved general development plan or detailed development plan specifically provides differently, amendments to either plan that require a Type III procedure are:

1. A proposed expansion of the approved boundary;

2. A proposed reduction in the approved boundary that affects a condition of approval, or takes the site out of conformance, or further out of conformance, with a development standard;

3. Proposals that increase the amount, frequency, or scale of a use over ten percent of what was approved (examples include the number of students, patients or members; the number of helicopter flights; the number or size of special events; transportation impacts);

4. New uses not covered in the plan that will increase vehicle trips to the site greater than ten percent of the original amount approved;

5. Increases or decreases in overall floor area of development on the site or number of residential units of over ten percent;

6. A increase/decrease greater than ten percent in the amount of approved or required parking; and

7. Proposed uses or development which were reviewed, but were denied because they were found not to be in conformance with an approved plan.

C. Type II Procedure. Unless an approved plan specifically provides otherwise, amendments to a general development plan or detailed development plan not specifically stated in subsection B or D are processed through a Type II procedure.

D. Type I Procedure. Unless an approved plan specifically provides otherwise, the following amendments to a general development plan or detailed development plan shall be processed through a Type I procedure:

1. Accessory uses and structures that meet applicable development regulations;

2. Reconfiguration of approved parking or landscape designs that do not alter the points of ingress or egress, and do not change the number of parking spaces required, so long as the reconfiguration meets applicable development regulations; and

3. Structures for approved uses that do not exceed one thousand five hundred square feet in size and that meet applicable development regulations

Finding: Complies with Conditions. The applicant's proposed building layouts and sizes are subject to change during the DDP process and should not be viewed as amendments to the Master Plan unless the final size or scope of the buildings surpasses what was initially proposed or if additional conditions are specified in the Master Plan (such as minimum building size or transportation impacts). The final design will be assessed during the Type II Detailed Development Plan review. This means the applicant can build a smaller development as long as the design fulfills the approval criteria of the Detailed Development Plan. The project's overall floor area ratio (FAR) is 0.73, which exceeds the zone's minimum requirement. With each DDP application, the applicant must show how the proposal will meet or surpass the zone's minimum FAR of 0.25 for the entire site, including parcels A, B, and D.
17.65.090 - Regulations that apply.
An applicant is entitled to rely on land use regulations in effect on the date its general development plan application was initially submitted, pursuant to ORS 227.178(3), as that statute may be amended from time to time. After a general development plan is approved, and so long as that general development plan is in effect, an applicant is entitled to rely on the land use regulations in effect on the date its general development plan application was initially submitted, as provided above, when seeking approval of detailed development plans that implement an approved general development plan. At its option, an applicant may request that a detailed development plan be subject to the land use regulations in effect on the date its detailed development plan is initially submitted.

Finding: Compiles with condition. Per OCMC 17.65.020.A, unless further amended and extended by the Planning Commission, this Master Plan, which includes Tax Lots 3330, 3400, 3200, and 3201, shall control development on the site until March 23, 2046. Tax Lots 500, 501 and 602 are not part of the 20-year Master Plan but are included initially to allow for the DDP construction of the Public Road, which will connect with Beavercreek Road. Future DDP applications are to be processed as Type I or II review as directed by the Oregon City Municipal Code, and the applicant may choose to use either the 2025 code adopted at the time of the Master Plan Amendment submittal (June 27, 2025) or the current code.

RECOMMENDATION:
Based on the analysis and findings as described above, Staff concludes that the proposed development located at 1367 Molalla Ave, Oregon City, Oregon 97045, identified as Clackamas County Map 3-2E-06DB Tax 3-2E-05DB TL 3200, 3201, 3300, & 3400, 500, 501, 602, can meet the requirements as described in the Oregon City Municipal Code by complying with the Conditions of Approval provided in this report. Therefore, the Community Development Director recommends approval with conditions, based upon the findings and exhibits contained in this staff report.

EXHIBITS:
1. Applicant's Submittal
    a. Master Plan Narrative
    b. Master Plan Parcel Site Plan
    c. GDP and DDP Plans
    d. Storm Drainage Analysis
    e. Transportation Impact Analysis

    f. Revised Transportation Impact Analysis – March 2026
2. March 12, 2026 Letter from Reah Flisakowski, PE, and Hallie Turk EI, RSP1, DKS Associates
3. Public Comment
    a. Rocky Younger
    b. Metro

Masterplan – General Development Plan

GLUA-25-00025-1367 Molalla Ave
CU-25-00001, MAS-25-00001, PARK-25-NROD-25-00012, MAS-25-00002

for

Oregon City Mixed Use
1367 Molalla Ave, Oregon City, OR

Prepared For:

Cypress Acquisitions
8144 Walnut Hill Lane, Suite 1200
Dallas, TX 75231

Prepared By:

Langan Engineering and Environmental Services, LLC
10135 SE Sunnyside Road, Suite 200
Clackamas, OR 97015

Scott G. Franklin
Professional Engineer License No.15979PE

Tessa Mens
Professional Engineer License No. 107649PE

March 2, 2026
749002701

LANGAN

OREGON CITY COMMERCIAL MASTERPLAN
GENERAL DEVELOPMENT PLAN AND DETAILED DEVELOPMENT PLAN
PROJECT NARRATIVE

APPLICANT: Cypress Acquisitions, LLC
8144 Walnut Hill Lane, Suite 1200
Dallas, TX 75231

OWNER: TL 3200, 3201, 3300, & 3400: Walmart Inc.
2608 SE J St.
Bentonville, AR 72716-5510

TL 500, 501: Rocky Younger
PO Box 1337
Oregon City, OR 97045

TL 602: Les Schwab
20900 Cooley Rd
Bend, OR 97701

REQUEST: Type III
Masterplan General Development Plan Approval
Conditional Use Approval for Drive-Through Use (Parcels A & D)
Maximum Parking Adjustment (Parcels A & D)

Type II
Masterplan Detailed Development Plan Approval
Natural Resource Overlay District (NROD) Approval
Geologic Hazard Overlay
Modification to Certain Public Improvements and Design Standards

LOCATION: 1367 Molalla Ave
Oregon City, OR 97045

BACKGROUND/NARRATIVE:

<u>Current Land-Use Action</u>

Pre-Application Conference:	April 22, 2025 (Appendix A)
Masterplan Application submittal:	June 27, 2025
Incomplete Notice:	July 24, 2025 (Appendix B)
Neighborhood Meeting:	October 7, 2025 (Appendix C)
Masterplan Resubmittal:	November 14, 2025 – Revised March 2, 2026 (Appendix D)
Project Plans:	November 14, 2025 – Revised March 2, 2026 (Appendix E)

Existing Conditions

The subject property is comprised of an assemblage of properties in the main development area which includes TL 3200, 3201, 3300, & 3400, Map 3 2E 05DB (On-Site) and a proposed public road through TL 500 & 501, Map 3 2E 05D (Off-site) that connects the on-site properties to Beavercreek Rd

The on-site properties are currently vacant and include a mixture of grasslands, scrub brush and scattered groves of trees, with more concentrated tree canopy along the north and south edges and in the southeast corner. The east side of the on-site properties extends into Newell Creek Canyon, is heavily forested, and lies within a geologic hazard area.

Past uses on TL 3200, 3201 and 3300 include a former wrecking yard whose operations started in 1953 and continued until late 2001 when the wrecking yard operations ceased. Environmental studies on these properties indicated low concentrations of petroleum hydrocarbons and/or metals in near surface and shallow soils, and that groundwater underlying the former wrecking yard was not impacted with contaminants of concern.

TL 3400 previously included a gas station and tavern in the vicinity of its southwest corner which has been removed. Environmental remediation occurred at the former gas station site and ODEQ issued a "No Further Action" letter indicating that ODEQ should be notified prior to installation of any groundwater supply wells and any construction or excavation in or around the former gas station pocket of contamination.

The on-site properties generally slope to the south with a portion of the west end of the site sloping to the southwest. The east end of the property includes a steep slope extending into Newell Creek Canyon and is heavily forested.

Proposed Project

The project proposes to develop the on-site properties into a mixed-use development via the Oregon City Masterplan process. Three parcels are proposed in addition to a public street extending from the existing signal at Molalla Ave through the on-site properties and through TL 500/501 to the existing signal at Beavercreek Rd. Uses on the parcels include an approximately 14,600 sf retail building on Parcel A that includes shops and a Quick Service Restaurant at the north end of the building, an approximately 208-unit multi-family residential component on Parcel B, and a Quick Service Restaurant on Parcel D. Parcel C is proposed as a public road through the site. The Quick Service Restaurants (Parcels A & D) include drive-through facilities, which require Conditional Use Approval. Parcels A and D will also seek an adjustment to the maximum parking ratio.

The project seeks Type III Masterplan General Development Plan approval and Type II Detailed Development Plan approval for the proposed public roadway and utility improvements through both the on- and off-site areas, and rough grading of the entire on-site area.

Overall phasing on the Masterplan includes the proposed public roadway and utility improvements as well as on-site rough grading in Phase 1. The remaining parcels are proposed as separate phases, though

their development will be market-driven and could be developed separately or simultaneously with each other.

Municipal Code Standards and Requirements: The following sections of the Oregon City Municipal Code are applicable to this land use approval:

Chapter 17.65 Master Plan
Chapter 17.52 Off-Street Parking and Loading- Parking
Chapter 17.28 MUC-2
Chapter 17.56 Conditional Use

Following are detailed code responses to all applicable code criteria for General Development Plan Approval as presented in this application:

DETAILED CODE RESPONSES

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CHAPTER 17.29 MUC MIXED USE CORRIDOR DISTRICT

17.29.010 Designated.

The mixed-use corridor (MUC) district is designed to apply along selected sections of transportation corridors such as Molalla Avenue, 7th Street, Beavercreek Road, and along Warner-Milne Road. Land uses are characterized by high-volume establishments such as retail, service, office, multi-family residential, lodging, recreation and meeting facilities, or a similar use as defined by the Community Development Director. A mix of high-density residential, office, and small-scale retail uses are encouraged in this district. Moderate density (MUC-1) and high density (MUC-2) options are available within the MUC zoning district. The area along 7th Street is an example of MUC-1, and the area along Warner-Milne Road is an example of MUC-2.

17.29.020 - Permitted uses—MUC-1 and MUC-2.

A. Banquet, conference facilities and meeting rooms.
B. Bed and breakfast/boarding houses, hotels, motels, and other lodging facilities.
C. Child care centers and/or nursery schools.
D. Indoor entertainment centers and arcades.
E. Health and fitness clubs.
F. Medical and dental clinics, outpatient; infirmary services.
G. Museums, libraries and cultural facilities.
H. Offices, including finance, insurance, real estate and government.
I. Outdoor markets, such as produce stands, craft markets and farmers markets that are operated on the weekends and after six p.m. during the weekday.
J. Postal services.
K. Parks, playgrounds, playfields and community or neighborhood centers.
L. Repair shops, for radio and television, office equipment, bicycles, electronic equipment, shoes and small appliances and equipment.
M. Multi-family residential, triplexes and quadplexes.
N. One or two dwelling units in conjunction with a nonresidential use, provided that the residential use occupies no more than fifty percent of the total square footage of the development.
O. Restaurants, eating and drinking establishments without a drive-through.
P. Services, including personal, professional, educational and financial services; laundry and dry-cleaning.
Q. Retail trade, including grocery, hardware and gift shops, bakeries, delicatessens, florists, pharmacies, specialty stores, marijuana, and similar, provided the maximum footprint for a standalone building with a single store or multiple buildings with the same business does not exceed sixty thousand square feet.
R. Seasonal sales.
S. Residential care facilities, assisted living facilities; nursing homes and group homes for over fifteen patients licensed by the state.
T. Studios and galleries, including dance, art, photography, music and other arts.
U. Utilities: Basic and linear facilities, such as water, sewer, power, telephone, cable, electrical and natural gas lines, not including major facilities such as sewage and water treatment plants, pump stations, water tanks, telephone exchanges and cell towers.
V. Veterinary clinics or pet hospitals, pet day care.
W. Home occupations.
X. Research and development activities.

Y. Temporary real estate offices in model dwellings located on and limited to sales of real estate on a single piece of platted property upon which new residential buildings are being constructed.
Z. Transportation facilities.
AA. Live/work dwellings.
BB. Accessory dwelling unit in conjunction with a legally established non-conforming single-family dwelling.
CC. Duplex.
DD. After-hours public parking.

Applicant's Response:
The proposed development uses include multi-family residential (17.29.020.M), retail less than 60,000 sf in building area (17.29.020.Q), and restaurant uses (17.29.020.O). The restaurant use is approved in this zone; however, a drive-through is a conditional use. The conditional use is further described in subsequent responses. Seasonal sales are also a permitted use in this zone, which may arise from time to time on the retail pad.

17.29.030 - Conditional uses—MUC-1 and MUC-2 zones.
The following uses are permitted in this district when authorized and in accordance with the process and standards contained in OCMC 17.56:
A. Drive-through facilities;
B. Emergency service facilities (police and fire), excluding correctional facilities;
C. Gas stations;
D. Outdoor markets that do not meet the criteria of OCMC 17.29.020.I;
E. Public utilities and services including sub-stations (such as buildings, plants and other structures);
F. Public and/or private educational or training facilities;
G. Religious institutions;
H. Retail trade, including gift shops, bakeries, delicatessens, florists, pharmacies, specialty stores and any other use permitted in the neighborhood, historic or limited commercial districts that have a footprint for a standalone building with a single store in excess of sixty thousand square feet in the MUC-1 or MUC-2 zone;
I. Hospitals;
J. Parking not in conjunction with a primary use on private property, excluding after-hours public parking;
K. Passenger terminals, excluding bus stops;
L. Shelters.

Applicant's Response:
Both Parcels A and D include drive-throughs. A drive-through is a conditional use in the MUC-2 zone and will be reviewed by Planning Commission as a part of this project's General Development Plan process. Please see our responses to 17.56 Conditional Use later in this code response.

17.29.040 - Prohibited uses in the MUC-1 and MUC-2 zones.
The following uses are prohibited in the MUC district:
A. Distributing, wholesaling and warehousing;
B. Outdoor storage;
C. Outdoor sales that are not ancillary to a permitted use on the same or abutting property under the same ownership;
D. Correctional facilities;
E. Heavy equipment service, repair, sales, storage or rentals (including but not limited to construction equipment and machinery and farming equipment);
F. Kennels;
G. Motor vehicle and recreational vehicle sales and incidental service;
H. Motor vehicle and recreational vehicle repair/service;
I. Self-service storage facilities;
J. Marijuana production, processing, wholesaling, research, testing, and laboratories;
K. Mobile food units, except with a special event permit.

Applicant's Response:
The proposed uses for this project are either approved outright or will be reviewed as a conditional use, and do not fall within the prohibited uses identified in this section.

17.29.050 - Dimensional standards—MUC-1.
Applicant's Response:
The subject property lies within the MUC-2 zone. Accordingly, this section is not applicable.

17.29.060 - Dimensional standards—MUC-2.
A. Minimum lot area: None.

Applicant's Response:
Acknowledged.

B. Minimum floor area ratio: 0.25.

Applicant's Response:
The project's overall floor area ratio is 0.73, which exceeds the minimum requirement of this zone. Please our response to 17.29.070 for greater detail.

C. Minimum building height: Twenty-five feet or two stories except for accessory structures or buildings under one thousand square feet.

Applicant's Response:
Acknowledged. Each of the parcels will seek Detailed Development Plan approval following this General Development Plan decision and will elaborate more on their respective building heights in those applications; however, each of the buildings will be in compliance with this section.

D. Maximum building height: Sixty feet.

Acknowledged. Each of the parcels will seek Detailed Development Plan approval following this General Development Plan decision and will elaborate more on their respective building heights in those applications; however, each of the buildings will be in compliance with this section.

E. Minimum required setbacks if not abutting a residential zone: None.

Applicant's Response:
The project abuts residential zoning along the property's most northern boundary. Minimum setbacks for the residentially zone properties north of the property will be addressed below. The property abuts an adjacent MUC-2 zoned property at the most northwesterly corner of the site (adjacent Wendy's restaurant). The applicant acknowledges a zero setback along this adjacent property; however, the proposed retail building is located away from this adjacent property.

F. Minimum required interior and rear yard setbacks if abutting a residential zone: Twenty feet, plus one foot additional yard setback for every two feet of building height over thirty-five feet.

Applicant's Response:
The project abuts residential zoning along the property's most northern boundary (R-2 and R-10). Proposed buildings abutting this residentially zone property include Retail and Multi-Family Buildings.

- **Retail - This building is expected to be less than 35 feet tall, so no additional building setback is applied, and the minimum setback is 20 feet. The proposed retail building is located approximately 36 feet south of the northerly property line, which exceeds the minimum setback.**
- **Multi-Family – There are three multi-family buildings proposed on Parcel B, two of which are situated in the northern part of the site, while the third fronts the internal public street. The two northerly buildings are approximately 60 feet tall and result in a minimum building setback of 33 ft (60'-35' = 25'; 25' / 2 = 12.5', or 13'; min setback = 20' + 13' = 33'). These buildings are proposed to be approximately 93 feet south of the northerly property line, which exceeds the minimum setback.**

G. Maximum Allowed Setbacks.
1. Front yard: Five feet.

Applicant's Response:
Maximum building setbacks are exceeded with the Retail building on Parcel A and the Quick Service Restaurant building on Parcel D, which will be addressed via implementation of at least one of the nine design elements described in 17.62.055.D and described in more detail during the Detailed Development Plan applications for each of those parcels. The multi-family building which fronts the proposed internal street is set back slightly further away from the right-of-way to provide adequate sight distance at the entrance drive for the multi-family development. This will be further addressed during the Detailed Development Plan application for the multi-family parcel.

2. Interior side yard: None.

Applicant's Response:
Acknowledged. Each of the proposed buildings on the proposed parcels are set back from interior lot lines to reduce impact to adjacent properties.

3. Corner side yard abutting street: Twenty feet.

Applicant's Response:
Parcels A and D both abut Molalla Ave and the proposed public road. Accordingly, this criterion applies to both of these proposed parcels. Both Parcel A and D buildings are set back well beyond the twenty foot setback as can be seen by inspection of the General Development Plan Site Plan (see Sht GDP-C1.0).

4. Rear yard: None.

Applicant's Response:
Acknowledged. Each of the proposed buildings on the proposed parcels are set back from rear lot lines to reduce impact to adjacent properties. Please see our response to 17.29.060.F for further discussion of Multi-Family setback where it abuts a residential zone.
H. Maximum site coverage of building and parking lot: Ninety percent.

Applicant's Response:
Proposed Total Site Coverage for each of the parcels is shown below, subject to Detailed Development Plan approval for each parcel:

Parcel	Tot Parcel Area (sf)	Building & Parking Lot Area (sf)	Site Coverage (%)
A	85,346	74,500	87+/-
B	288,563	185,000	64+/-
D	87,773	55,000	63+/-

These values are approximate and show broad compliance with the criterion; however, each parcel will provide detailed information with their own Detailed Development Plan applications.

I. Minimum landscaping requirement (including parking lot): Ten percent.

Applicant's Response:
Proposed landscaping for each of the parcels is shown below, subject to Detailed Development Plan approval for each parcel:

Parcel	Tot Parcel Area (sf)	Proposed Landscape Area (sf)	Landscape Coverage (%)
A	85,346	11,000	13+/-
B	288,563	108,000	37+/-
D	87,773	34,000	39+/-

These values are approximate and show broad compliance with the criterion; however, each parcel will provide detailed information with their own Detailed Development Plan applications.

J. Residential minimum net density of 17.4 units per acre, except that no minimum net density shall apply to residential uses proposed above nonresidential uses in a mixed-use configuration or to live/work dwellings.

Applicant's Response:
Parcel B includes multi-family residential use with 208 total units. The total area of Parcel B is 288,617 sf. Of that total area, the area east of the geologic hazard area 35-ft setback line, building setback line along the north property line, the area covered by a PUE, and that area included within the proposed public sanitary sewer easement are excluded. The net developable area then becomes 199,641 sf or 4.58 acres, resulting in a net residential density of 45.3 units per acre, which exceeds the minimum density identified in this criterion.

17.29.070 - Floor area ratio (FAR).
Floor area ratios are a tool for regulating the intensity of development. Minimum FARs help to achieve more intensive forms of building development in areas appropriate for larger-scale buildings and higher residential densities.
A. The minimum floor area ratios contained in OCMC 17.29.050 and 17.29.060 apply to all nonresidential and mixed-use building development, except stand-alone commercial buildings less than ten thousand square feet in floor area.
B. Required minimum FARs shall be calculated on a project-by-project basis and may include multiple contiguous blocks. In mixed-use developments, residential floor space will be included in the calculations of floor area ratio to determine conformance with minimum FARs.
C. An individual phase of a project shall be permitted to develop below the required minimum floor area ratio provided the applicant demonstrates, through covenants applied to the remainder of the site or project or through other binding legal mechanism, that the required density for the project will be achieved at project build out.

Applicant's Response:
The minimum FAR for the MUC-2 zone is 0.25 per OCMC 17.29.060.B. The proposed project includes mixed use buildings consisting of multi-family residential, retail (including an in-line quick service restaurant), and a quick-service restaurant. Proposed FAR exceeds the minimum FAR required in this zone. Please see General Development Plan Sht FAR-EXH for FAR as proposed.

17.29.080 – Additional standards for Thimble Creek concept plan area.
A. Applicability. This section applies to all development in the MUC-2 district within the Thimble Creek Concept Plan Area.
B. Relationship of Standards. These standards apply in addition to and supersede the standards of the MUC-2 zone within the Thimble Creek Concept Plan Area. In the event of a conflict, the standards of this section control.
C. Uses.
1. Light industrial uses limited to the design, light manufacturing, processing, assembly, packaging, fabrication and treatment of products made from previously prepared or semi-finished materials are permitted.
2. The following permitted uses, alone or in combination, shall not exceed twenty percent of the total gross floor area of all of the other permitted and conditional uses within the development site. The total gross floor area of two or more buildings may be used, even if the buildings are not

all on the same parcel or owned by the same property owner, as long as they are part of the net developable portion of contiguous mixed-use corridor zoned lands.

a. Restaurants, eating and drinking establishments;

b. Services, including personal, professional, educational and financial services; laundry and drycleaning;

c. Retail trade, including grocery, hardware and gift shops, bakeries, delicatessens, florists, pharmacies, specialty stores, marijuana, and similar, provided the maximum footprint for a standalone building with a single store does not exceed twenty thousand square feet; and

d. Grocery stores provided the maximum footprint for a standalone building does not exceed forty thousand square feet.

3. Drive-throughs are prohibited.

4. Gas stations are prohibited.

5. Bed and breakfast and other lodging facilities for up to ten guests per night are a conditional use.

6. Tax Lot 00800, located on Clackamas County Map #32E10C has a special provision to allow the multifamily residential use permitted as of July 31, 2020 as a permitted use. This property may only maintain and expand the current use.

Applicant's Response:
The subject property is not located within the Thimble Creek concept plan area. Accordingly, these criteria are not applicable.

D. Dimensional Standards.

1. Minimum floor area ratio (FAR) shall be 0.35.

2. Maximum allowed setback for corner side yard abutting street shall be five feet.

Applicant's Response:
The subject property is not located within the Thimble Creek concept plan area. Accordingly, these criteria are not applicable.

E. Residential Uses. All residential uses, except live/work units, are limited to upper stories only, and may only be proposed as part of a single development application incorporating nonresidential uses allowed in the MUC-2 district on the ground floor.

Applicant's Response:
The subject property is not located within the Thimble Creek concept plan area. Accordingly, these criteria are not applicable.

CHAPTER 17.52 OFF-STREET PARKING AND LOADING

17.52.010 - Applicability.
The construction of a new structure or parking lot, or alterations to the size or use of an existing structure, parking lot or property use shall require site plan review approval and compliance with this chapter. This chapter does not apply to single-family attached, detached residential dwellings, duplexes, townhouses and cottage clusters.

Applicant's Response:
The applicant acknowledges the applicability of 17.52

17.52.015 - Planning commission adjustment of parking standards.
A. Purpose. The purpose of permitting a planning commission adjustment to parking standards is to provide for flexibility in modifying parking standards in all zoning districts, without permitting an adjustment that would adversely impact the surrounding or planned neighborhood. Adjustments provide flexibility to those uses which may be extraordinary, unique, or provide greater flexibility for areas that can accommodate a denser development pattern based on existing infrastructure and ability to access the site by means of walking, biking or transit. An adjustment to a minimum parking standard may be approved based on a determination by the planning commission that the adjustment is consistent with the purpose of this code, and the approval criteria can be met.

B. Procedure. A request for a planning commission parking adjustment shall be initiated by a property owner or authorized agent by filing a land use application. The application shall be accompanied by a site plan, drawn to scale, showing the dimensions and arrangement of the proposed development and parking plan, the extent of the adjustment requested along with findings for each applicable approval criteria. A request for a parking adjustment shall be processed as a Type III application as set forth in Chapter 17.50.

C. Approval criteria for the adjustment are as follows:

1. Documentation: The applicant shall document that the individual project will require an amount of parking that is different from that required after all applicable reductions have been taken.

Applicant's Response:
The applicant acknowledges the purpose and procedure for Planning Commission consideration of parking adjustments. While each parcel will seek their own individual Detailed Development Plan (DDP) approval, this Masterplan application seeks adjustment to the required parking criteria as shown below so that the individual parcel DDP applications will already have received a decision on anticipated parking counts.

Parcel	Proposed Use	Required Parking	Required Criteria	Proposed Parking	Parking Adj Needed?
A	Retail	55 (min); 68 (max)	4.10/1ksf (min); 5.00/1ksf (max)	102 (7.0/1ksf)	Yes
B	Multi-Family Residential	208 (min); 520 (max)	1.00/unit (min); 2.5/unit (max)	320	No
D	Restaurant	20 (min); 25 (max)	4.10/1ksf (min); 5.00/1ksf (max)	58 (11.8/1ksf)	Yes

2. Parking analysis for Surrounding Uses and on-street parking availability: The applicant shall show that there is a continued fifteen percent parking vacancy in the area adjacent to the use during peak parking periods and that the applicant has permission to occupy this area to serve the use pursuant to the procedures set forth by the Community Development Director.

a. For the purposes of demonstrating the availability of on street parking as defined in OCMC 17.52.020.B.3., the applicant shall undertake a parking study during time periods specified by the Community Development Director. The time periods shall include those during which the highest parking demand is anticipated by the proposed use. Multiple observations during multiple days shall be required. Distances are to be calculated as traversed by a pedestrian that utilizes sidewalks and legal crosswalks or an alternative manner as accepted by the Community Development Director.

Applicant's Response:
The above analysis requirement implies a request for a reduction in parking by evaluating surrounding parking availability, including on-street parking. This project's proposed parking adjustments are in excess of maximum required parking, rather than seeking a reduction in parking requirements due to on-street parking or shared parking from another use.

Oregon City Municipal Code (OCMC) Table 17.52.020 identifies parking requirements and groups retail stores, shopping centers, and restaurants in the same category and limits the maximum parking ratio to 5.0 per thousand square feet. It does not differentiate between sizes of uses or different types of uses within the three applicable uses described (for example: retail store vs grocery store or specialty retail; sit-down restaurants vs quick service restaurants that generate higher traffic/parking impacts; or larger regional shopping centers vs neighborhood shopping centers). As such, variations in use can have a significant impact on the number of required parking spaces for a given user that may not fit within the limits of Table 17.52.020.

<u>Parcel A Discussion:</u>
This project's proposed public street does not include on-street parking. Existing uses north of this parcel preclude shared parking by virtue of adjacent limited parking capacity of the existing QSR, and street connectivity to Hilltop Ave. Additionally, counting on-street parking from Hilltop Ave would preclude parking in front of these existing Hilltop uses by those same uses. There is no on-street parking on Molalla Ave. The shopping center on the west side of Molalla Ave is not likely to be utilized by Parcel A customers given the distance from the Parcel A building entrance and the need to cross Molalla Ave.

A maximum parking ratio of 5.0 may work for larger retail or shopping centers, but the proposed retail use is relatively small at 14,600 sf

The applicant seeks an increase in maximum parking as proposed in the above table. Parking ratios have varied between approximately 5.0 – 7.0 in similar combined retail shops/QSR uses. In locations where their parking ratios have been lower, parking has spilled over to adjacent shopping center parking to make up for demand at this retailer. With this project, the retail shops and QSR combination is a stand-alone location without the ability to share parking with another use or shopping center. If the parking ratio is limited to 5.0, customers would attempt to utilize adjacent parking from Parcel B, thereby reducing available parking for adjacent residential use. Customers may also attempt to utilize parking from Parcel D across the street, reducing available parking for Parcel D and creating an unsafe street crossing situation.

<u>Parcel D Discussion:</u>
Required parking for this proposed use is grouped with retail store and shopping center uses and does not recognize the parking demands of a quick service restaurant. Existing development north of the site is comprised of another Quick Service Restaurant (QSR) at the northeast corner of the subject property and single- and multi-family residential, with no connected access to these properties. The adjacent QSR is situated 4'-5' higher in elevation than the subject property and already has limited parking. The adjacent QSR parking ratio is approximately 12.5/1ksf, consistent with the project's requested parking ratio. The adjacent QSR, as with the proposed QSR, is a stand-alone restaurant and not part of a shopping center development where shared parking can occur. Our proposed QSR cannot share parking with other uses without crossing either a major arterial street (Molalla Ave) or our proposed Collector street, thus limiting practical shared parking opportunities. If the parking ratio is limited to 5.0, customers may attempt to utilize parking from Parcels A or B across the street, reducing available parking for these parcels and creating an unsafe street crossing situation.

The applicant seeks an increase in maximum parking as proposed in the above table. Based on other locations for this QSR, parking ratios have varied between approximately 12.6 – 20.0. In locations where their parking ratios have been the highest, parking was shared with adjacent development so identifying the exact parking count is difficult to do. This project does not seek an extreme parking ratio. Instead, it seeks a parking ratio consistent with adjacent uses in similar conditions. If the parking ratio is limited to 5.0, customers would attempt to utilize adjacent parking from Parcel B, thereby reducing available parking for adjacent residential use. Customers may also attempt to utilize parking from Parcel D across the street, reducing available parking for Parcel D and creating an unsafe street crossing situation.

b. The onsite parking requirements may be reduced based on the parking vacancy identified in the parking study. The amount of the reduction in onsite parking shall be calculated as follows:

i. Vacant on-street parking spaces within three hundred feet of the site will reduce onsite parking requirements by 0.5 parking spaces; and

ii. Vacant on-street parking spaces between three hundred and six hundred feet of the site will reduce onsite parking requirements by 0.2 parking spaces.

Applicant's Response:
The applicant does not seek a reduction in the minimum parking criterion. Parcels A and D seek an increase in maximum allowable parking. This criterion is not applicable.

3. Function and Use of Site: The applicant shall demonstrate that modifying the amount of required parking spaces will not significantly impact the use or function of the site and/or adjacent sites.

Applicant's Response:
As noted above, allowing an increase to the maximum allowed parking results in needed customer parking that does not depend on shared parking from adjacent uses that also need parking. Adjustments to the maximum allowable parking are requested for Parcels A and D. Each of these parcels have stand-alone parking lots where shared parking with another on-site use is not possible. Sharing parking with other uses within the proposed masterplan development would involve taking parking from the Parcel B residential use, which is not recommended, or requiring customers to cross a Collector road that separates Parcels A & D. Customers are not likely to park in the Parcel A parking lot, then travel to the Molalla Ave crosswalk then walk to the Parcel D building and vice versa (a travel distance of nearly 600 feet). Allowing an increase in maximum parking will not negatively impact the function and use of the proposed development. In fact, function and use of the development site are both supported by an increase in maximum parking so that customers from Parcels A and/or D do not consume parking from each other or from Parcel B that otherwise needed by those uses.

4. Compatibility: The proposal is compatible with the character, scale and existing or planned uses of the surrounding neighborhood.

Applicant's Response:
The subject property is considered infill development, as surrounding properties are already developed. The proposed increase in maximum allowable parking is compatible with surrounding uses which include comparably-parked adjacent QSR uses and shopping center parking.

5. Safety: The proposal does not significantly impact the safety of adjacent properties and rights-of-way.

Applicant's Response:
The proposed maximum parking adjustment results in a safer development proposal than one in which inadequate parking exists. As noted above, given the stand-alone nature of the subject parcels, any shared parking that may be necessary to satisfy the parking needs of Parcels A & D would result in taking parking away from adjacent residential use or require customers to cross a Collector street or Major Arterial to patron the subject uses.

6. Services: The proposal will not create a significant impact to public services, including fire and emergency services.

Applicant's Response:
The proposed increase to maximum allowable parking will have no negative impact on public services, including fire or emergency services. Additional space created by added parking allows more room for emergency services access and circulation within Parcels A and D. Public and private utility demands are unaffected by the requested parking increase.

17.52.020 - Number of automobile spaces required.

A. The number of parking spaces shall comply with the minimum and maximum standards listed in Table 17.52.020. The parking requirements are based on spaces per one thousand square feet net leasable area unless otherwise stated.

Table 17.52.020

LAND USE	***PARKING REQUIREMENTS***	
	MINIMUM	*MAXIMUM*
Multi-family Residential	*1 per unit*	*2.5 per unit*
Triplex and quadplex	*2*	*4*
Hotel, Motel	*1 per guest room*	*1.25 per guest room*
Correctional Institution	*1 per 7 beds*	*1 per 5 beds*
Senior housing, including congregate care, residential care and assisted living facilities; nursing homes and other types of group homes	*1 per 7 beds*	*1 per 5 beds*
Hospital	*2*	*4*
Preschool Nursery/Kindergarten	*2*	*3*
Elementary/Middle School	*1 per classroom*	*1 per classroom + 1 per administrative employee + 0.25 per seat in auditorium/assembly room/stadium*
High School, College, Commercial School for Adults	*0.20 per # staff and students*	*0.30 per # staff and students*
Auditorium, Meeting Room, Stadium, Religious Assembly Building, movie theater,	*.25 per seat*	*0.5 per seat*
Retail Store, Shopping Center, Restaurants	*4.10*	*5*
Office	*2.70*	*3.33*
Medical or Dental Clinic	*2.70*	*3.33*
Sports Club, Recreation Facilities	*Case Specific*	*5.40*
Storage Warehouse, Freight Terminal	*0.30*	*0.40*
Manufacturing, Wholesale Establishment	*1.60*	*1.67*
Light Industrial, Industrial Park	*1.3*	*1.60*

1. *Multiple Uses. In the event several uses occupy a single structure or parcel of land, the total requirements for off-street parking shall be the sum of the requirements of the several uses computed separately.*
2. *Requirements for types of buildings and uses not specifically listed herein shall be determined by the community development director, based upon the requirements of comparable uses listed.*
3. *Where calculation in accordance with the above list results in a fractional space, any fraction less than one-half shall be disregarded and any fraction of one-half or more shall require one space.*
4. *Fleet vehicle parking shall be accommodated within the maximum parking ratio, except that in GI, CI, and MUE zones, fleet vehicle parking may be included in a parking lot in addition to the maximum number of permitted parking spaces.*
5. *A change in use within an existing habitable building located in the MUD design district or the Willamette Falls Downtown District is exempt from additional parking requirements. Additions to an existing building and new construction are required to meet the minimum parking requirements for the areas as specified in Table 17.52.020 for the increased square footage.*

Applicant's Response:
The above parking requirements are acknowledged by the applicant, and a request to increase the allowable maximum parking for Parcels A and D are included in this application.

Parcel	Proposed Use	Required Parking	Required Criteria	Proposed Parking	Parking Adj Needed?
A	Retail	55 (min); 68 (max)	4.10/1ksf (min); 5.00/1ksf (max)	102 (7.0/1ksf)	Yes
B	Multi-Family Residential	208 (min); 520 (max)	1.00/unit (min); 2.5/unit (max)	320	No
D	Restaurant	20 (min); 25 (max)	4.10/1ksf (min); 5.00/1ksf (max)	58 (11.8/1ksf)	Yes

B. Parking requirements can be met either on-site, or off-site by meeting one or multiple of the following conditions:

1. Parking may be located on the same site as the associated use which it is supporting.
2. Mixed Uses. If more than one type of land use occupies a single structure or parcel of land, the total requirements for off-street automobile parking shall be the sum of the requirements for all uses, unless it can be shown that the peak parking demands are actually less (e.g. the uses operate on different days or at different times of the day). In that case, the total requirements shall be reduced accordingly, up to a maximum reduction of fifty percent, as determined by the community development director.
3. Shared Parking. Required parking facilities for two or more uses, structures, or parcels of land may be satisfied by the same parking facilities used jointly, to the extent that the owners or operators show that the need for parking facilities does not materially overlay (e.g., uses primarily of a daytime versus nighttime nature), that the shared parking facility is within one thousand feet of the potential uses, and provided that the right of joint use is evidenced by a recorded deed, lease, contract, or similar written instrument authorizing the joint use.
4. On-Street Parking. On-street parking may be counted toward the minimum standards when it is on the street face abutting the subject land use. An on-street parking space shall not obstruct a

required clear vision area and it shall not violate any law or street standard. On-street parking for commercial uses shall conform to the following standards:

a. Dimensions. The following constitutes one on-street parking space:

1. Parallel parking: Twenty-two feet of uninterrupted and available curb;
2. Forty-five and/or sixty-degree diagonal parking: Fifteen feet of curb;
3. Ninety-degree (perpendicular) parking: Twelve feet of curb.
4. Public Use Required for Credit. On-street parking spaces counted toward meeting the parking requirements of a specific use may not be used exclusively by that use, but shall be available for general public use at all times. Signs or other actions that limit general public use of on-street spaces are prohibited.

Applicant's Response:
Parking requirements are proposed to be met within each of the parcels proposed development area using parking stall geometry consistent with the geometry identified in the code. The Detailed Development Plan application for Parcels A, B, & D will address their individual parking proposals.

C. Reduction of the Number of the Minimum Automobile Spaces Required. Any combination of the reductions below is permitted unless otherwise noted.

1. Downtown Parking Overlay. The minimum required number of parking stalls is reduced within the downtown parking overlay by fifty percent.
2. Transit Oriented Development. For projects not located within the downtown parking overlay district, the minimum required number of parking stalls is reduced up to twenty-five percent when:
   a. In a commercial center (sixty thousand square feet or greater of retail or office use measured cumulatively within a five hundred foot radius);
   b. When adjacent to multi-family development with over eighty units; or
   c. Within one thousand three hundred twenty feet of an existing or planned public transit street and within one thousand three hundred twenty feet of the opposite use (commercial center or multi-family development with over eighty units).
3. Tree Preservation. The community development director may grant an adjustment to any standard of this requirement provided that the adjustment preserves a designated heritage tree or grove so that the reduction in the amount of required pavement can help preserve existing healthy trees in an undisturbed, natural condition.
4. Transportation Demand Management. The community development director shall reduce the required number of parking stalls up to twenty-five percent when a parking-traffic study prepared by a traffic engineer demonstrates alternative modes of transportation, including transit, bicycles, and walking, and/or special characteristics of the customer, client, employee or resident population will reduce expected vehicle use and parking space demand for this development, as compared to standard Institute of Transportation Engineers vehicle trip generation rates and further that the transportation demand management program promotes or achieves parking utilization lower than minimum city parking requirements.

   A transportation demand management (TDM) program shall be developed to include strategies for reducing vehicle use and parking demand generated by the development and will be measured annually. If, at the annual assessment, the city determines the plan is not successful, the plan may be revised. If the city determines that no good-faith effort has been made to implement the plan, the city may take enforcement actions.

5. The minimum required number of stalls may be reduced by up to ten percent when the subject property is adjacent to an existing or planned fixed public transit route or within one thousand feet of an existing or planned transit stop.

Applicant's Response:
The applicant does not request a reduction in allowable parking for any of the proposed parcels. The Detailed Development Plan application for Parcels A, B, & D will address their individual parking proposals.

17.52.030 - Standards for automobile parking.
A. Access. Ingress and egress locations on public thoroughfares shall be located in the interests of public traffic safety and meet requirements of OCMC 16.12.035. Groups of more than four parking spaces shall be so located and served by driveways so that their use will require no backing movements or other maneuvering within a street right-of-way other than an alley.

Applicant's Response:
As indicated in our response to OCMC 16.12.035, all proposed driveways meet the access spacing requirements identified in Table 16.12.035.A, with the exception of the easterly driveway for Parcel A and the westerly driveway for Parcel B. The separation between these two driveways measured at the right-of-way from curb-to-curb on the driveways is approximately 50.9 ft. With the pre-application notes prepared by Public Works indicating the proposed road was a Local Street, this driveway separation met the minimum 25-ft separation identified in the above table. However, subsequent to the pre-application notes Public Works increased the road classification to a Collector Street, which places the driveway spacing in conflict with Table 16.12.035.A.

The applicant wishes to keep the proposed driveways as shown on the proposed site layout (Shts DDP-C1.0 and GDP-C1.0 for the following reasons:

1. **Oregon Fire Code Appendix D106.2 and D106.3 require two access points for multi-family residential projects having more than 200 units and that they be separated by a distance not less than one-half of the length of the maximum overall diagonal dimension of the property (measured in a straight line between accesses). The maximum diagonal distance of Parcel B is 879 ft, resulting in a minimum driveway spacing of approximately 439 ft.**

2. **Moving the Parcel B westerly driveway further east along the proposed public road to a distance of 439 ft from the easterly driveway results in splitting the current 70-unit building in two, reducing unit count while increasing building construction costs to a point where the multi-family development becomes unviable. Such a new driveway location would place it in the middle of the west diagonal leg of this building (see Sht GDP-C1.0 for building reference).**

B. Surfacing. Required off-street parking spaces and access aisles shall have paved surfaces adequately maintained. The use of pervious asphalt/concrete and alternative designs that reduce storm water runoff and improve water quality pursuant to the City's stormwater and low impact development design standards are encouraged.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

C. Drainage. Drainage shall be designed in accordance with the requirements of OCMC 13.12 and the City public works stormwater and grading design standards.

Applicant's Response:
The applicant acknowledges the drainage design standards for the proposed public street and utility improvements as well as the proposed rough grading associated with this DDP application. Please see the storm report accompanying this application and the Preliminary Civil Grading and Drainage Plan, Sht DDP-C2.0. Each of the parcels will provide their own separate design proposals with their own DDP applications.

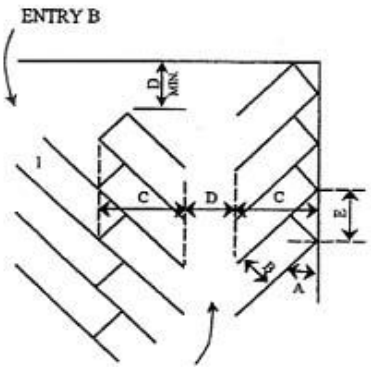
D. Dimensional Standards.
1. Requirements for parking developed at varying angles are according to the table included in this section. A parking space shall not be less than seven feet in height when within a building or structure and shall have access by an all-weather surface to a street or alley. Parking stalls in compliance with the American with Disabilities Act may vary in size in order to comply with the building division requirements. Up to thirty-five percent of the minimum required parking may be compact, while the remaining required parking stalls are designed to standard dimensions. The Community Development Director may approve alternative dimensions for parking stalls in excess of the minimum requirement which comply with the intent of this chapter.

PARKING STANDARD / PARKING ANGLE SPACE DIMENSIONS

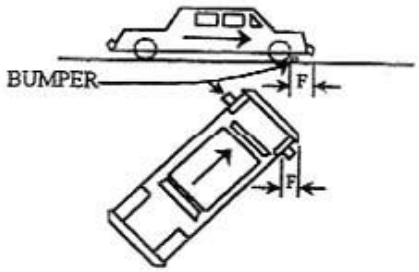
A ***Parking Angle***		***B*** ***Stall Width***	***C*** ***Stall to Curb***	***D*** ***Aisle Width***	***E*** ***Curb Length***	***F*** ***Overhang***
0 degrees		*8.5*	*9'*	*12'*	*20'*	*0*
30 degrees	*Standard* *Compact*	*9'* *8'*	*17.3'* *14.9'*	*11'* *11'*	*18'* *16'*	
45 degrees	*Standard* *Compact*	*8.5* *8.5*	*19.8'* *17'*	*13'* *13'*	*12.7'* *11.3'*	*1.4*
60 degrees	*Standard* *Compact*	*9'* *8'*	*21'* *17.9'*	*18'* *16'*	*10.4'* *9.2'*	*1.7*
90 degrees	*Standard* *Compact*	*9'* *8'*	*19'* *16'*	*24'* *22'*	*9'* *8'*	*1.5*

All dimensions are to the nearest tenth of a foot.

C:\Users\lterway\AppData\Local\Microsoft\Windows\INetCache\IE\images\17.52.030Typicalparkinglayout.



png
Typical Parking layout Entry A



Note: Space 1 Contingent upon Entry B overhang
Note: Overhang dimensions are intended to indicate possible location from parking area edge for location of bumpers.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

2. Alternative parking/plan. Any applicant may propose an alternative parking plan. Such plans are often proposed to address physically constrained or smaller sites, however innovative designs for larger sites may also be considered. In such situations, the Community Development Director may approve an alternative parking lot plan with variations to parking dimensions of this section. The alternative shall be consistent with the intent of this chapter and shall create a safe space for automobiles and pedestrians while providing landscaping to the quantity and quality found within parking lot landscaping requirements.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. While alternative parking plans are not anticipated on the parcels, each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

E. Carpool and Vanpool Parking. New developments with seventy-five or more parking spaces, excluding projects where seventy-five percent or more of the total floor area is residential , and new hospitals, government offices, group homes, nursing and retirement homes, schools and transit park-and-ride facilities with fifty or more parking spaces, shall identify the spaces available for employee, student and commuter parking and designate at least five percent, but not fewer than two, of those spaces for exclusive carpool and vanpool parking. Carpool and vanpool parking spaces shall be located closer to the main employee, student or commuter entrance than all other employee, student or commuter parking spaces with the exception of ADA accessible parking spaces. The carpool/vanpool spaces shall be clearly marked "Reserved - Carpool/Vanpool Only."

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

17.52.040 - Bicycle parking standards.
A. Purpose-Applicability. To encourage bicycle transportation to help reduce principal reliance on the automobile, and to ensure bicycle safety and security, bicycle parking shall be provided in conjunction with all uses other than exclusively residential use with less than five dwellings on-site (excluding cottage clusters).
B. Number of Bicycle Spaces Required. For any use not specifically mentioned in Table A, the bicycle parking requirements shall be the same as the use which, as determined by the Community Development Director, is most similar to the use not specifically mentioned. Calculation of the number of bicycle parking spaces required shall be determined in the manner established in OCMC 17.52.020 for determining automobile parking space requirements. Modifications to bicycle parking requirements may be made through the site plan and design, conditional use, or master plan review process.

*TABLE A Required Bicycle Parking Spaces**
Where two options for a requirement are provided, the option resulting in more bicycle parking applies. Where a calculation results in a fraction, the result is rounded up to the nearest whole number.

USE	***MINIMUM BICYCLE PARKING***	***MINIMUM BICYCLE PARKING - COVERED - The following percentage of bicycle parking is required to be covered***
Multi-family (five or more units)	*1 per 10 units (min of 2)*	*50% (min of 1)*
Correctional institution	*1 per 15 auto spaces (min of 2)*	*30% (min of 1)*
Nursing home or care facility	*1 per 30 auto spaces (min of 2)*	*30% (min of 1)*
Hospital	*1 per 20 auto spaces (min of 2)*	*30% (min of 1)*
Park-and-ride lot	*1 per 5 auto spaces (min of 2)*	*50% (min of 1)*
Transit center	*1 per 5 auto spaces (min of 2)*	*50% (min of 1)*

Parks and open space	*1 per 10 auto spaces (min of 2)*	*0%*
Public parking lots	*1 per 10 auto spaces (min of 2)*	*50% (min of 1)*
Automobile parking structures	*1 per 10 auto spaces (min of 4)*	*80% (min of 2)*
Religious institutions, movie theater, auditorium or meeting room	*1 per 10 auto spaces (min of 2)*	*30% (min of 1)*
Libraries, museums	*1 per 5 auto spaces (min of 2)*	*30% (min of 1)*
Preschool, nursery, kindergarten	*2 per classroom (min of 2)*	*50% (min of 1)*
Elementary	*4 per classroom (min of 2)*	*50% (min of 1)*
Junior high and High school	*2 per classroom (min of 2)*	*50% (min of 2)*
College, business/commercial schools	*2 per classroom (min of 2)*	*50% (min of 1)*
Swimming pools, gymnasiums, ball courts	*1 per 10 auto spaces (min of 2)*	*30% (min of 1)*
Retail stores and shopping centers	*1 per 20 auto spaces (min of 2)*	*50% (min of 2)*
Retail stores handling exclusively bulky merchandise such as automobile, boat or trailer sales or rental	*1 per 40 auto spaces (min of 2)*	*0%*
Bank, office	*1 per 20 auto spaces (min of 2)*	*50% (min of 1)*
Medical and dental clinic	*1 per 20 auto spaces (min of 2)*	*50% (min of 1)*
Eating and drinking establishment	*1 per 20 auto spaces (min of 2)*	*0%*
Gasoline service station	*1 per 10 auto spaces (min of 2)*	*0%*

** Covered bicycle parking is not required for developments with two or fewer parking stalls.*

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

C. Design Standards.

1. Bicycle parking facilities shall be in the form of a lockable enclosure onsite, secure room in a building onsite, a covered or uncovered rack onsite, or within the adjacent right-of-way.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

2. Bicycle parking areas shall be clearly marked or visible from on-site buildings or the street. If a bicycle parking area is not plainly visible from the street or main building entrance, a sign shall be posted indicating the location of the bicycle parking area. Indoor bicycle parking areas shall not require stairs to access the space. If sites have more than one building, bicycle parking shall be distributed as appropriate to serve all buildings.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

3. All bicycle racks shall be designed so that:
a. The bicycle frame is supported horizontally at two or more places.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

b. The frame and at least one wheel of the bicycle can be locked to the rack with a standard U-type lock.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

c. The user is not required to lift the bicycle onto the bicycle rack.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

d. Each bicycle parking space is accessible without moving another bicycle.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

e. It is a minimum of thirty inches tall and eighteen inches wide between the two points of contact.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

f. Provides an area of six feet by two feet per bicycle.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

g. All bicycle racks and lockers shall be securely anchored to the ground or to a structure.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

17.52.060 - Parking lot landscaping.
Purpose. The purpose of this code section includes the following:
1. To enhance and soften the appearance of parking lots;
2. To limit the visual impact of parking lots from sidewalks, streets and particularly from residential areas;
3. To shade and cool parking areas;
4. To reduce air and water pollution;
5. To reduce stormwater impacts and improve water quality; and
6. To establish parking lots that are more inviting to pedestrians and bicyclists.

A. Applicability. Unless otherwise specified, construction of new parking lots and alterations of existing parking lots shall comply with parking lot landscaping standards. Parking lot landscaping requirements within this section do not apply to parking structures or parking garages, except landscaping as required in OCMC 17.62.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

B. Development Standards.

1. The landscaping shall be located in defined landscaped areas that are uniformly distributed throughout the parking or loading area.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

2. All areas in a parking lot not used for parking, maneuvering, or circulation shall be landscaped.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

3. Parking lot trees shall be a mix of deciduous shade trees and coniferous trees. The trees shall be evenly distributed throughout the parking lot as both interior and perimeter landscaping.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

4. Required landscaping trees shall be of a minimum two-inch minimum caliper size (though it may not be standard for some tree types to be distinguished by caliper), planted according to American Nurseryman Standards, and selected from the Oregon City Street Tree List or approved by an arborist.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

5. At maturity, all of the landscaped area shall be planted in ground cover plants, which includes grasses. Mulch (as a ground cover) shall only be allowed underneath plants at full growth and within two feet of the base of a tree and is not a substitute for ground cover.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed

Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

6. Landscaped areas shall include irrigation systems unless an alternate plan is submitted, and approved by the Community Development Director, that can demonstrate adequate maintenance;

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

7. All landscaping shall be installed according to accepted planting procedures, according to American Nurseryman Standards.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

C. Perimeter Parking Lot Landscaping and Parking Lot Entryway/Right-of-Way Screening. Parking lots and associated drive aisles shall include a five-foot wide landscaped buffer where the parking lot abuts the right-of-way and/or adjoining properties. In order to provide connectivity between non-single-family sites, the Community Development Director may approve an interruption in the perimeter parking lot landscaping for a single driveway where the parking lot abuts property designated as multi-family, commercial or industrial. Shared driveways and parking aisles that straddle a lot line do not need to meet perimeter landscaping requirements.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

1. The perimeter parking lot are[a] shall include:
a. Trees spaced a maximum of thirty feet apart (minimum of one tree on either side of the entryway is required). When the parking lot is adjacent to a public right-of-way, the parking lot trees shall be offset from the street trees;

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

b. An evergreen hedge screen of thirty to forty-two inches high or shrubs spaced no more than four feet apart on average. The hedge/shrubs shall be parallel to and not nearer than two feet from the right-of-way line. The required screening shall be designed to allow for free access to the site and sidewalk by pedestrians. Visual breaks, no more than five feet in width, shall be provided every thirty feet within evergreen hedges abutting public right-of-ways.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

D. Parking Area/Building Buffer. Except for parking lots with fewer than five parking stalls, parking areas (excluding drive aisles with no adjacent parking) shall be separated from the exterior wall of a structure, exclusive of pedestrian entranceways or loading areas, by one of the following:

1. Minimum five-foot wide landscaped planter strip (excluding areas for pedestrian connection) meeting the standards for perimeter parking lot area landscaping; or:

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

2. Minimum seven foot sidewalks with shade trees spaced a maximum of thirty feet apart in three-foot by five-foot tree wells.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

E. Interior Parking Lot Landscaping. Surface parking lots with more than five parking stalls shall include at least forty-five square feet of interior parking lot landscaping per parking stall to improve the water quality, reduce storm water runoff, and provide pavement shade. Pedestrian walkways or any impervious surface in the landscaped areas are not to be counted in the percentage. Fractions shall be rounded up when calculating the required number of plantings. Interior parking lot landscaping shall include:

1. A minimum of one tree per four parking spaces.

Applicant's Response: This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their

own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

2. A minimum of 1.5 shrubs per parking space.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

3. No more than eight contiguous parking spaces shall be created without providing an interior landscape strip between them. Landscape strips shall be provided between rows of parking shall be a minimum of six feet in width and a minimum of ten feet in length.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

F. Alternative landscaping plan.
Any applicant may propose an alternative landscaping plan. Such plans are often proposed to address physically constrained or smaller sites, however innovative designs for larger sites may also be considered. Alternative plans may include the use of low impact development techniques and minimized landscaping requirements. In such situations, the Community Development Director may approve variations to the landscaping standards of OCMC 17.52.060 in accordance with 1 and/or 2 below.

1. General Review Standard. The alternative shall meet the standards in OCMC 17.62.015-Modifications that will better meet design review requirements.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

2. Credit for Pervious/Low Impact Development. The Community Development Director may count up to fifty percent of the square footage of any pervious hardscaped landscape material within a parking lot that is designed and approved pursuant to the City's adopted stormwater and low impact development design standards toward minimum landscaping requirements for the site. (This includes porous pavement detention, open celled block pavers, porous asphalt, porous concrete pavement, porous turf, porous gravel, etc.).

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed

Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

17.52.080 - Maintenance.

The owner, tenant and their agent, if any, shall be jointly and severally responsible for the maintenance of the site including but not limited to the off-street parking and loading spaces, bicycle parking and all landscaping which shall be maintained in good condition so as to present a healthy, neat and orderly appearance and shall be kept free from refuse and debris.
All plant growth in interior landscaped areas shall be controlled by pruning, trimming, or otherwise so that:
A. It will not interfere with the maintenance or repair of any public utility;
B. It will not restrict pedestrian or vehicular access; and
C. It will not constitute a traffic hazard due to reduced visibility.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

17.52.090 - Loading areas.

A. Purpose. The purpose of this section is to provide adequate loading areas for commercial, office, retail and industrial uses that do not interfere with the operation of adjacent streets.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

B. Applicability. OCMC 17.52.090 applies to uses that are expected to have service or delivery truck visits with a forty-foot or longer wheelbase, at a frequency of one or more vehicles per week. The City Engineer and decision maker shall determine through site plan and design review the number, size and location of required loading areas, if any.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

C. Standards.

1. The off-street loading space shall be large enough to accommodate the largest vehicle that is expected to serve the use without obstructing vehicles or pedestrian traffic on adjacent streets and driveways. Applicants are advised to provide complete and accurate information about the potential need for loading spaces because the City Engineer or decision maker may restrict the use

of other public right-of-way to ensure efficient loading areas and reduce interference with other uses.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

2. Where parking areas are prohibited between a building and the street, loading areas or drive isles are also prohibited.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

3. The City Engineer and decision maker, through site plan and design review, may approve a loading area adjacent to or within a street right-of-way when all of the following loading and unloading operations conditions are met:

a. Short in duration (i.e., less than one hour);
b. Infrequent (less than three operations daily between 5:00 a.m. and 12:00 a.m. or all operations between 12:00 a.m. and 5:00 a.m. at a location that is not adjacent to a residential zone);
c. Does not obstruct traffic during peak traffic hours;
d. Does not interfere with emergency response services; and
e. Is acceptable to the applicable roadway authority.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

CHAPTER 17.56 CONDITIONAL USES

17.56.010 - Permit—Authorization—Standards—Conditions.

A conditional use listed in this title may be permitted, enlarged or altered upon authorization of the Planning Commission in accordance with the standards and procedures of this title. A conditional use permit listed in this section may be permitted, enlarged or altered upon authorization of the Planning Commission or City Commission in accordance with the standards and procedures of this section. Any expansion to, alteration of, or accessory use to a conditional use shall require Planning Commission or City Commission approval of a modification to the original conditional use permit unless authorized in this chapter.

Applicant's Response:
The applicant acknowledges the responsibility of Planning Commission or City Commission in the Conditional Use review process.

A. Conditional uses, because of their public convenience and necessity and their effect upon the neighborhood shall be permitted only upon the approval of the Planning Commission or City Commission after due notice and public hearing, according to procedure as provided in OCMC 17.50. The applicant shall provide evidence substantiating that all the requirements of this title relative to the proposed use are satisfied, and demonstrate that the proposed use also satisfies the following criteria:

1. The use is listed as a conditional use in the underlying district;

Applicant's Response:
The proposed Masterplan includes a drive-through on both Parcels A and D which is identified as a Conditional Use in the MUC-2 zone (OCMC 17.29.030).

2. The characteristics of the site are suitable for the proposed use considering size, shape, location, topography, existence of improvements and natural features;

Applicant's Response:
The characteristics of the site are suitable for the proposed drive-through facilities as the proposed configuration of the drive-through facilities are designed in such a way that other site design code elements can still be maintained, drive-through facilities exist immediately north and west of the site, the proposed parcel size can easily accommodate the drive-through facilities and allow adequate queuing without impacting site circulation on public roads, and the site topography is gentle enough to accommodate the proposed drive-throughs while still allowing space for the access easement on Parcel D required for the properties south of the subject property as identified in the Beavercreek Access Management Plan.

3. Development shall demonstrate compliance with OCMC 16.12;

Applicant's Response:
Please see our responses to OCMC 16.12 in the Detailed Development Plan code responses.

4. The proposed use will not alter the character of the surrounding area in a manner which substantially limits, impairs or precludes the use of surrounding properties for the primary uses listed in the underlying district;

Applicant's Response:
Parcel A Drive-Through
The proposed drive-through is situated approximately 36' away from the north property line and approximately 60' – 90' away from the nearest residential use north of the subject property. The drive-through menu board and ordering speaker will be situated on the back (east) side of the building at least 50' south of the north edge of the Parcel A building. The Parcel A drive-through facility will not substantially limit, impair or preclude the continuing use of these residential properties. The proposed Parcel A drive-through facility is comparable in nature to the existing drive-through facility at the adjacent QSR at the northwest corner of the site, which is situated approximately 60' from the adjacent residential use, and will not substantially limit, impair or preclude the continuing operation of the existing QSR use.

Parcel D Drive-Through
The proposed drive-through is situated 350'-530' away from the nearest residential use north of the subject property and is separated by a proposed public street that has no direct connection to the abutting residential properties. The drive-through facility will not substantially limit, impair or preclude the continuing use of these residential properties. The proposed drive-through facility is comparable in nature to the existing drive-through facility at the adjacent QSR at the northwest corner of the site and will not substantially limit, impair or preclude the continuing operation of the existing QSR use.

The proposed drive-through facilities do not limit, impair or preclude uses in the existing shopping center west of the site. The proposed drive-through facilities are comparable in nature to several of the tenants in this shopping center who also have drive-through facilities. Similarly, the commercial uses south of the subject property are not impacted by the proposed drive-through use. Their uses can continue to operate regardless of the proposed drive-through use. In fact, the proposed drive-through lane is configured in a manner that allows future access to properties south of Parcel D in compliance with the Beavercreek Access Management Plan.

5. The proposal satisfies the goals and policies of the City comprehensive plan which apply to the proposed use.

Applicant's Response:
The following Comprehensive Plan Goals are applicable to the proposed drive-through conditional use:

HEALTHY AND WELCOMING COMMUNITIES
Goal 1 – Community Engagement
By virtue of the Conditional Use process before Planning Commission, Comprehensive Plan Goal 1 and its associated policies are satisfied. The proposed drive-through facilities are located in an area of the site with prior development activity (former gas station was located in this portion of the subject property).

Goal 2 – Historic, Artistic, and Cultural Resources

Based on coordination with the State Historic Preservation office (SHPO), SHPO has no record of identified archeological objects or sites and no Native American cairn, burial, human remains, sacred objects or objects of cultural patrimony in or adjacent to the project area and does not have any concerns with the project proceeding as planned. The Confederated Tribes of Grand Ronde requested an archeological survey of the site be performed. This survey will be performed prior to detailed construction plan preparation and the results of the survey incorporated into the design in the event they impact the proposed drive-through facility. Comprehensive Plan Goal 2 and its associated applicable policies are met.

Goal 3 – Livability and Access to Community Services

This goal is focused on community-based organizations, access to health care, civic engagement, community safety, and unhoused residents. Policy 3.4 describes the need to support and promote availability of affordable healthy food for neighborhoods and describes a strategy of allowing and encouraging the development of small retail centers in residential neighborhoods that provide goods and services for local residents and workers. The Comprehensive Plan identifies the subject property as Mixed Use Corridor (MUC). The proposed drive-through facilities do not impact access to community services. Restaurants are an allowed use in the Mixed Use Corridor (MUC) Plan District. The proposed drive-through supports the underlying Plan designation.

DIVERSE ECONOMY

Goal 1 – Varied Goods and Services and Employment Options

The proposed drive-through facilities do not negatively impact any of the stated Comprehensive Plan Policies. The proposed drive-through facilities allow an outright permitted use in this zone to operate in a manner that will bring them to the community and provide another food option.

Goal 2 – Housing Options

The proposed drive-through facilities do not impact this goal as they do not impact housing options.

Goal 3 – Implementation of 2040 Vision and Urban Growth Boundary

The proposed drive-through facilities are part of a development that lies within the Urban Growth Boundary and lies within a Comprehensive Plan designation that allows restaurants.

Goal 4 – Supportive Community Features and Sustainable Site/Building Design

The proposed drive-through facilities are part of a larger development that incorporates sustainable stormwater design and complies with applicable site and building code elements that have been adopted by the city and therefore have been deemed to satisfy this goal.

Goal 5 – Periodically Amend the Urban Growth Boundary

The proposed drive-through facilities do not impact this goal as they lie within the existing Urban Growth Boundary.

CONNECTED INFRASTRUCTURE

Goal 1 – Transportation Network Serving Multiple Modes of Travel

The proposed drive-through facilities do not negatively impact the goal of providing multiple modes of travel within the city. It focuses on the specific transportation impacts of the proposed masterplan development and will help support a safe and effective transportation network by being long enough to house drive-through traffic within the site and avoid spilling onto the proposed public street.

Goal 2 – Adequate Public Facilities
The proposed drive-through facilities do not negatively impact the goal of providing public utilities and transportation facilities within the city.

Goal 3 – Comprehensive Public Facilities
The proposed drive-through facilities do not negatively impact the goal of providing comprehensive public utilities facilities within the city. The proposed drive-through facility does not increase the demand for these services.

Goal 4 – Energy Conservation, Sustainability, and Resiliency
The proposed drive-through facilities will follow the same sustainable site improvements, including stormwater quality treatment and detention as the rest of the site improvements.

PROTECTED ENVIRONMENT
Goal 1 – Accessible Recreation
The proposed drive-through facilities will have no negative impact on the recreation opportunities within the city.

Goal 2 – Protection of Natural Resources
The proposed drive-through facilities will follow the same sustainable site improvements, including stormwater quality treatment and detention as the rest of the site improvements. Parcel D does not include protected natural resources or ecosystems.

Goal 3 – Minimize Impacts of Natural Hazards
The proposed drive-through facilities will have no impact on natural hazard events or the city's ability to respond to same.

Goal 4 – Willamette River Greenway
The proposed drive-through facilities have no impact to the Willamette River Greenway.

B. Permits for conditional uses shall stipulate restrictions or conditions which may include, but are not limited to, a definite time limit to meet such conditions, provisions for a front, side or rear yard greater than the minimum dimensional standards of the zoning ordinance, suitable landscaping, off-street parking, and any other reasonable restriction, condition or safeguard that would uphold the spirit and intent of the zoning ordinance, and mitigate adverse effect upon the neighborhood properties by reason of the use, extension, construction or alteration allowed as set forth in the findings of the Planning Commission.

Applicant's Response:
The applicant requests no time limit be set on approval of the drive-through facilities as considerable investment in drive-through infrastructure will be made and drive-through facilities are integral to the

QSR operations for both Parcels A and D. As proposed, the drive-through facilities already exceed minimum setback requirements for such improvements, and adverse impacts to neighborhood properties are not expected, given location and orientation of the Parcel A menu board and speaker, and the adjacent commercial uses south of the proposed Parcel D drive-through and the large distance separating the Parcel D drive-through facility from residential properties to the north of the proposed conditional use.

C. Any conditional use shall meet the dimensional standards of the zone in which it is to be located pursuant to subsection B. of this section unless otherwise indicated, as well as the minimum conditions listed below.

Applicant's Response:
The proposed drive-throughs are consistent with the applicable dimensional standards of the MUC-2 zone. Parking lot coverage identified in our response to the MUC-2 dimensional standards includes the proposed drive-through facility.

D. In the case of a use existing prior to the effective date of the ordinance codified in this title and classified in this title as a conditional use, any change of use expansion of lot area or expansion of structure shall conform with the requirements for conditional use.

Applicant's Response:
The proposed drive-through facilities are not a pre-existing use. Accordingly, this criterion is not applicable.

E. The Planning Commission may specifically permit, upon approval of a conditional use, further expansion to a specified maximum designated by the Planning Commission without the need to return for additional review.

Applicant's Response:
The applicant acknowledges the Planning Commission's authority to address further expansion of the proposed conditional use without the need for further review.

17.56.020 - Permit—Application.

A. A property owner or authorized agent shall initiate a request for a conditional use by filing an application with the City Recorder. The applicant shall submit a site plan, drawn to scale, showing the dimensions and arrangement of the proposed development. The application shall be accompanied by the filing fee listed in OCMC 17.50.080 to defray the costs of publication, investigation and processing.

Applicant's Response:
An application for Conditional Use Approval, together with the applicable review fee, was included in the overall Masterplan land-use application submitted June 27, 2025 (Ref CU-25-00001).

B. Before the Planning Commission or City Commission may act on a conditional use application, it shall hold a public hearing thereon, following procedure as established in OCMC 17.50.

Applicant's Response:
The applicant acknowledges the requirement for a public hearing for the requested conditional use approval.

17.56.025 - Minor modifications to legal conditional uses.
Minor modifications to an approved conditional use permit may be permitted. If permitted, the modification shall be reviewed as a minor site plan and design review. A minor modification to an approved conditional use permit is considered one of the following:

A. Modification to a structure for the purpose of enhancing the aesthetics of the building and there is no increase in the interior usable space;

Applicant's Response:
The applicant acknowledges the requirements to modify a conditional use. The proposed drive-through facilities included in this masterplan application is the initial request. If subsequent modifications are desired, the applicant will seek the applicable procedure for such modification.

B. Except for shelters, a maximum addition of up to one thousand square feet to a commercial, office, institutional, public, multi-family, or industrial building provided that the addition is not more than thirty-five percent of the original building square footage; or

Applicant's Response:
The applicant acknowledges the requirements to modify a conditional use. The proposed drive-through facilities included in this masterplan application is the initial request. If subsequent modifications are desired, the applicant will seek the applicable procedure for such modification.

C. Revisions to parking alignment and/or related vehicle circulation patterns.

Applicant's Response:
The applicant acknowledges the requirements to modify a conditional use. The proposed drive-through facilities included in this masterplan application is the initial request. If subsequent modifications are desired, the applicant will seek the applicable procedure for such modification.

17.56.040 - Criteria and standards for conditional uses.
In addition to the standards listed herein in OCMC 17.56.010, which are to be considered in the approval of all conditional uses and the standards of the zone in which the conditional use is located, the following additional standards shall be applicable:

A. Building Openings. The City may limit or prohibit building openings within fifty feet of residential property in a residential zone if the openings will cause glare, excessive noise or excessive traffic which would adversely affect adjacent residential property as set forth in the findings of the Planning Commission.

Applicant's Response:
Parcel A Drive-Through
The proposed drive-through is situated approximately 36' away from the north property line and approximately 60' – 90' away from the nearest residential use north of the subject property. The drive-through menu board and ordering speaker will be situated on the back (east) side of the building at least 50' south of the north edge of the Parcel A building. The Parcel A drive-through facility will not substantially limit, impair or preclude the continuing use of these residential properties. The proposed Parcel A drive-through facility is comparable in nature to the existing drive-through facility at the adjacent QSR at the northwest corner of the site, which is situated approximately 60' from the adjacent residential use.

Parcel D Drive-Through
The proposed drive-through facility includes a drive-through window on the southerly side of the proposed building. The drive-through window is located more than 225 ft away from the existing MUC-2 property south of the site. No additional building openings are proposed with this drive-through facility. The proposed drive-through facility is expected to include a secondary canopy near the approximate mid-point of the dual drive-through lanes. This canopy is located more than 80 ft away from the existing MUC-2 property to the south of the site. This canopy – as with the rest of the Parcel D improvements - will be further presented/described in the Parcel D Detailed Development Plan.

B. Additional Street Right-of-Way. The dedication of additional right-of-way may be required where the City plan indicates need for increased width and where the street is inadequate for its use; or where the nature of the proposed development warrants increased street width.

Applicant's Response:
The proposed drive-through facilities do not require any additional street right-of-way, and are contained entirely on-site without impacting the proposed Collector street.

C. Public Utility or Communication Facility. Such facilities as a utility substation, water storage tank, radio or television transmitter, tower, tank, power transformer, pumping station and similar structures shall be located, designed and installed with suitable regard for aesthetic values. The base of these facilities shall not be located closer to the property line than a distance equal to the height of the structure. Hydroelectric generation facilities shall not exceed ninety megawatts of generation capacity.

Applicant's Response:
The proposed drive-through facilities are not utility or communications facilities. Accordingly, this criterion is not applicable.

D. Schools. The site shall be located to best serve the intended area, shall be in conformance with the City plan, shall have adequate access, and shall be in accordance with appropriate State standards.

Applicant's Response:
The proposed drive-through facilities are not a school. Accordingly, this criterion is not applicable.

E. Helipad Landing Facility.

1. Size of runways and landing areas;
2. Approaches and obstructions within the runways and landing areas;
3. Fencing and/or screening to provide visual and noise buffering and to deflect winds or blast due to aircraft operation;
4. Fire protection measures and equipment;
5. Night illumination adequate for operations, and its effects upon surrounding property;
6. Landing markers;
7. Structural adequacy of runways, pads and other structures;
8. Paving and ground cover materials in relation to noise and down wash.

Applicant's Response:
The proposed drive-through facilities are not a helipad landing facility. Accordingly, this criterion is not applicable.

F. Residential Care Facilities.

1. In addition to the general provisions of OCMC 17.56.020, any application shall include a description of the proposed use, including the number of residents and the nature of the condition or circumstances for which care, or a planned treatment or training program will be provided, the number of staff and the estimated length of stay per resident and the name of the agency responsible for regulating or sponsoring the use.

Applicant's Response:
The proposed drive-through facilities are not residential care facilities. Accordingly, this criterion is not applicable.

2. Approval of a conditional use application for a residential care facility shall include the following minimum standards where applicable:

a. The proposed facility shall maintain all applicable licenses required by the appropriate agencies for the use described in the application.

Applicant's Response:
The proposed drive-through facilities are not residential care facilities. Accordingly, this criterion is not applicable.

b. All residential care facilities shall be subject to design review. Special considerations for this use are:

i. Compatibility in appearance with the surrounding area;

Applicant's Response:
The proposed drive-through facilities are not residential care facilities. Accordingly, this criterion is not applicable.

ii. Provisions of usable on-site open space appropriate to the needs of the residents and the nature of the care, treatment or training provided;

Applicant's Response:
The proposed drive-through facilities are not residential care facilities. Accordingly, this criterion is not applicable.

iii. Clearly defined property boundaries.

Applicant's Response:
The proposed drive-through facilities are not residential care facilities. Accordingly, this criterion is not applicable.

G. Bed and Breakfast Inns.

1. The bed and breakfast inn shall maintain all applicable licenses required by governmental agencies for the use described in the application.

Applicant's Response:
The proposed drive-through facilities are not bed and breakfast inns. Accordingly, this criterion is not applicable.

2. All bed and breakfast inns shall be subject to design review. Special considerations for this use are:

a. Compatibility of the structure in appearance with the surrounding area;

Applicant's Response:
The proposed drive-through facilities are not bed and breakfast inns. Accordingly, this criterion is not applicable.

b. Compatibility of the parking facilities in appearance and circulation of traffic with the surrounding area. Parking facilities shall also comply with Chapter 17.52;

Applicant's Response:
The proposed drive-through facilities are not bed and breakfast inns. Accordingly, this criterion is not applicable.

c. Compatibility of the signage in appearance with the surrounding area. Signage shall also comply with Chapter 15.28;

Applicant's Response:
The proposed drive-through facilities are not bed and breakfast inns. Accordingly, this criterion is not applicable.

d. The number of rooms to be used as overnight public accommodations shall not exceed four rooms in an underlying residential zone, or seven rooms in an underlying nonresidential zone;

Applicant's Response:
The proposed drive-through facilities are not bed and breakfast inns. Accordingly, this criterion is not applicable.

e. The owner/operators shall reside in the bed and breakfast inn, or in a residence adjacent to the bed and breakfast inn; and

Applicant's Response:
The proposed drive-through facilities are not bed and breakfast inns. Accordingly, this criterion is not applicable.

f. The Planning Commission may allow up to an additional six non-guests to be served along with the guests at a meal.

Applicant's Response:
The proposed drive-through facilities are not bed and breakfast inns. Accordingly, this criterion is not applicable.

H. Shelters.

1. Shelters shall be processed as a Type IV review.

Applicant's Response:
The proposed drive-through facilities are not shelters. Accordingly, this criterion is not applicable.

2. The shelter shall maintain a written community engagement plan include the following information:

a. Description of purpose and scope of services of the shelter;
b. Population to be housed at the shelter and the process and criteria for the selection of guests;
c. Bed capacity for nightly guests;
d. Hours of operations and curfew, if applicable;
e. 24 hour contact information; and
f. Explanation of how the shelter will address concerns/complaints.

Applicant's Response:
The proposed drive-through facilities are not shelters. Accordingly, this criterion is not applicable.

3. Shelters shall hold a meeting with the community prior to commencing operation, and a minimum of once a year each year thereafter. The purpose of the meeting is to discuss the community engagement plan and provide an opportunity for greater communication. Mailed notice of the meeting shall be provided to property owners within 300 feet, the neighborhood association, and the City. The meeting shall be open to the public.

Applicant's Response:
The proposed drive-through facilities are not shelters. Accordingly, this criterion is not applicable.

17.56.060 - Revocation of conditional use permits.

The Planning Commission or the City Commission may initiate administrative action under Chapter 17.50 to revoke any conditional use permit previously issued by the City or, with regard to lands annexed by the City, those such permits issued by the county. The Planning Commission or the City Commission, may revoke such permit upon determining:

A. One or more conditions attached to the grant of the conditional use permit have not been fulfilled; and

B. The unfulfilled condition is substantially related to the issuance of the conditional use permit.

Applicant's Response:
The applicant acknowledges the ability of Planning Commission or City Commission to revoke a conditional use approval.

17.56.070 - Periodic review of conditional use permits.

A. The City Commission may provide for the periodic review of some or all of the conditional use permits previously issued by the City, or, with regard to lands annexed by the City, those such permits issued by the county. In providing for such review, the City Commission may designate classes of such previously issued permits for which periodic review shall be undertaken.

B. Such review shall be accomplished as an administrative action under Chapter 17.50 and shall be limited to the question of whether additional conditions should be imposed on a conditional use in the light of changing circumstances and more efficient implementation of the City's comprehensive plan.

C. Notwithstanding the provisions of Chapter 17.58, any additional conditions shall be met as a requirement for continued operation of the conditional use.

Applicant's Response:
The applicant acknowledges the periodic review authority of City Commission for review of conditional use approvals.

CHAPTER 17.65 MASTER PLANS AND PLANNED UNIT DEVELOPMENT

17.65.010 Purpose and intent.

It is the intent of this chapter to foster the growth of major institutions, phased residential, commercial or mixed-use development, and other large-scale development, while identifying and mitigating the impacts of such growth on surrounding properties and public infrastructure. The City recognizes the valuable housing options, services and/or employment opportunities that these developments bring to Oregon City residents. The master plan or planned unit development process is intended to facilitate an efficient and flexible review process for major developments, support innovative and creative land development, and to provide long-term assurance to plan for and execute developments in a phased manner. To facilitate this, the master plan process is structured to allow an applicant to address larger development issues, such as adequacy of infrastructure and transportation capacity, and reserve capacity of the infrastructure and transportation system before expenditure of final design costs. The master plan or planned unit development process is further intended to promote efficiency in land development, maintenance, street systems and utility networks while providing site layouts that integrate usable and attractive open spaces, site circulation, and the general wellbeing of site users. For the purposes of this chapter planned unit developments are considered the same as master plans.

Applicant's Response:
The applicant acknowledges the purpose and intent of the masterplan process and chooses to request General Development Plan approval for the overall property and Detailed Development Plan approval for the proposed street improvements and rough grading of the site. Detailed Development Plan approval for Parcels A, B & D will be sought separately from this application.

17.65.020 What is included in a master plan or planned unit development.

A. A master plan or planned unit development is a two-step process that includes a general development plan and a detailed development plan. A general development plan incorporates the entire area where development is planned for up to the next twenty years from the date of final approval, including the identification of one or more development phases. The general development plan may encompass land that is not currently under the applicant's control, but which eventually may be controlled by the applicant during the duration of the master plan. The plan shall have no effect for lands not currently controlled by the applicant. "Controlled" shall be defined as leased or owned by the applicant. A detailed development plan is the phase or phases of the general development plan that are proposed for development within two years.

B. A master plan or planned unit development identifies the current and proposed uses of the development, proposed project boundaries, and proposed public and private infrastructure needed to serve the development. If approved, the general development plan may be used to allow existing legal non-conforming uses. If conditions of approval from a previous land use decision have not been completed, they shall be modified through the general development plan or completed with new development.

C. A master plan or planned unit development identifies future development impacts, thresholds for mitigation and mitigation improvements and implementation schedules. A threshold for mitigation is the

point that determines when or where a mitigation improvement will be required. Examples of "thresholds" include vehicle trips, square feet of impervious surface area, water usage measured in gallons per minute, construction of a building within a general development plan and construction of a building within a certain distance of a residential lot.

Mitigation improvements are necessary when a threshold for mitigation is reached. Examples include road dedication, intersection improvement, road widening, construction of a stormwater or water quality facility, installation of vegetative buffering and wetland restoration or enhancement.

Applicant's Response:
The applicant acknowledges the masterplan process.

17.65.030 - Applicability of the Master Plan or Planned Unit Development Regulations.
A. Required for Large Institutional Uses. If the boundaries of an institutional development exceed ten acres in size, the proposed development shall be master planned using the regulations of this chapter. No land use review other than a Type I or II Minor Site Plan and Design Review shall be issued for any institutional development in excess of ten acres in total acreage unless it is accompanied by or preceded by a master plan approval under this chapter. This requirement does not apply to modifications to existing institutional developments unless the modification results in a cumulative square footage increase of over ten thousand total building square feet in an existing institutional development over ten acres.

B. When Required as Part of Previous Land Use Review. The master plan or planned unit development regulations may be used to fulfill a condition of approval from a previous land use decision-requiring master planning for a development.

C. When identified in the Oregon City Comprehensive Plan. The master plan regulations are required for all properties identified for master planning in the land use section of the Oregon City Comprehensive Plan.

D. Voluntarily. An applicant may voluntarily submit a master plan or planned unit development as part of a land use review, including for residential projects.

Applicant's Response:
The applicant voluntarily requests General Development Plan approval for the overall property and Detailed Development Plan approval for the proposed street and utility main improvements and rough grading of the site. Detailed Development Plan approval for Parcels A, B & D will be sought separately from this application.

17.65.040 - Procedure.
A. Preapplication Review. Prior to filing for either general development plan or detailed development plan approval, the applicant shall file a pre-application conference pursuant to OCMC 17.50.030.

Applicant's Response:
A pre-application conference was held April 22, 2025.

B. General Development Plan. An application for a general development plan describing the long-term buildout of the site shall be reviewed through a Type III procedure. An applicant shall have an approved general development plan before any detailed development plan may be approved unless both are approved or amended concurrently. Amendments to an approved general development plan shall be reviewed under a Type III procedure pursuant to OCMC 17.65.080.

Applicant's Response:
An application for Masterplan General Development Plan and Detailed Development Plan, together with Lot Line Adjustment, Geologic Hazard Overlay, Conditional Use, Parking Adjustment, and Natural Resource (NROD) Review, was submitted June 27, 2025. The application was deemed incomplete on July 24, 2025. This land-use application package is submitted in response to the July 24, 2025 incomplete letter.

C. Detailed Development Plan. An application for a detailed development plan, is processed through a Type II procedure, as long as it is in conformance with the approved general development plan. Amendments to an approved detailed development plan shall be processed pursuant to OCMC 17.65.080. Once a development has an approved detailed development plan, OCMC 17.62 Site Plan and Design Review is not required.

Applicant's Response:
The applicant seeks Detailed Development Plan approval for the proposed street improvements and rough grading of the site. Detailed Development Plan approval for Parcels A, B & D will be sought separately from this application.

D. Concurrent Review. An applicant may concurrently apply for a general development plan and a detailed development plan. Such a concurrent application is reviewed through the highest procedure that applies to any element of the combined application.

Applicant's Response:
The applicant requests concurrent General Development Plan approval for the overall property and Detailed Development Plan approval for the proposed street and utility main improvements and rough grading of the site. Detailed Development Plan approval for Parcels A, B & D will be sought separately from this application.

E. Relationship to Other Reviews. It is the express policy of the City that development review not be segmented into discrete parts in a manner that precludes a comprehensive review of the entire development and its cumulative impacts.

Applicant's Response:
The applicant presents the enclosed application packages for comprehensive review of the entire development and its cumulative impacts.

F. Duration of General Development Plan. A general development plan shall involve a planning period of up to twenty years. An approved general development plan shall remain in effect until development allowed by the plan has been completed through the detailed development plan process, the plan is

amended or superseded, or the plan expires under its stated expiration date either as stated in the approved master plan or planned unit development application or decision of approval.

Applicant's Response:
The applicant acknowledges the planning period of up to twenty years for the requested masterplan approval.

17.65.050 - General Development Plan.

A. Existing Conditions Submittal Requirements.

1. Narrative Statement. An applicant shall submit a narrative statement that describes the following:

a. Current uses of and development on the site;

b. For institutions, history or background information about the mission and operational characteristics of the institution that may be helpful in the evaluation of the general development plan, and information about current programs or services;

c. A vicinity map showing the location of the general development plan boundary relative to the larger community, along with affected major transportation routes, transit, and parking facilities. At least one copy of the vicinity map shall be eight and one-half inches by eleven inches in size, and black and white reproducible;

d. Land uses that surround the development site. This may also reference submitted maps, diagrams or photographs;

e. Previous land use approvals within the general development plan boundary and related conditions of approval, if applicable;

f. Existing utilization of the site;

g. Site description, including the following items. May also reference submitted maps, diagrams or photographs:

i. Physical characteristics;

ii. Ownership patterns;

iii. Building inventory;

iv. Vehicle/bicycle parking;

v. Landscaping/usable open space;

vi. FAR/lot coverage;

vii. Natural resources that appear on the City's adopted Goal 5 inventory;

viii. Cultural/historic resources that appear on the City's adopted Goal 5 inventory;

ix. Location of existing trees six inches in diameter or greater when measured four feet above the ground. The location of single trees shall be shown. Trees within groves may be clustered together rather than shown individually; and

x. Geologic hazards pursuant to OCMC 17.44.

h. Existing transportation analysis, including the following items. May also reference submitted maps, diagrams or photographs.

i. Existing transportation facilities, including highways, local streets and street classifications, and pedestrian and bicycle access points and ways;

ii. Transit routes, facilities and availability;

iii. Alternative modes utilization, including shuttle buses and carpool programs; and

iv. Baseline parking demand and supply study (may be appended to application or waived if not applicable).

i. Infrastructure facilities and capacity, including the following items:
i. Water;
ii. Sanitary sewer;
iii. Stormwater management; and
iv. Easements.

Applicant's Response:
Please see the narrative included with this application which addresses the above narrative requirements. The narrative includes references to various reports and project plan sheets.

2. Maps and Plans.
a. Existing conditions site plan. Drawn at a minimum scale of one-inch equals one hundred feet (one inch equals one hundred feet) that shows the following items. At least one copy shall be eight and one-half inches x eleven inches in size, and black and white reproducible.
i. Date, north point, and scale of drawing.
ii. Identification of the drawing as an existing conditions site plan.
iii. Proposed development boundary.
iv. All parking, circulation, loading and service areas, including locations of all carpool, vanpool and bicycle parking spaces as required in Chapter 52 of this title.
v. Contour lines at two-foot contour intervals for grades zero to ten percent, and five-foot intervals for grades over ten percent.
b. A site plan or plans, to scale, for the general development plan site and surrounding properties containing the required information identified in OCMC 17.62.040.b, Vicinity map. Depicting the location of the site sufficient to define its location, including identification of nearest cross streets. At least one copy of the vicinity map shall be eight and one-half inches by eleven inches in size, and black and white reproducible.
c. Aerial photo. Depicting the subject site and property within two hundred fifty feet of the proposed development boundaries. At least one copy of the aerial photo shall be eight and one half inches by eleven in size, and black and white reproducible.

Applicant's Response:
Please see the existing conditions plan and proposed General Development Plan maps accompanying this application.

B. Proposed Development Submittal Requirements.
1. Narrative statement. An applicant shall submit a narrative statement that describes the following:
a. The proposed duration of the general development plan.
b. The proposed development boundary. May also reference submitted maps or diagrams.
c. A description, approximate location, and timing of each proposed phase of development, and a statement specifying the phase or phases for which approval is sought under the current application. May also reference submitted maps or diagrams.
d. An explanation of how the proposed development is consistent with the purposes of Section 17.65, the applicable zone district or districts, and any applicable overlay district.

e. A statement describing the impacts of the proposed development on inventoried Goal 5 natural, historic or cultural resources within the development boundary or within two hundred fifty feet of the proposed development boundary.

f. An analysis of the impacts of the proposed development on the surrounding community and neighborhood, including:

i. Transportation impacts as prescribed in subsection g below;

ii. Internal parking and circulation impacts and connectivity to sites adjacent to the development boundary and public right-of-ways within two hundred fifty feet of the development boundary;

iii. Public facilities impacts (sanitary sewer, water and stormwater management) both within the development boundary and on City-wide systems; including a phasing plan for all onsite and off-site public improvements, including but not limited to transportation, schools, parks, open space, trails, sewer, water and stormwater, with an analysis off the capacity and improvements required as a result of fully implementing the plan. This analysis shall reference any adopted parks and recreation, public facilities plans and concept plans and identify specific funding mechanisms to address the adequacy of public facilities.

iv. Neighborhood livability impacts;

v. Natural, cultural and historical resource impacts within the development boundary and within two hundred fifty feet of the development boundary.

g. A summary statement describing the anticipated transportation impacts of the proposed development. This summary shall include a general description of the impact of the entire development on the local street and road network, and shall specify the maximum projected average daily trips, projected AM and PM peak hour traffic and the maximum parking demand associated with build-out each phase of the master plan or planned unit development.

h. In addition to the summary statement of anticipated transportation impacts, an applicant shall provide a traffic impact study as specified by City requirements. The transportation impact study shall either:

i. Address the impacts of the development of the site consistent with all phases of the general development plan; or

ii. Address the impacts of specific phases if the City engineer determines that the traffic impacts of the full development can be adequately evaluated without specifically addressing subsequent phases.

i. If an applicant chooses to pursue option h.1., the applicant may choose among three options for implementing required transportation capacity and safety improvements:

i. The general development plan may include a phasing plan for the proposed interior circulation system and for all on-site and off-site transportation capacity and safety improvements required on the existing street system as a result of fully implementing the plan. If this option is selected, the transportation phasing plan shall be binding on the applicant.

ii. The applicant may choose to immediately implement all required transportation safety and capacity improvements associated with the fully executed general development plan. If this option is selected, no further transportation improvements will be required from the applicant. However, if a general development plan is later amended in a manner so as to cause the projected average daily trips, the projected a.m. or p.m.

peak hour trips, or the peak parking demand of the development to increase over original projections, an additional transportation impact report shall be required to be submitted during the detailed development plan review process for all future phases of the development project and additional improvements may be required.
iii. The applicant may defer implementation of any and all capacity and safety improvements required for any phase until that phase of the development reaches the detailed development plan stage. If this option is selected, the applicant shall submit a table linking required transportation improvements to vehicle trip thresholds for each development phase.

j. For residential and mixed-use projects:
i. Proposed minimum lot area, width, frontage and yard requirements.
ii. Proposed project density in number of units per acre.
iii. Proposed residential types and number of each.

Applicant's Response:
Please see the narrative included with this application which addresses the above narrative requirements. The narrative includes references to various reports and project plan sheets.

2. Maps and Diagrams. The applicant shall submit, in the form of scaled maps or diagrams, as appropriate, the following information:

a. A preliminary site circulation plan showing the approximate location of proposed vehicular, bicycle, and pedestrian access points and circulation patterns, parking and loading areas or, in the alternative, proposed criteria for the location of such facilities to be determined during detailed development plan review.
b. The approximate location of all proposed streets, alleys, other public ways, sidewalks, bicycle and pedestrian access ways and other bicycle and pedestrian ways, transit streets and facilities, neighborhood activity centers and easements on and within two hundred fifty feet of the site. The map shall identify existing subdivisions and development and un-subdivided or unpartitioned land ownerships adjacent to the proposed development site and show how existing streets, alleys, sidewalks, bike routes, pedestrian/bicycle access ways and utilities within two hundred fifty feet may be extended to and/or through the proposed development.
c. The approximate location of all public facilities to serve the proposed development, including water, sanitary sewer, stormwater management facilities.
d. The approximate location, footprint and building square footage of buildings within of each phase of proposed development, and/or proposed lot patterns for each phase of future development.
e. The approximate locations of proposed parks, playgrounds or other outdoor play areas; outdoor common areas and usable open spaces; and natural, historic and cultural resource areas or features proposed for preservation. This information shall include identification of areas proposed to be dedicated or otherwise preserved for public use and those open areas to be maintained and controlled by the owners of the property and their successors in interest for private use.

Applicant's Response:
Please see the proposed General Development Plan maps accompanying this application.

C. Approval Criteria for a General Development Plan. The Planning Commission may approve an application for general development plan only upon finding that the following approval criteria are met.

1. The proposed General Development Plan is consistent with the purposes of OCMC 17.65.

Applicant's Response:
The proposed General Development Plan identifies the proposed uses and street patterns of the subject property which has been vacant for nearly twenty-five years. The proposed development will include mixed uses comprised of multi-family residential, retail, and restaurant uses with various adjustments requested born out of the site's geometry and need for a public roadway through the site. The proposed masterplan will be developed in phases, with Phase 1 being the public street and utility improvements together with rough grading of the site. Parcels A, B, and D include retail, multi-family residential, and restaurant uses and will be constructed based on market demand following their individual Detailed Development Plan approval processes. Construction of the individual parcel uses may be concurrent with each other or may be separate. The master plan process is useful for implementing such a development plan by promoting efficiency in the overall development process and infrastructure needed to support the entire development.

2. Development shall demonstrate compliance with OCMC 12.04 16.12, 17.62, if applicable, and 16.08, if applicable.

Applicant's Response:
Compliance with OCMC 12.04, 16.12, 17.62, and 16.08 is demonstrated in our Masterplan Detailed Development Plan code responses. Please see our accompanying DDP application/code responses.

3. Public services for transportation, water supply, police, fire, sanitary waste disposal, storm-water disposal, and any other needed public services and facilities including schools and parks for proposed residential uses, are capable of serving the proposed development, or will be made capable by the time each phase of the development is completed.

Applicant's Response:
The proposed masterplan development will construct the necessary public roadway and utility improvements associated with the proposed development plan, including roadway and bike facilities, pedestrian improvements, traffic signal improvements, storm sewer, sanitary sewer, water, and dry utilities. When Parcel B submits its Detailed Development Plan, residential open space will be further described.

4. The proposed General Development Plan protects any inventoried Goal 5 natural, historic or cultural resources within the proposed development boundary consistent with the provisions of applicable overlay districts.

Applicant's Response:
The proposed development is adjacent to and overlooks the Newel Creek Canyon, an inventoried Goal 5 natural resource within the city of Oregon City. The property's eastern edge is included in a geologic hazard overlay and a geotechnical report addressing development, including slope stability, is included with this application. The geotechnical analysis recommends a 35-ft setback from the top of

bank overlooking Newell Creek Canyon, as well as specific retaining wall recommendations which mitigate the geologic hazard. Additionally, the project's overall stormwater discharge location lies within a Natural Resource Overlay District (NROD) which also drains through the Newell Creek Canyon. The project minimizes impacts to the NROD buffer due to the required public street connection to Beavercreek Rd and mitigates the impact that it does have. The project's stormwater facilities provide both water quality and detention treatment to reduce impacts to the downstream drainage through Newell Creek Canyon. Please see our specific code responses to the Geologic Hazard and NROD code sections included with this application.

5. The proposed General Development Plan, including development standards and impact mitigation thresholds and improvements, adequately mitigates identified impacts from each phase of development. For needed housing, as defined in ORS 197.303(1), the development standards and mitigation thresholds shall contain clear and objective standards.

Applicant's Response:
Oregon City's 2021 Housing Needs Analysis identified the need for 7,435 new dwelling units over the next 20 years. The proposed multi-family residential component of the General Development Plan helps the city achieve their goal of providing more housing. The proposed roadway and signal improvements, together with cost participation in the city's planned Beavercreek Road/Hwy 213 improvements, will mitigate the project's development impact. The roadway and utility improvements are proposed to be constructed with the initial phase of development, with the uses generating the actual impact to follow, thereby providing impact mitigation before the proposed demand.

6. The proposed general development plan is consistent with the Oregon City Comprehensive Plan.

Applicant's Response:
As described in our response to OCMC 17.56.010.A.5, the proposed General Development Plan is consistent with the Oregon City Comprehensive Plan. Please see our response to OCMC 17.56.010.A.5 for the Parcel D drive-through conditional use. The overall General Development Plan provides similar compliance with our responses to OCMC 17.56.010.A.5.

7. The proposed general development plan is consistent with the underlying zoning district(s) and any applicable overlay zone or concept plans.

Applicant's Response:
The proposed General Development Plan is consistent with the underlying MUC-2 zone, Geologic Hazard Overlay, and Natural Resource Overlay District as identified and described in this application and associated code responses and supporting documents.

8. For projects with a residential use component, the proposed general development plan includes common open space for the recreational needs of the development's residents.
a. Required open space shall be located either on-site or off-site within one-quarter mile of the development.

Applicant's Response:
Required open space for the Parcel B multi-family component of the General Development Plan is proposed to be located on-site. While Parcel B's Detailed Development Plan will provide detail on the proposed open space, the proposed open space area is shown on the General Development Plan Sht GDP-C1.0.

b. Minimum required open space shall be 100 square feet per residential unit in the development.

Applicant's Response:
The proposed Parcel B multi-family component of the General Development Plan includes 208 units, resulting in a required open space of 20,800 sf at 100 sf per unit. As shown on General Development Plan Sht GDP-C1.0, Parcel B includes over 12,000 sf of open space between the two northerly buildings (subject to Parcel B Detailed Development Plan submittal/approval) and over 20,000 sf of open space between the top of the slope and the geologic hazard setback line. A pedestrian pathway is proposed within this geologic hazard setback. Additionally, over 42,000 sf of forested open space lies on the east edge of Parcel B between the property boundary and the top of slope. Parcel B provides open space far in excess of the minimum required open space.

Note – OCMC 17.62.057.B.2 identifies a smaller open space requirement for mixed-use zones of 50 square feet per residential unit. This results in an open space requirement of 10,400 square feet. The proposed open space will exceed the criteria identified in both 17.65.050.C.8.b and 17.62.057.B.2.

c. The open space area may be in private ownership or proposed for public dedication, at the City's discretion whether to accept.

Applicant's Response:
The Parcel B open space is currently planned for private ownership.

d. The open space shall be developed with a unified design to provide for a mix of passive and active uses. Passive uses include, but are not limited to sitting benches, picnicking, reading, bird watching and natural areas. Active uses include, but are not limited to playgrounds, sports fields and courts, running and walking areas.

Applicant's Response:
General Development Plan Sht GDP-C1.0 identifies active open space between the two northerly buildings, and the Geologic Hazard setback area contains a pedestrian pathway. Portions of the Geologic Hazard setback area will be planted with NROD mitigation plantings. The steep slope open space area on the east edge of Parcel B is intended to remain in its natural state.

e. Land area to be used for the open space area that is required in this section shall not include required setback areas, required landscaping, streets, rights-of-way, driveways, or parking spaces.

Applicant's Response:
The Geologic Hazard setback area is not a setback required by the city. Instead, it is a setback recommended by the geotechnical engineer to protect against long-term slope stability concerns. Accordingly, it is not considered a building setback for the purpose of this section. However, even if the Geologic Hazard setback area is excluded from open space consideration (not likely, since the project is required to provide a pedestrian pathway), the steep slope area east of the top of slope is more than adequate to satisfy the open space requirements.

f. Unless dedicated to the public, the applicant shall also provide an irrevocable legal mechanism for the maintenance of the open space and any related landscaping and facilities. The applicant shall submit, for City review and approval, all proposed deed restrictions or other legal instruments used to reserve open space and maintenance of open space and any related landscaping and facilities.

Applicant's Response:
Development of Parcel B will be described in more detail with a separate Detailed Development Plan application. Maintenance of the required open space will be addressed with Parcel B's Detailed Development Plan.

9. For projects with a residential use component, the proposed general development plan includes a mix of residential uses such that no single residential use exceeds seventy-five percent of the total proposed units. The mix of residential uses shall provide variety of dwelling types and sizes that are integrated throughout the site, rather than isolated from one another, with smooth transitions between residential types including appropriate setbacks, landscaping or screening as necessary, while maintaining street and pedestrian connectivity between all residential uses. Tenancy (i.e. ownership versus rental) shall not be a consideration in determination of the mix of residential use. For the purposes of this section, residential uses include single-family detached, duplex, triplex, quadplex, townhouse, cottage cluster, and multi-family.

Applicant's Response:
Development of Parcel B will be described in more detail with a separate Detailed Development Plan application. The multi-family units for Parcel B will include a mixture of unit sizes/configurations consistent with this code section.

<u>17.65.060 - Detailed development plan.</u>

A. Submittal Requirements.

1. A transportation impact study documenting the on- and off-site transportation impacts, as specified in OCMC 17.65.050.B.1.h.i. If such an analysis was submitted as part of the general development plan process, the scope of the report may be limited to any changes which have occurred during the interim and any information listed below which was not a part of the initial study.

The on-site portion of the analysis shall include the location, dimensions and names of all proposed streets, alleys, other public ways, sidewalks, bike routes and bikeways, pedestrian/bicycle access ways and other pedestrian and bicycle ways, transit streets and facilities, neighborhood activity centers, and easements on and within two hundred fifty feet of the boundaries of the site. The map

shall identify existing subdivisions and development and un-subdivided or unpartitioned land ownerships adjacent to the proposed development site and show how existing streets, alleys, sidewalks, bike routes, pedestrian/bicycle access ways and utilities within two hundred fifty feet may be extended to and/or through the proposed development.

2. The location within the development and in the adjoining streets of existing and proposed sewers, water mains, culverts, drain pipes, underground electric, cable television and telephone distribution lines, gas lines, and the location of existing aerial electric, telephone and television cable lines, if any, to be relocated within the development.

3. For portions of the project that would otherwise be subject to site plan and design review, a site plan or plans, to scale, containing the required information identified in OCMC 17.62.040.

4. For residential portions of the project not otherwise subject to site plan and design review, a site plan or plans, to scale, showing the proposed land uses and densities, building locations, lot patterns, circulation patterns, and open space locations and uses.

5. Any other information the Community Development Director deems necessary to show that the proposed development will comply with all of the applicable Chapter 17 requirements.

B. Approval Criteria. The Community Development Director shall approve an application for detailed development plan approval only upon findings that:

1. All development standards and impact mitigation meet the requirements of the approved general development plan, including conditions of approval.
2. Any other applicable zoning regulations that are not addressed in the general development plan are met, unless an adjustment to those regulations has been applied for and is approved. The approval standards applicable to adjustments required as part of a master plan or planned unit development are contained in OCMC 17.65.070.
3. The detailed development plan conforms with the base zone standards, applicable residential design standards, and applicable standards contained in Chapters 17.62, 17.52, 16.12, and 16.08 unless adjusted as provided in OCMC 17.65.070

Applicant's Response:
Please see our separate response to the Detailed Development Plan submittal for the proposed street and utility improvements and site rough grading.

17.65.070 - Adjustments to development standards.
A. Purpose. In order to implement the purpose of the City's master plan or planned unit development process, which is to foster the growth of major institutions, major residential, commercial or mixed-use development, and other large-scale development, while identifying and mitigating their impacts on surrounding properties and public infrastructure, an applicant may request one or more adjustments to the applicable development regulations as part of the master planning or planned unit development process, and are not required to go through the variance process pursuant to OCMC Chapter 17.60.

B. Procedure. Requests for adjustments shall be processed concurrently with a general development plan. An adjustment request at the detailed development plan review shall cause the detailed development plan to be reviewed as a Type III application.

Applicant's Response:
The applicant acknowledges the adjustment standards of this section.

C. Regulations That May be Adjusted. Adjustments may be allowed for the following items:

1. Dimensional standards of the underlying zone of up to twenty percent, except the perimeter of the development shall meet the underlying zone's setbacks when adjacent to residentially zoned property.
2. Site plan and design standards.
3. Residential design standards.
4. Increase in allowed maximum residential density of up to ten percent.
5. Standards for land division approval.
6. Additional uses allowed with residential projects, or residential component of projects:
a. Notwithstanding the use provisions of the underlying zones, neighborhood commercial uses as defined in Chapter 17.24.020, including restaurants and eating and drinking establishments without a drive-through, retail trade, and services, are permitted on up to ten percent of the net developable area. The neighborhood commercial uses shall be planned and constructed so as to support and be compatible with the entire development and shall not alter the character of the surrounding area so as to substantially preclude, impair or limit the use of surrounding properties for the primary uses listed in the underlying district.
b. Public or private parks and playgrounds, community buildings and/or outdoor recreational facilities, such as swimming pools and tennis courts.
c. Indoor recreational facilities, such as racquetball or tennis courts, fitness centers or swimming pools.
d. Common public and private open space including trails.
e. Primary or accessory uses that are not identified as a permitted or conditional use in the underlying zone but which are defined in the code.

Applicant's Response:
The applicant acknowledges the above regulations that may be adjusted via the masterplan process. The General Development Plan application seeks adjustment to the maximum parking standards as described in our responses to OCMC 17.52.015.

D. Regulations That May Not be Adjusted. Adjustments are prohibited for the following items:

1. To allow a primary or accessory use that is not identified as a permitted, or conditional use in the underlying zone, with the exception of the additional uses permitted under OCMC 17.65.070.C.6 above;
2. To any regulation that contains the word "prohibited";
3. As an exception to a threshold review, such as a Type III review process; and
4. Minimum density for residential sites may not be reduced.

Applicant's Response:
The proposed masterplan General development Plan and Detailed Development Plan submittals do not seek any of the above prohibited adjustments.

E. Approval Criteria. A request for an adjustment to one or more applicable development regulations under this section shall be approved if the review body finds that the applicant has shown the following criteria to be met.

1. Granting the adjustment will equally or better meet the purpose of the regulation to be modified;

Applicant's Response:
Please see our responses to maximum parking adjustment for Parcels A and D in OCMC 17.52.015

2. If more than one adjustment is being requested, the cumulative effect of the adjustments results in a project that is still consistent with the overall purpose of the zone;

Applicant's Response:
Please see our responses to maximum parking adjustment for Parcels A and D in OCMC 17.52.015

3. City-designated Goal 5 resources are protected to the extent otherwise required by Title 17;

Applicant's Response:
Please see our responses to maximum parking adjustment for Parcels A and D in OCMC 17.52.015

4. Any impacts resulting from the adjustment are mitigated such that the development does not create significant adverse impacts on adjacent properties;

Applicant's Response:
Please see our responses to maximum parking adjustment for Parcels A and D in OCMC 17.52.015. Denying the adjustment for maximum parking on Parcels A and D could result in customers from those uses taking up parking spaces from the adjacent Parcel D multi-family development or from existing commercial and residential uses north of the site. Approval of the maximum parking adjustment request is not expected to have adverse impacts on adjacent properties.

5. If an environmental zone, the proposal has as few significant detrimental environmental impacts on the resource and resource values as is practicable; and

Applicant's Response:
Please see our responses to maximum parking adjustment for Parcels A and D in OCMC 17.52.015. the uses subject to the maximum parking adjustment are not located in an environmental zone.

6. The proposed adjustment is consistent with the Oregon City Comprehensive Plan and a concept plan if applicable.

Applicant's Response:
Please see our responses to maximum parking adjustment for Parcels A and D in OCMC 17.52.015. The requested maximum parking adjustment is consistent with the Comprehensive Plan. The Comprehensive Plan Goals were discussed in our response to OCMC 17.56.010.A.5 (our Conditional Use Approval request). The maximum parking request has similar responses to Comprehensive Plan goals as does the Conditional Use response.

17.65.80 - Amendments to approved plans.

A. When Required. An amendment to an approved general development plan or detailed development plan is required for any use or development that is not in conformance with the applicable plan, as provided below. The approval criteria contained in OCMC 17.65.050 will apply to general development plan amendments, the approval criteria contained in OCMC 17.65.060 will apply to detailed development plan amendments. The thresholds and procedures for amendments are stated below.

Applicant's Response:
The applicant acknowledges the amendment procedures identified in the section.

B. Type III Procedure. Unless the approved general development plan or detailed development plan specifically provides differently, amendments to either plan that require a Type III procedure are:

1. A proposed expansion of the approved boundary;
2. A proposed reduction in the approved boundary that affects a condition of approval, or takes the site out of conformance, or further out of conformance, with a development standard;
3. Proposals that increase the amount, frequency, or scale of a use over ten percent of what was approved (examples include the number of students, patients or members; the number of helicopter flights; the number or size of special events; transportation impacts);
4. New uses not covered in the plan that will increase vehicle trips to the site greater than ten percent of the original amount approved;
5. Increases or decreases in overall floor area of development on the site or number of residential units of over ten percent;
6. A increase/decrease greater than ten percent in the amount of approved or required parking; and
7. Proposed uses or development which were reviewed, but were denied because they were found not to be in conformance with an approved plan.

Applicant's Response:
The applicant acknowledges the amendment procedures identified in the section.

C. Type II Procedure. Unless an approved plan specifically provides otherwise, amendments to a general development plan or detailed development plan not specifically stated in subsection B or D are processed through a Type II procedure.
D. Type I Procedure. Unless an approved plan specifically provides otherwise, the following amendments to a general development plan or detailed development plan shall be processed through a Type I procedure:

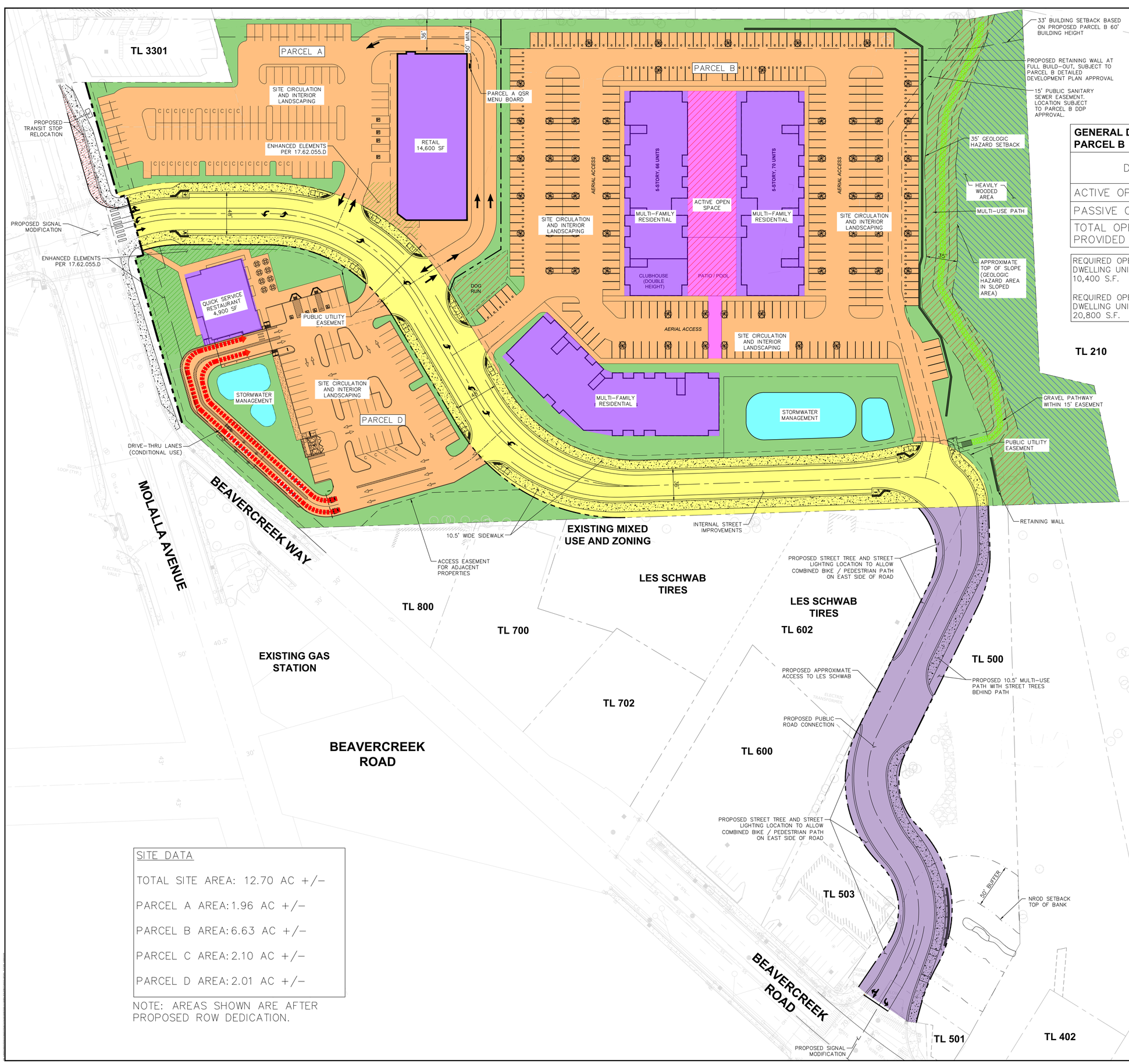
1. Accessory uses and structures that meet applicable development regulations;

2. Reconfiguration of approved parking or landscape designs that do not alter the points of ingress or egress, and do not change the number of parking spaces required, so long as the reconfiguration meets applicable development regulations; and
3. Structures for approved uses that do not exceed one thousand five hundred square feet in size and that meet applicable development regulations

Applicant's Response:
The applicant acknowledges the amendment procedures identified in the section.

17.65.090 - Regulations that apply.
An applicant is entitled to rely on land use regulations in effect on the date its general development plan application was initially submitted, pursuant to ORS 227.178(3), as that statute may be amended from time to time. After a general development plan is approved, and so long as that general development plan is in effect, an applicant is entitled to rely on the land use regulations in effect on the date its general development plan application was initially submitted, as provided above, when seeking approval of detailed development plans that implement an approved general development plan. At its option, an applicant may request that a detailed development plan be subject to the land use regulations in effect on the date its detailed development plan is initially submitted.

Applicant's Response:
Application for masterplan approval was made June 27, 2025, and notice of incomplete application was provided July 24, 2025. The applicant intends to resubmit the application materials addressing those items in the incomplete letter within the statutory 180-days to remain vested under the rules in place when the initial application was submitted.



GENERAL DEVELOPMENT PLAN OPEN SPACE - PARCEL B

DESCRIPTION	AREA (SF)	HATCH
ACTIVE OPEN SPACE	35,036	
PASSIVE OPEN SPACE	42,572	
TOTAL OPEN SPACE PROVIDED	77,608	

REQUIRED OPEN SPACE PER 17.62.057.B.2 = 50 S.F. / DWELLING UNIT. AT 208 UNITS, REQUIRED OPEN SPACE IS 10,400 S.F.

REQUIRED OPEN SPACE PER 17.65.050.C.8.b = 100 S.F. / DWELLING UNIT. AT 208 UNITS, REQUIRED OPEN SPACE IS 20,800 S.F.

PHASING

PHASE 1 – MOLALLA AVENUE IMPROVEMENTS, PROPOSED PUBLIC ROAD (AND ASSOCIATED UTILITIES AND EXTENDING TO BEAVERCREEK ROAD), OVERALL SITE ROUGH GRADING, AND PROPOSED STORMWATER MANAGEMENT FACILITY. PHASE 1 DETAILED DEVELOPMENT PLAN IS SUBMITTED CONCURRENTLY WITH THIS GENERAL DEVELOPMENT PLAN.

PHASE 2 – PARCEL D SITE AND UTILITY IMPROVEMENTS, INCLUDING THE PARCEL D STORMWATER MANAGEMENT FACILITY.

PHASE 3 – PARCEL B SITE AND UTILITY IMPROVEMENTS, INCLUDING EXTENSION OF SANITARY SEWER TO NORTHEAST CORNER OF SITE.

PHASE 4 – PARCEL A SITE AND UTILITY IMPROVEMENTS.

PHASES 2–4 ARE MARKET DRIVEN AND CAN BE CONSTRUCTED CONCURRENTLY OR SEPARATELY WITH OTHER PHASES.

PARCELS A, B, AND D LAYOUTS ARE SHOWN SCHEMATICALLY. PARCELS A, B, AND D WILL EACH SUBMIT THEIR OWN DETAILED DEVELOPMENT PLAN FOLLOWING GENERAL DEVELOPMENT PLAN APPROVAL.

GENERAL DEVELOPMENT PLAN DECISIONS:

1. OVERALL GENERAL DEVELOPMENT PLAN APPROVAL
2. CONDITIONAL USE APPROVAL FOR DRIVE-THROUGH FACILITIES ON BOTH PARCELS A AND D
3. MAXIMUM PARKING ADJUSTMENT

SITE DATA

TOTAL SITE AREA: 12.70 AC +/-

PARCEL A AREA: 1.96 AC +/-

PARCEL B AREA: 6.63 AC +/-

PARCEL C AREA: 2.10 AC +/-

PARCEL D AREA: 2.01 AC +/-

NOTE: AREAS SHOWN ARE AFTER PROPOSED ROW DEDICATION.

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture, and Geology, D.P.C.
10135 SE Sunnyside Road Suite 200
Clackamas, OR 97015
T: 503.659.9500 www.langan.com

CLIENT/OWNER

CYPRESS EQUITIES

PROJECT NAME

OREGON CITY MIXED USE GENERAL DEVELOPMENT PLAN

LANGAN PROJECT NUMBER: 794-002-701

PROJECT ADDRESS

1367 MOLALLA AVENUE
OREGON CITY, OR 97045

STAMP

REVISIONS

REV	ISSUED FOR:	DATE
0	GDP SUBMITTAL	11/14/2025
1	GDP SUBMITTAL	12/09/2025
2	GDP SUBMITTAL	03/02/2026

SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

GENERAL DEVELOPMENT PLAN

SHEET NUMBER

GDP-C1.0

APPENDIX E
General Development Plans

Detailed Development Plans

March 2, 2026

CYPRESS EQUITIES OREGON CITY MIXED USE MASTERPLAN - GENERAL DEVELOPMENT PLAN

1367 MOLALLA AVENUE
OREGON CITY, OR 97045



VICNITY MAP

NTS



LOCATION MAP

NTS

PROPERTY DESCRIPTION

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON

VERTICAL BENCHMARK

VERTICAL DATUM IS BASED ON THE CITY OF OREGON CITY BENCHMARK, A BRASS DISK LOCATED BY THE FLAG POLE IN FRONT OF THE OREGON CITY POLICE BUILDING, 320 WARNER MILNE ROAD, ELEVATION 447.729' (NGVD 1929) AND BENCHMARK 0030, A BRASS DISK STAMPED "DAVID EVANS AND ASSOCIATES, INC. GPS STA. LIBRARY 1990".
ELEVATION = 452.739'.

SURVEY MONUMENT PROTECTION

EXISTING SURVEY MONUMENT ARE TO BE PROTECTED DURING CONSTRUCTION OR REPLACED IN ACCORDANCE WITH OREGON REVISED STATUTES 209.140 – 209.155.

GENERAL NOTES

1. ALL WORK AND MATERIALS SHALL COMPLY WITH ALL OREGON CITY REGULATIONS AND CODES AND O.S.H.A. STANDARDS, INCLUDING BUT NOT LIMITED TO THE CURRENT OREGON CITY ROAD DESIGN AND CONSTRUCTION STANDARDS, CLEAN WATER SERVICES DESIGN AND CONSTRUCTION STANDARDS, THE OREGON TRANSPORTATION COMMISSION STANDARDS FOR ACCESSIBLE PARKING DATED AUGUST 2018, AND THE APWA STANDARDS WHICH ARE HEREBY REFERENCED AS PART OF THESE PLANS.

2. THE DESIGN SHOWN IS BASED UPON THE ENGINEER'S UNDERSTANDING OF THE EXISTING CONDITIONS. THE PLAN DOES NOT REPRESENT A DETAILED FIELD SURVEY. THE EXISTING CONDITIONS SHOWN ON THIS PLAN SHEET ARE BASED UPON THE ALTA SURVEY PREPARED BY CES | NW, DATED JULY 9, 2012. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING FIELD CONDITIONS PRIOR TO BIDDING THE PROPOSED SITEWORK IMPROVEMENTS. IF CONFLICTS ARE DISCOVERED, THE CONTRACTOR SHALL NOTIFY THE OWNER/DEVELOPER PRIOR TO INSTALLATION OF ANY PORTION OF THE SITEWORK WHICH WOULD BE AFFECTED. IF CONTRACTOR DOES NOT ACCEPT EXISTING SURVEY, INCLUDING TOPOGRAPHY AS SHOWN ON THE PLANS, WITHOUT EXCEPTION, HE SHALL HAVE MADE, AT HIS OWN EXPENSE, A TOPOGRAPHIC SURVEY BY A REGISTERED LAND SURVEYOR AND SUBMIT IT TO THE OWNER FOR REVIEW.

3. CAUTION – NOTICE TO CONTRACTOR
THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 48 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.

4. IN THE EVENT OF CONFLICTS BETWEEN THE VARIOUS PROVISIONS OF THIS PLAN SET, THE MORE STRINGENT PROVISION APPLY.

5. ATTENTION: OREGON LAW REQUIRES YOU TO FOLLOW RULES ADOPTED BY THE OREGON UTILITY NOTIFICATION CENTER. THOSE RULES ARE SET FORTH IN OAR 952-001-0001 (ADOPTION OF MODEL RULES) THROUGH 952-001-0100 (RECORD KEEPING REQUIREMENTS). YOU MAY OBTAIN COPIES OF THE RULES BY CALLING THE CENTER.
NOTES: THE TELEPHONE NUMBER FOR THE OREGON UTILITY NOTIFICATION CENTER IS (503) 232-1987.

6. A ROAD CLOSURE WILL NO BE PERMITTED WITHOUT A SEPARATE ROAD CLOSURE PERMIT THROUGH WASHINGTON COUNTY TRAFFIC ENGINEERING.

7. THE CONTRACTOR, AT THE TIME OF MEETING WITH COUNTY INSPECTION STAFF FOR A PRE-CONSTRUCTION MEETING, SHALL PROVIDE THEIR WORK TRAFFIC CONTROL PLAN.

8. ACCOMMODATE ALL ROAD USERS AT ALL TIMES INCLUDING MOTORISTS, BICYCLISTS, PEDESTRIANS, AND THOSE WITH DISABILITIES OR IMPAIRMENTS. INSTALL AND MAINTAIN ADDITIONAL TEMPORARY SIGNING AND TRAFFIC CONTROL DEVICES FOR THE CONTROL OF NON-MOTORIZED VEHICLES AND PEDESTRIANS WHERE A REASONABLE VOLUME OF THESE USERS ARE EXPECTED AND WHERE WORK IS EXPECTED TO LAST LONGER THAN ONE HOUR. MAINTAIN SAFE ACCESSIBILITY OR PROVIDE SUITABLE ALTERNATE ROUTES IN, THROUGH, OR AROUND WORK AREAS.

9. ESTABLISH AND MAINTAIN WORK ZONE TRAFFIC CONTROL IN COMPLIANCE WITH THE OREGON TEMPORARY TRAFFIC CONTROL HANDBOOK FOR OPERATIONS OF THREE DAYS OR LESS (DECEMBER 2011) ANY TIME VEHICLE OR PEDESTRIAN TRAFFIC IS INFLUENCED BY THE WORK. FOR WORK REQUIRING DEVICES IN PLACE LONGER THAN THREE (3) DAYS, A SITE SPECIFIC TRAFFIC CONTROL PLAN BASED ON THE PRINCIPLES IN PART 6 OF THE MUTCD, THE OREGON SUPPLEMENT AND ODOT'S 2015 STANDARD DRAWINGS TM800 –TM871, IS REQUIRED. ALL TRAFFIC CONTROL DEVICES SHALL MEET OR EXCEED THE NCHRP 350 REQUIREMENTS FOR CRASHWORTHINESS. COMPLETED SIGNAL SHUT DOWN REQUESTS MUST BE RECEIVED BY THE COUNTY A MINIMUM OF 3 WORKING DAYS PRIOR TO ANY PROPOSED SIGNAL SHUT DOWN.

SHEET INDEX

GDP-C0.0	CIVIL COVER SHEET
GDP-C1.0	GENERAL DEVELOPMENT PLAN
GDP-EX-FAR	FLOOR AREA RATIO EXHIBIT

EXISTING CONDITIONS PLANS

ALTA / BOUNDARY SURVEY SHEETS:

1	BOUNDARY SURVEY
2	TITLE EXCEPTIONS
3	TOPOGRAPHIC SURVEY
4	STORM AND SANITARY SEWER
5	TREE SURVEY

OFF-SITE TOPOGRAPHIC SURVEY SHEETS:

1	TOPOGRAPHIC SURVEY
2	TREE SURVEY
3	EASEMENTS

PROJECT CONTACTS

CONSULTANTS

CIVIL ENGINEER:
LANGAN ENGINEERING
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CES | NW
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LANDSCAPE ARCHITECT
LANGAN ENGINEERING
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CONTACT: ANNA ILAO

CULTURAL RESOURCES
LANGAN ENGINEERING
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APPLICANT/DEVELOPER

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GOVERNING AGENCY

OREGON CITY PUBLIC WORKS DEPARTMENT
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OREGON CITY, OR 97045
(503) 204-4631
CONTACT: ERIK NICHOLS

TRAFFIC

TRANSPO GROUP
12131 113TH AVENUE NE, SUITE 203
KIRKLAND, WA 98034
(425) 896-5208
CONTACT: MIKE SWENSON PE, PTOE
KASSI LEINGANG PE

Know what's **below.**
Call before you dig.

LANGAN
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CLIENT/OWNER

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REV	ISSUED FOR:	DATE
0	GDP SUBMITTAL	11/14/2025
1	GDP SUBMITTAL	12/09/2025
2	GDP SUBMITTAL	03/02/2026

SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

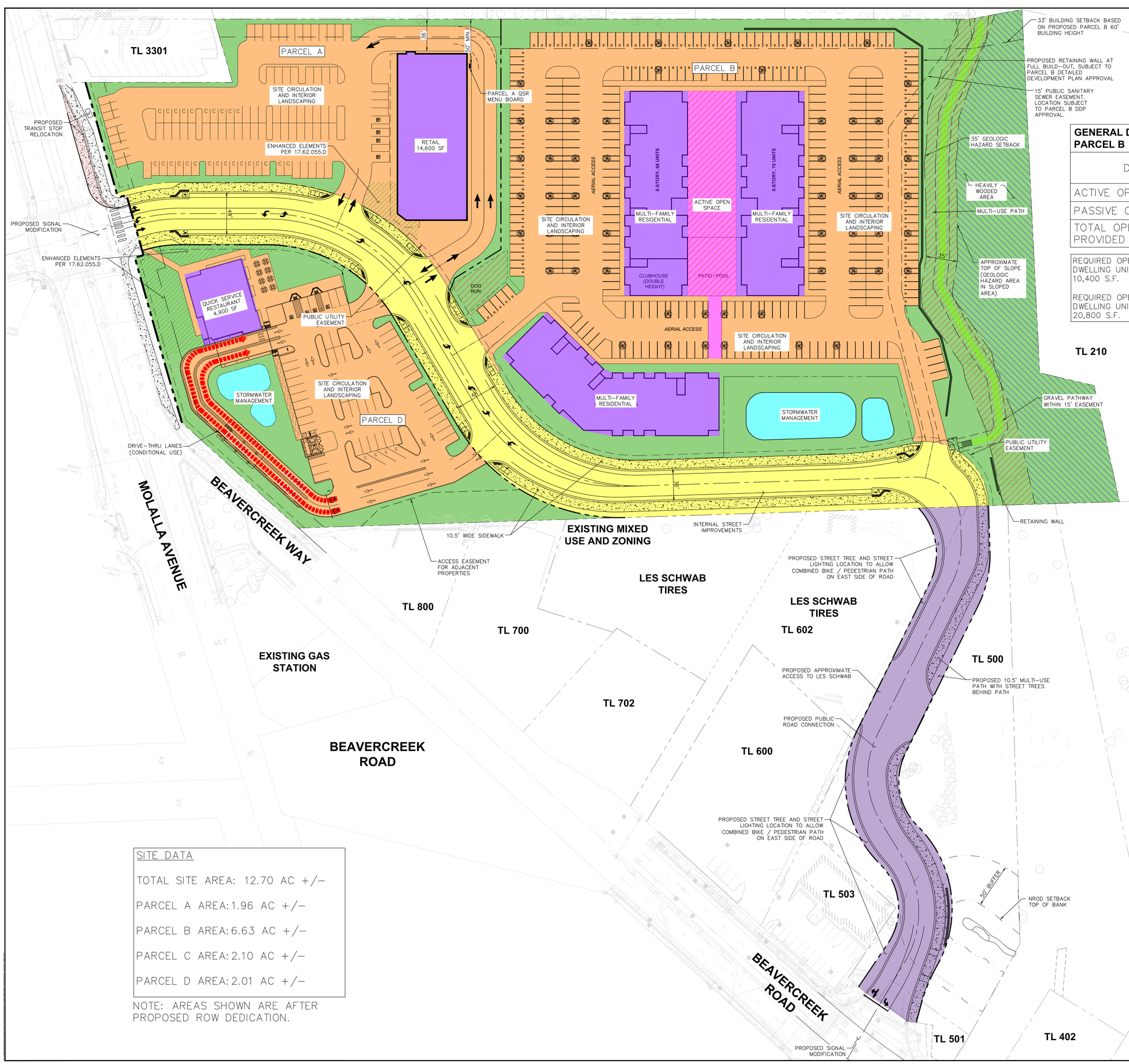
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

CIVIL COVER SHEET

SHEET NUMBER

GDP-C0.0



GENERAL DEVELOPMENT PLAN OPEN SPACE - PARCEL B

DESCRIPTION	AREA (SF)	HATCH
ACTIVE OPEN SPACE	35,036	
PASSIVE OPEN SPACE	42,572	
TOTAL OPEN SPACE PROVIDED	77,608	

REQUIRED OPEN SPACE PER 17.62.057.B.2 = 50 S.F. / DWELLING UNIT. AT 208 UNITS, REQUIRED OPEN SPACE IS 10,400 S.F.

REQUIRED OPEN SPACE PER 17.65.050.C.8.b = 100 S.F. / DWELLING UNIT. AT 208 UNITS, REQUIRED OPEN SPACE IS 20,800 S.F.

PHASING

PHASE 1 – MOLALLA AVENUE IMPROVEMENTS, PROPOSED PUBLIC ROAD (AND ASSOCIATED UTILITIES AND EXTENDING TO BEAVERCREEK ROAD), OVERALL SITE ROUGH GRADING, AND PROPOSED STORMWATER MANAGEMENT FACILITY. PHASE 1 DETAILED DEVELOPMENT PLAN IS SUBMITTED CONCURRENTLY WITH THIS GENERAL DEVELOPMENT PLAN.

PHASE 2 – PARCEL D SITE AND UTILITY IMPROVEMENTS, INCLUDING THE PARCEL D STORMWATER MANAGEMENT FACILITY.

PHASE 3 – PARCEL B SITE AND UTILITY IMPROVEMENTS, INCLUDING EXTENSION OF SANITARY SEWER TO NORTHEAST CORNER OF SITE.

PHASE 4 – PARCEL A SITE AND UTILITY IMPROVEMENTS.

PHASES 2–4 ARE MARKET DRIVEN AND CAN BE CONSTRUCTED CONCURRENTLY OR SEPARATELY WITH OTHER PHASES.

PARCELS A, B, AND D LAYOUTS ARE SHOWN SCHEMATICALLY. PARCELS A, B, AND D WILL EACH SUBMIT THEIR OWN DETAILED DEVELOPMENT PLAN FOLLOWING GENERAL DEVELOPMENT PLAN APPROVAL.

GENERAL DEVELOPMENT PLAN DECISIONS:

1. OVERALL GENERAL DEVELOPMENT PLAN APPROVAL
2. CONDITIONAL USE APPROVAL FOR DRIVE-THROUGH FACILITIES ON BOTH PARCELS A AND D
3. MAXIMUM PARKING ADJUSTMENT

SITE DATA

TOTAL SITE AREA: 12.70 AC +/-

PARCEL A AREA: 1.96 AC +/-

PARCEL B AREA: 6.63 AC +/-

PARCEL C AREA: 2.10 AC +/-

PARCEL D AREA: 2.01 AC +/-

NOTE: AREAS SHOWN ARE AFTER PROPOSED ROW DEDICATION.

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture, and Geology, D.P.C.
10135 SE Sunnyside Road Suite 200
Clackamas, OR 97015
T: 503.659.9500 www.langan.com

CLIENT/OWNER

CYPRESS EQUITIES

PROJECT NAME

OREGON CITY MIXED USE GENERAL DEVELOPMENT PLAN

LANGAN PROJECT NUMBER: 794-002-701

PROJECT ADDRESS

1367 MOLALLA AVENUE
OREGON CITY, OR 97045

STAMP

REVISIONS

REV	ISSUED FOR:	DATE
0	GDP SUBMITTAL	11/14/2025
1	GDP SUBMITTAL	12/09/2025
2	GDP SUBMITTAL	03/02/2026

SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

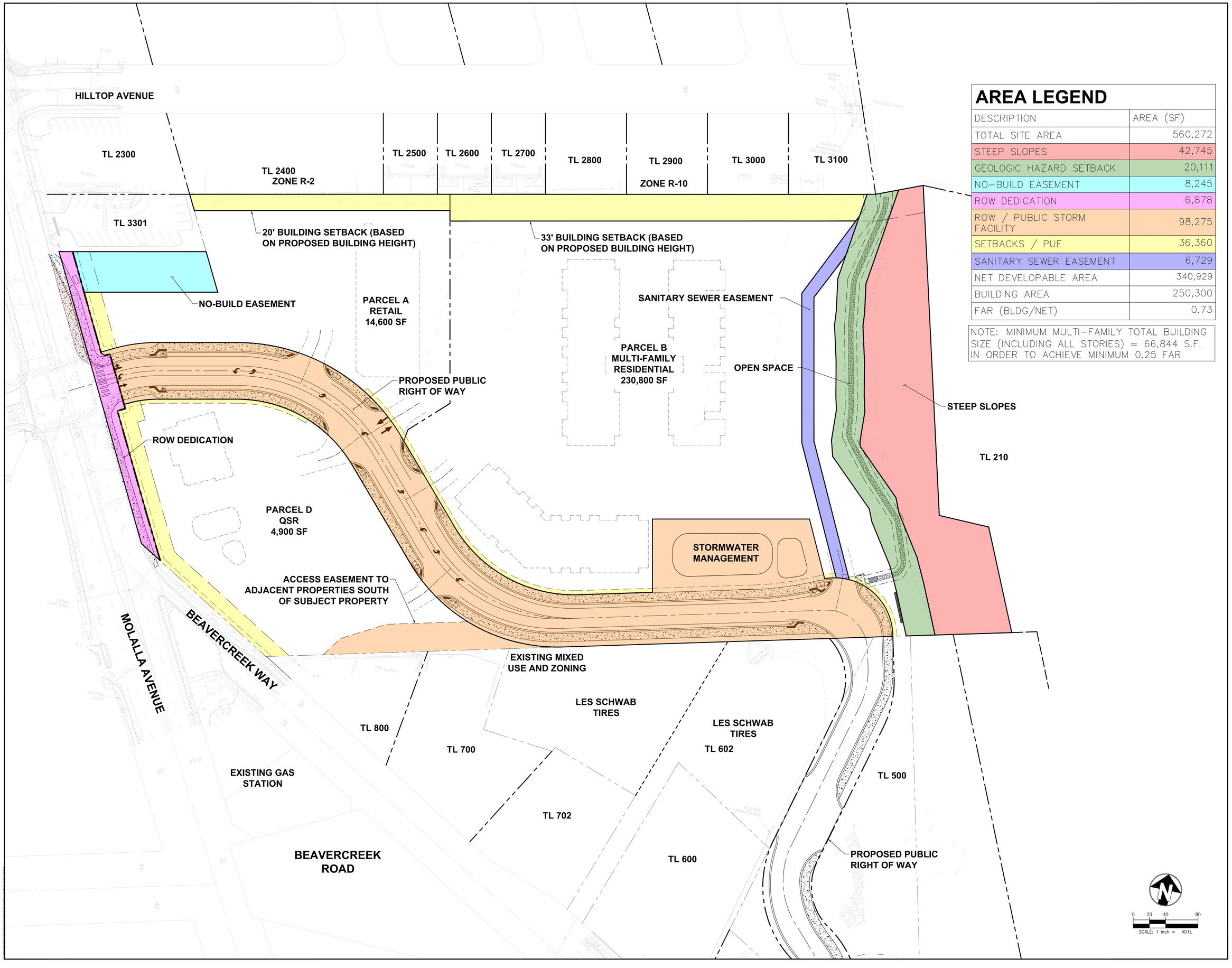
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

GENERAL DEVELOPMENT PLAN

SHEET NUMBER

GDP-C1.0



AREA LEGEND

DESCRIPTION	AREA (SF)
TOTAL SITE AREA	560,272
STEEP SLOPES	42,745
GEOLOGIC HAZARD SETBACK	20,111
NO-BUILD EASEMENT	8,245
ROW DEDICATION	6,878
ROW / PUBLIC STORM FACILITY	98,275
SETBACKS / PUE	36,360
SANITARY SEWER EASEMENT	6,729
NET DEVELOPABLE AREA	340,929
BUILDING AREA	250,300
FAR (BLDG/NET)	0.73

NOTE: MINIMUM MULTI-FAMILY TOTAL BUILDING SIZE (INCLUDING ALL STORIES) = 66,844 S.F. IN ORDER TO ACHIEVE MINIMUM 0.25 FAR

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SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

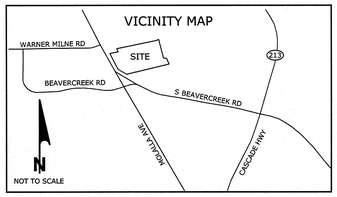
FLOOR AREA RATIO EXHIBIT

SHEET NUMBER

GDP-EX-FAR

ALTA/ACSM SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON
REFERENCE: STEWART TITLE PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 1
ORDER NO. 1016646 DATED APRIL 27, 2012



CERTIFICATION FOR SURVEY

1. THE SURVEY WAS MADE ON THE GROUND DURING APRIL AND MAY OF 2012, AND CORRECTLY SHOWS THE AREA OF THE SUBJECT PROPERTY, THE LOCATION AND TYPE OF ALL BUILDINGS, STRUCTURES AND OTHER IMPROVEMENTS SITUATED ON THE SUBJECT PROPERTY.

2. EXCEPT AS SHOWN ON THE SURVEY, THERE ARE NO OBSERVABLE, ABOVE GROUND ENCROACHMENTS BY THE IMPROVEMENTS ON THE SUBJECT PROPERTY UPON ADJOINING PROPERTIES, STREETS OR ALLEYS, OR BY THE IMPROVEMENTS ON ADJOINING PROPERTIES, STREETS OR ALLEYS UPON THE SUBJECT PROPERTY.

3. THE LOCATION OF EACH EASEMENT, RIGHT OF WAY, SERVITUDE, AND OTHER MATTER AFFECTING THE SUBJECT PROPERTY AND LISTED IN STEWART TITLE COMPANY, PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 1, ORDER NUMBER 1016646, DATED APRIL 27, 2012, WITH RESPECT TO THE SUBJECT PROPERTY, HAS BEEN SHOWN ON THE SURVEY, TOGETHER WITH THE APPROPRIATE RECORDING REFERENCES, TO THE EXTENT THAT SUCH MATTERS CAN BE LOCATED. THE PROPERTY SHOWN ON THE SURVEY IS THE PROPERTY DESCRIBED IN THAT TITLE REPORT.

4. THE SUBJECT PROPERTY HAS ACCESS TO AND FROM DULY DEDICATED AND ACCEPTED PUBLIC STREETS.

5. THE MEASURED BEARINGS AND DISTANCES SHOWN HEREON FORMS A MATHEMATICALLY CLOSED FIGURE WITH A MINIMUM LATITUDE AND DEPARTURE CLOSURE ERROR OF 1 IN 50,000.

6.THIS SITE LIES WITHIN WITHIN THE LIMITS OF FEMA MAP NUMBER 41005C0279D, WHICH IS NOT PRINTED SINCE THE ENTIRE MAP IS IN ZONE 'X' AS REITERATED ON FEMA MAP NUMBER 41005C1ND0A, EFFECTIVE DATE: JUNE 17, 2008.

7.SUBJECT PROPERTY IS ZONED, MUC-2 "MIXED USE CORRIDOR"

8. NO ORTHOPHOTOGRAPHY, PHOTOGRAMMETRIC MAPPING, LASER SCANNING, OR SIMILAR PRODUCTS WERE UTILIZED IN THE PREPARATION OF THIS SURVEY.

I HEREBY CERTIFY TO PACLAND; WAL-MART STORES, INC., A DELAWARE CORPORATION; WAL-MART REAL ESTATE BUSINESS TRUST, A DELAWARE STATUTORY TRUST; WAL-MART TRS, LLC, A DELAWARE LIMITED LIABILITY COMPANY; STEWART TITLE GUARANTY COMPANY;

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2011 "MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS", JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 1-6, 7(a), 7(b)(1), 7(c), 8, 9, 10(a), 11(b), 13, 14, 15-19, 20(a), 21 AND 22 OF TABLE 'A' THEREOF. THE FIELD WORK WAS COMPLETED ON JULY 9, 2012.

CES/NW MAKES NO WARRANTIES AS TO MATTER OF UNWRITTEN TITLE SUCH AS ACQUIESCENCE, ESTOPPEL, ADVERSE POSSESSION, ETC.

RYAN H. GODSEY
PROFESSIONAL LAND SURVEYOR
REGISTRATION NO.(OR) 65604

NARRATIVE

THE BASIS OF BEARINGS IS THE MONUMENTED CENTERLINE OF MOLALLA AVENUE (FORMERLY STATE HIGHWAY NO. 213), AS ESTABLISHED BY MONUMENTS NO. 140 AND NO. 139 AS SHOWN HEREON PER SN 2010-176, SURVEY RECORDS, CLACKAMAS COUNTY, OREGON.

THE PURPOSE OF THIS SURVEY IS TO RETRACE THE BOUNDARIES AS SHOWN ON CLACKAMAS COUNTY SURVEY NUMBER SN2004-37. ALL MONUMENTS SHOWN WERE VISITED IN THE PROCESS OF THIS RETRACEMENT.

VERTICAL DATUM IS BASED ON A CITY OF OREGON CITY BENCHMARK, A BRASS DISK LOCATED BY THE FLAG POLE IN FRONT OF THE OREGON CITY POLICE BUILDING, 320 WARNER MILNE RD, ELEVATION 447.729' (NGVD 1929) AND BENCHMARK 0030, A BRASS DISK STAMPED "DAVID EVANS AND ASSOCIATES, INC. GPS STA. LIBRARY 1990" ELEVATION = 452.739'

LEGAL DESCRIPTION PER TITLE REPORT

A TRACT OF LAND SITUATED IN THE SOUTHWEST QUARTER AND THE SOUTHEAST QUARTER OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, WILLAMETTE MERIDIAN, CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON, SAID TRACT IS MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT A THREE INCH BRASS DISK SET BY THE OREGON STATE HIGHWAY DEPARTMENT IN THE CENTERLINE OF MOLALLA AVENUE (FORMERLY STATE HIGHWAY NO. 213) AT ENGINEER'S STATION 31+00; THENCE SOUTH 73°27'47" EAST A DISTANCE OF 289.83 FEET TO THE NORTHWEST CORNER OF THAT TRACT DESCRIBED IN FEE NO. 96-010378, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SAID POINT ALSO BEING ON THE SOUTHERLY RIGHT-OF-WAY LINE OF HILLTOP AVENUE; THENCE ALONG THE WESTERLY LINE OF SAID TRACT, SOUTH 27°39'59" EAST A DISTANCE OF 104.03 FEET TO THE SOUTHWEST CORNER OF SAID TRACT, AND BEING THE TRUE POINT OF BEGINNING; THENCE ALONG THE NORTHERLY LINE OF THOSE TRACTS DESCRIBED IN FEE NO. 72-08888 AND FEE NO. 69-09411, NORTH 78°20'26" EAST A DISTANCE OF 846.78 FEET TO THE COMMON CORNER OF THOSE LANDS DESCRIBED IN FEE NO. 69-09411, FEE NO. 95-073144 AND FEE NO. 96-010376, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE SOUTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-010376, DEED RECORDS, CLACKAMAS COUNTY, OREGON, NORTH 67°47'51" EAST A DISTANCE OF 59.75 FEET TO THE COMMON CORNER OF THOSE LANDS DESCRIBED IN FEE NO. 96-010376 AND FEE NO. 96-007471, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE CONTINUING ALONG THE WESTERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-007471, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 14°26'42" EAST A DISTANCE OF 407.81 FEET TO THE COMMON CORNER OF THOSE LANDS DESCRIBED IN FEE NO. 69-09411, FEE NO. 96-007471, AND FEE NO. 96-046001, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE CONTINUING ALONG THE COMMON LINE OF THOSE LANDS DESCRIBED IN FEE NO. 96-046001 AND FEE NO. 96-007471, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 88°29'47" EAST A DISTANCE OF 62.63 FEET; THENCE SOUTH 23°58'58" EAST A DISTANCE OF 133.44 FEET TO THE SOUTHEASTERLY CORNER OF THAT TRACT DESCRIBED IN FEE NO. 96-046001, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE CONTINUING ALONG THE SOUTHERLY LINE OF SAID TRACT, AND ALONG THE NORTHERLY LINE OF THOSE LANDS DESCRIBED IN FEE NO. 98-044696 AND FEE NO. 99-004122, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 76°38'35" WEST A DISTANCE OF 125.26 FEET; THENCE ALONG SAID SOUTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-046001, AND THE NORTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 95-045260, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 76°19'45" WEST A DISTANCE OF 45.33 FEET; THENCE ALONG SAID SOUTHERLY LINE, AND THE NORTHERLY LINE OF THOSE LANDS DESCRIBED IN FEE NO. 97-004501, AND FEE NO. 98-041108, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 76°29'26" WEST A DISTANCE OF 750.61 FEET TO A POINT IN THE NORTHEASTERLY RIGHT-OF-WAY OF BEAVERCREEK ROAD (MARKET ROAD NO. 11) (COUNTY ROAD NO. 398), SAID POINT BEING 30' NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, THE CENTERLINE OF SAID ROAD; THENCE ALONG SAID NORTHEASTERLY RIGHT-OF-WAY, NORTH 59°27'26" WEST A DISTANCE OF 206.63 FEET TO THE COMMON NORTHEASTERLY RIGHT-OF-WAY INTERSECTION OF SAID BEAVERCREEK ROAD AND MOLALLA AVENUE (FORMERLY STATE HIGHWAY NO. 213), SAID POINT BEING 35' NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, SAID CENTERLINE OF MOLALLA AVENUE; THENCE CONTINUING ALONG THE NORTHEASTERLY RIGHT-OF-WAY OF SAID MOLALLA AVENUE, ALONG THE ARC OF A 5694.58 FOOT RADIUS CURVE TO THE RIGHT A DISTANCE OF 66.39 FEET, THROUGH A CENTRAL ANGLE OF 00°40'05" (THE LONG CHORD OF WHICH BEARS NORTH 27°43'34" WEST A DISTANCE OF 66.39 FEET); THENCE NORTH 27°23'32" WEST A DISTANCE OF 307.30 FEET; THENCE NORTH 62°36'28" EAST A DISTANCE OF 5.00 FEET TO A POINT 40 FEET NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, SAID CENTERLINE, SAID POINT ALSO BEING ON THE SOUTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 97-022793, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE LEAVING SAID NORTHEASTERLY RIGHT-OF-WAY LINE, AND CONTINUING ALONG SAID SOUTHERLY TRACT LINE, NORTH 78°20'26" EAST A DISTANCE OF 176.19 FEET TO THE SOUTHEASTERLY CORNER OF SAID TRACT; THENCE ALONG THE EASTERLY LINE OF SAID TRACT, NORTH 27°39'59" WEST A DISTANCE OF 73.67 FEET TO THE TRUE POINT OF BEGINNING.

CONTAINING AN AREA OF 560,272 SQUARE FEET, OR 12.862 ACRES, MORE OR LESS.

RECORD DESCRIPTIONS

2004-091249 PARCEL 1
A TRACT OF LAND SITUATED IN THE SOUTHWEST 1/4 AND THE SOUTHEAST 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, WILLAMETTE MERIDIAN, CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON. SAID TRACT IS MORE PARTICULARLY DESCRIBED AS FOLLOW:

COMMENCING AT THE EXTREME SOUTHERLY CORNER OF TRACT DESCRIBED IN CLACKAMAS COUNTY DEED BOOK "O", PAGE 265, SAID POINT BEING IN THE CENTERLINE OF MOLALLA AVENUE; THENCE SOUTH 88°29'47" EAST A DISTANCE OF 39.98 FEET TO A POINT BEING 35 FEET NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, THE CENTERLINE OF SAID ROAD, SAID POINT BEING THE TRUE POINT OF BEGINNING; THENCE ALONG THE NORTHEASTERLY RIGHT-OF-WAY OF SAID MOLALLA AVENUE, NORTH 27°23'32" WEST A DISTANCE OF 10.28 FEET; THENCE ALONG THE SOUTHERLY LINE THAT TRACT DESCRIBED IN FEE NO. 72-08888 DEED RECORDS, CLACKAMAS COUNTY, OREGON. SOUTH 88°29'47" EAST A DISTANCE OF 653.92 FEET TO THE SOUTHEAST CORNER OF SAID TRACT; THENCE ALONG THE EASTERLY LINE OF SAID TRACT, NORTH 12°38'23" WEST A DISTANCE OF 110.72 FEET TO THE NORTHWEST CORNER OF THAT TRACT DESCRIBED IN FEE NO. 81-19662, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE NORTHERLY LINE OF SAID TRACT, SOUTH 88°29'47" EAST A DISTANCE OF 120.00 FEET TO THE NORTHEAST CORNER OF SAID TRACT; THENCE ALONG THE EASTERLY LINE OF SAID TRACT, SOUTH 12°38'23" EAST A DISTANCE OF 120.00 FEET TO A POINT ON THE NORTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-046001, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE NORTHERLY LINE OF SAID TRACT, NORTH 88°29'47" WEST A DISTANCE OF 771.22 FEET TO THE TRUE POINT OF BEGINNING.

CONTAINING AN AREA OF 19,837 SQUARE FEET, OR 0.455 ACRES, MORE OR LESS.

2004-091249 PARCEL 2
A TRACT OF LAND SITUATED IN THE SOUTHWEST 1/4 AND THE SOUTHEAST 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, WILLAMETTE MERIDIAN, CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON. SAID TRACT IS MORE PARTICULARLY DESCRIBED AS FOLLOW:

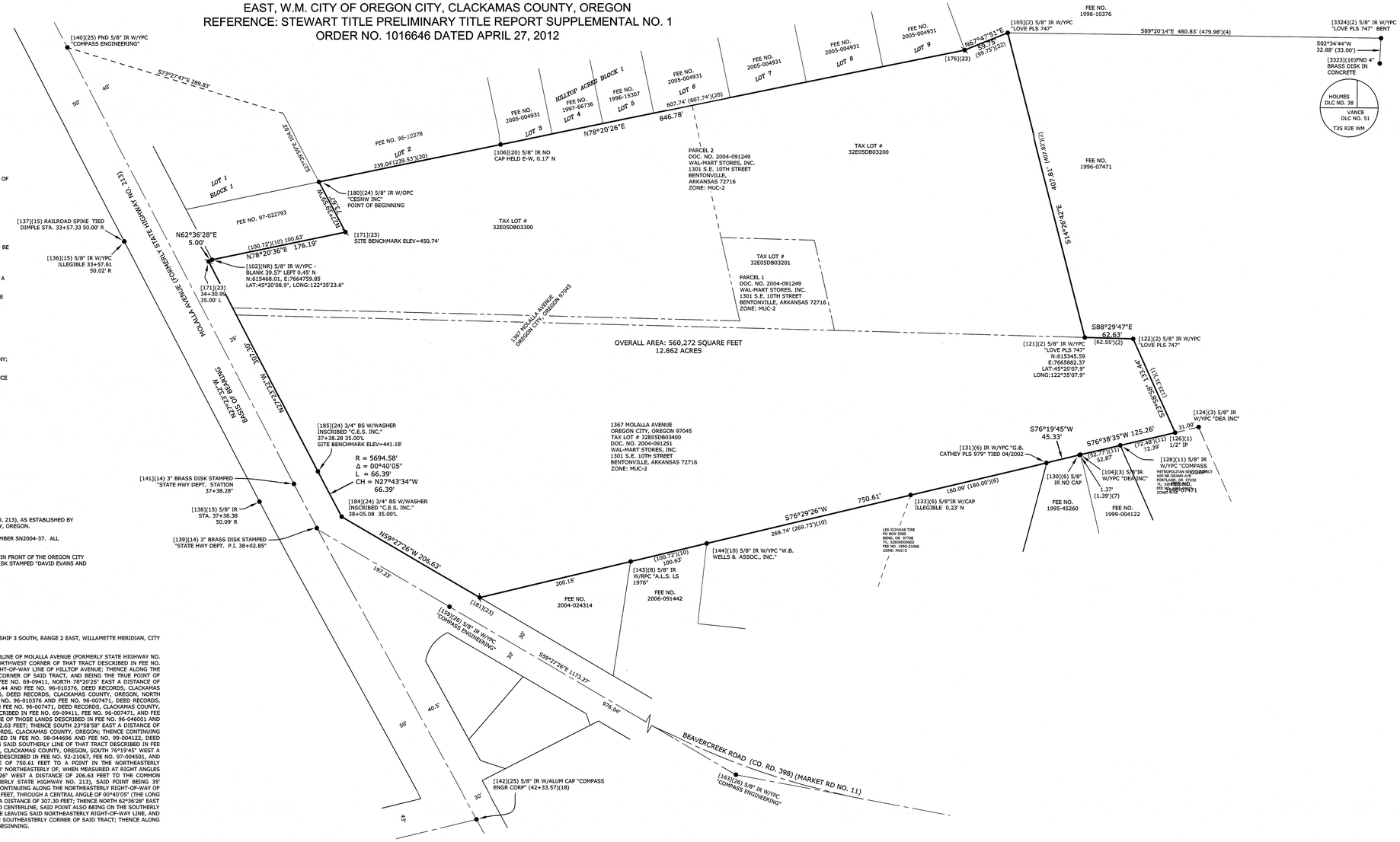
COMMENCING AT THE EXTREME SOUTHERLY CORNER OF TRACT DESCRIBED IN CLACKAMAS COUNTY DEED BOOK "O", PAGE 265, SAID POINT BEING IN THE CENTERLINE OF MOLALLA AVENUE; THENCE SOUTH 88°29'47" EAST A DISTANCE OF 39.98 FEET TO A POINT BEING 35 FEET NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, THE CENTERLINE OF SAID ROAD; THENCE ALONG THE NORTHEASTERLY RIGHT-OF-WAY OF SAID MOLALLA AVENUE, NORTH 27°23'32" WEST A DISTANCE OF 10.28 FEET TO THE TRUE POINT OF BEGINNING; THENCE CONTINUING ALONG THE NORTHEASTERLY RIGHT-OF-WAY OF SAID MOLALLA AVENUE, NORTH 27°23'32" WEST A DISTANCE OF 67.85 FEET; THENCE NORTH 62°36'28" EAST A DISTANCE OF 5.00 FEET TO A POINT 40 FEET NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, SAID CENTERLINE, SAID POINT ALSO BEING ON THE SOUTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 97-022793, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE LEAVING SAID NORTHEASTERLY RIGHT-OF-WAY LINE, AND CONTINUING ALONG SAID SOUTHERLY LINE, NORTH 78°20'26" EAST A DISTANCE OF 176.19 FEET TO THE SOUTHWEST CORNER OF THAT TRACT DESCRIBED IN FEE NO. 96-010378, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE NORTHERLY LINE OF THOSE TRACTS DESCRIBED IN FEE NO. 72-08888 AND FEE NO. 69-09411, NORTH 78°20'26" EAST A DISTANCE OF 846.78 FEET TO THE COMMON CORNER OF THOSE LANDS DESCRIBED IN FEE NO. 69-09411, FEE NO. 95-073144 AND FEE NO. 96-010376, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE SOUTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-010376, DEED RECORDS, CLACKAMAS COUNTY, OREGON, NORTH 67°47'51" EAST A DISTANCE OF 59.75 FEET TO THE COMMON CORNER OF THOSE LANDS DESCRIBED IN FEE NO. 96-010376 AND FEE NO. 96-007471, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE CONTINUING ALONG THE WESTERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-007471, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 14°26'42" EAST A DISTANCE OF 407.81 FEET TO THE COMMON CORNER OF THOSE TRACTS DESCRIBED IN FEE NO. 69-09411, FEE NO. 96-007471, AND FEE NO. 96-046001, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE SOUTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 81-19662, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE EASTERLY LINE OF SAID TRACT DESCRIBED IN FEE NO. 81-19662, NORTH 12°38'23" WEST A DISTANCE OF 120.00 FEET; THENCE ALONG THE NORTHERLY LINE OF SAID TRACT, NORTH 88°29'47" WEST A DISTANCE OF 120.00 FEET; THENCE ALONG THE WESTERLY LINE OF SAID TRACT, SOUTH 12°38'23" EAST A DISTANCE OF 110.72 FEET TO THE SOUTHEAST CORNER OF THAT TRACT DESCRIBED IN FEE NO. 72-08888, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE SOUTHERLY LINE OF SAID TRACT DESCRIBED IN FEE NO. 72-08888, NORTH 88°29'47" WEST A DISTANCE OF 653.92 FEET TO THE TRUE POINT OF BEGINNING.

CONTAINING AN AREA OF 256,397 SQUARE FEET, OR 5.886 ACRES, MORE OR LESS.

2004-091251
A TRACT OF LAND SITUATED IN THE SOUTHWEST 1/4 AND THE SOUTHEAST 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, WILLAMETTE MERIDIAN, CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON. SAID TRACT IS MORE PARTICULARLY DESCRIBED AS FOLLOW:

COMMENCING AT THE EXTREME SOUTHERLY CORNER OF TRACT DESCRIBED IN CLACKAMAS COUNTY DEED BOOK "O", PAGE 265, SAID POINT BEING IN THE CENTERLINE OF MOLALLA AVENUE; THENCE SOUTH 88°29'47" EAST A DISTANCE OF 39.98 FEET TO A POINT BEING 35 FEET NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, THE CENTERLINE OF SAID ROAD, SAID POINT BEING THE TRUE POINT OF BEGINNING; THENCE ALONG THE SOUTHERLY LINE OF THOSE LANDS DESCRIBED IN FEE NO. 81-19662, FEE NO. 69-09411, AND FEE NO. 96-007471 DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 88°29'47" EAST A DISTANCE OF 1156.21 FEET; THENCE SOUTH 23°58'58" EAST A DISTANCE OF 133.44 FEET TO THE SOUTHEASTERLY CORNER OF THAT TRACT DESCRIBED IN FEE NO. 96-046001, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE CONTINUING ALONG THE SOUTHERLY LINE OF SAID TRACT, AND ALONG THE NORTHERLY LINE OF THOSE LANDS DESCRIBED IN FEE NO. 98-044696 AND FEE NO. 99-004122, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 76°38'35" WEST A DISTANCE OF 125.26 FEET; THENCE ALONG SAID SOUTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-046001, AND THE NORTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 95-045260, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 76°19'45" WEST A DISTANCE OF 45.33 FEET; THENCE ALONG SAID SOUTHERLY LINE, AND THE NORTHERLY LINE OF THOSE LANDS DESCRIBED IN FEE NO. 92-21067, FEE NO. 97-004501, AND FEE NO. 98-041108, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 76°29'26" WEST A DISTANCE OF 750.61 FEET TO A POINT IN THE NORTHEASTERLY RIGHT-OF-WAY OF BEAVERCREEK ROAD (MARKET ROAD NO. 11) (COUNTY ROAD NO. 398), SAID POINT BEING 30' NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, THE CENTERLINE OF SAID ROAD; THENCE ALONG SAID NORTHEASTERLY RIGHT-OF-WAY, NORTH 59°27'26" WEST A DISTANCE OF 206.63 FEET TO THE COMMON NORTHEASTERLY RIGHT-OF-WAY INTERSECTION OF SAID BEAVERCREEK ROAD AND MOLALLA AVENUE (FORMERLY STATE HIGHWAY NO. 213), SAID POINT BEING 35' NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, SAID CENTERLINE OF MOLALLA AVENUE; THENCE CONTINUING ALONG THE NORTHEASTERLY RIGHT-OF-WAY OF SAID MOLALLA AVENUE, ALONG THE ARC OF A 5694.58 FOOT RADIUS CURVE TO THE RIGHT A DISTANCE OF 66.39 FEET, THROUGH A CENTRAL ANGLE OF 00°40'05" (THE LONG CHORD OF WHICH BEARS NORTH 27°43'34" WEST A DISTANCE OF 66.39 FEET); THENCE NORTH 27°23'32" WEST A DISTANCE OF 229.17 FEET TO THE TRUE POINT OF BEGINNING.

CONTAINING AN AREA OF 284,038 SQUARE FEET, OR 6.521 ACRES, MORE OR LESS.

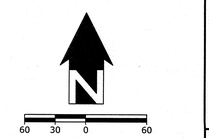


REFERENCES

(1) PS-3291
(2) PS-24613
(3) PS-22135
(4) PS-27403
(5) PARTITION PLAT NO. 1996-14
(6) PS-18026
(7) PS-26512
(8) PS-23880
(9) PARTITION PLAT NO. 1992-49
(10) PS-24728
(11) PS-27729
(12) PS-28185
(13) PS-16481
(14) OREGON STATE HIGHWAY DEPARTMENT DRG. NO. 8B-12-9 DEC. 1958
(15) PS-27047
(16) BT BOOK 12, PAGE 6
(17) LP 060 SUPPLEMENTAL
(18) PS-25313
(19) PS-24286
(20) HILLTOP ACRES, PLAT BOOK 37 PAGE 26
(21) PS-18187
(22) PS-26713
(23) SN29636
(24) SN2004-377
(25) SN2010-176
(26) SN2008-034

LEGEND

● = FOUND SURVEY MONUMENT AS NOTED
◥ = FOUND 5/8" IRON ROD W/ORANGE PLASTIC CAP MARKED "CES NW, INC." PER S.N. 29636
BS W/WASHER = BRASS SCREW WITH WASHER
L = LENGTH ALONG ARC
W/YPC = WITH YELLOW PLASTIC CAP
DOC. NO. = DOCUMENT NUMBER, CLACKAMAS COUNTY RECORDS
FTC = FROM TRUE CORNER
NR = RECORD NOT LOCATED
PS = PRIVATE SURVEY NUMBER AS FILED, CLACKAMAS COUNTY SURVEYOR'S OFFICE
SN = SURVEY NUMBER AS FILED, CLACKAMAS COUNTY SURVEYOR'S OFFICE
FEE NO. RECORDING NUMBER, CLACKAMAS COUNTY RECORDER
###.## = DENOTES MEASURED DISTANCE
(###.##')(#) = DENOTES RECORD DISTANCE PER REFERENCE NUMBER
###.##'(#) = DENOTES MEASURED AND RECORD DISTANCE(HELD) PER REFERENCE NUMBER
[###](#) = DENOTES FOUND MONUMENT NUMBER AND REFERENCE NUMBER



SHEET INDEX

SHEET 1 - VICINITY MAP, BOUNDARY SURVEY & SURVEYORS CERT
SHEET 2 - ZONING & EXCEPTIONS
SHEET 3 - SITE TOPOGRAPHIC FEATURES, UTILITIES & ELEVATIONS
SHEET 4 - STORM & SANITARY SEWER
SHEET 5 - TREE SURVEY

REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON DECEMBER 13, 2007 RYAN H. GODSEY 65604
RENEWS: 6/30/13

OREGON CITY
PROJECT NO. 3051-00

PACLAND
6400 SE LAKE ROAD, SUITE 300
PORTLAND, OR 97222

CES|NW
13190 SW 68TH PKWY, STE 150
TIGARD, OREGON 97223
(503)968-6655 www.cesnw.com

ALTA SURVEY

REVISIONS

2689-ALTA.DWG

DATE: 07-09-12
CHECKED BY: RHG
2689
783
PROJECT NO. 3051-00:
DRAWN BY:

BOUNDARY SURVEY

SHEET 1
OF 5

ALTA/ACSM SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2
EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON
REFERENCE: STEWART TITLE PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 1
ORDER NO. 1016646 DATED APRIL 27, 2012

SPECIAL EXCEPTIONS

6. CITY LIENS, IF ANY, OF THE CITY OF OREGON CITY.

7. PERSONAL PROPERTY TAXES, IF ANY

8. COVENANTS, CONDITIONS, RESTRICTIONS AND EASEMENTS IN DECLARATION OF RESTRICTIONS, AND ANY AMENDMENTS THERETO:
RECORDED: JUNE 3, 1981
RECORDING NO.: 81015230
(PLOTTED BUILDING RESTRICTION)

9. AN EASEMENT CREATED BY JUDGEMENT, AND THE TERMS AND CONDITIONS THEREOF:
ENTERED: DECEMBER 20, 1996
SUIT NO.: CV96-09-321
IN FAVOR OF: THE CITY OF OREGON CITY
FOR: RIGHT OF WAY
AFFECTS: THE WESTERLY PORTION OF SAID PREMISES
(PLOTTED RIGHT-OF-WAY EASEMENT)

10. EASEMENT AND THE TERMS AND CONDITIONS THEREOF:
GRANTEE: LES SCHWAB PROFIT SHARING TRUST
PURPOSE: INGRESS AND EGRESS
AFFECTS: REFERENCE SAID DOCUMENT FOR PARTICULARS
RECORDED: OCTOBER 1, 2004
RECORDING NO.: 2004091594
(NOT PLOTTED - EASEMENT AREA NOT CLEARLY DEFINED)

11. ANY UNRECORDED LEASEHOLDS, RIGHT OF VENDORS AND HOLDERS OF SECURITY INTEREST ON PERSONAL PROPERTY INSTALLED UPON SAID PROPERTY, AND RIGHT OF TENANTS TO REMOVE TRADE FIXTURES AT THE EXPIRATION OF THE TERM.

12. EVIDENCE OF THE INDEMNITY AND AUTHORITY OF THE OFFICES OF WAL-MART STORES, INC., A DELAWARE CORPORATION TO EXECUTE THE FORTHCOMING INSTRUMENT MUST BE SUBMITTED.

ZONING
MUC-2 - MIXED-USE CORRIDOR
OREGON CITY OREGON - MUNICIPAL CODE CHAPTER 17.29

SETBACKS 17.29.060 DIMENSIONAL STANDARDS

MAXIMUM ALLOWABLE SETBACKS:	
FRONT YARD	5'*
INTERIOR SIDE YARD	NONE
CORNER SIDE YARD ABUTTING STREET	25'**
REAR YARD	NONE
REAR YARD	NONE
MINIMUM REQUIRED INTERIOR AND REAR YARD SETBACKS IF ABUTTING A RESIDENTIAL ZONE	25'***
MAXIMUM BUILDING SQUARE FOOTAGE	NO MAXIMUM
MAXIMUM BUILDING HEIGHT	60'

*MAY BE EXPANDED WITH SITE PLAN AND DESIGN REVIEW REQUIREMENTS OF SECTION 17.62.055
**PROVIDED THE SITE PLAN AND DESIGN REVIEW REQUIREMENTS OF SECTION 17.62.055 ARE MET
***PLUS ONE FOOT ADDITIONAL YARD SETBACK FOR EVERY TWO FEET OF BUILDING HEIGHT OVER 35'

CITY OF OREGON CITY
PLANNING DEPARTMENT
221 MOLALLA AVENUE, SUITE 200
OREGON CITY, OR 97045
503-722-3789

NO REPRESENTATION IS MADE FOR THE ACCURACY OR COMPLETENESS OF SAID THIRD PARTY INFORMATION. THIS FIRM IS NOT AN EXPERT IN THE INTERPRETATION OF COMPLEX ZONING ORDINANCES. COMPLIANCE IS BEYOND THE SCOPE OF THIS SURVEY. ANY USER OF SAID INFORMATION IS URGED TO CONTACT THE LOCAL AGENCY DIRECTLY.



60 30 0 60
1" = 60'

REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
DECEMBER 13, 2007
RYAN H. GODSEY
65604
RENEWS: 6/30/13

OREGON CITY
PROJECT NO. 3051-00

PACLAND
6400 SE LAKE ROAD, SUITE 300
PORTLAND, OR 97222

CES NW
13190 SW 68TH PKWY, STE 150
TIGARD, OREGON 97223
(503)968-6655 www.cesnw.com

ALTA SURVEY

REVISIONS

2689-ALTA.DWG

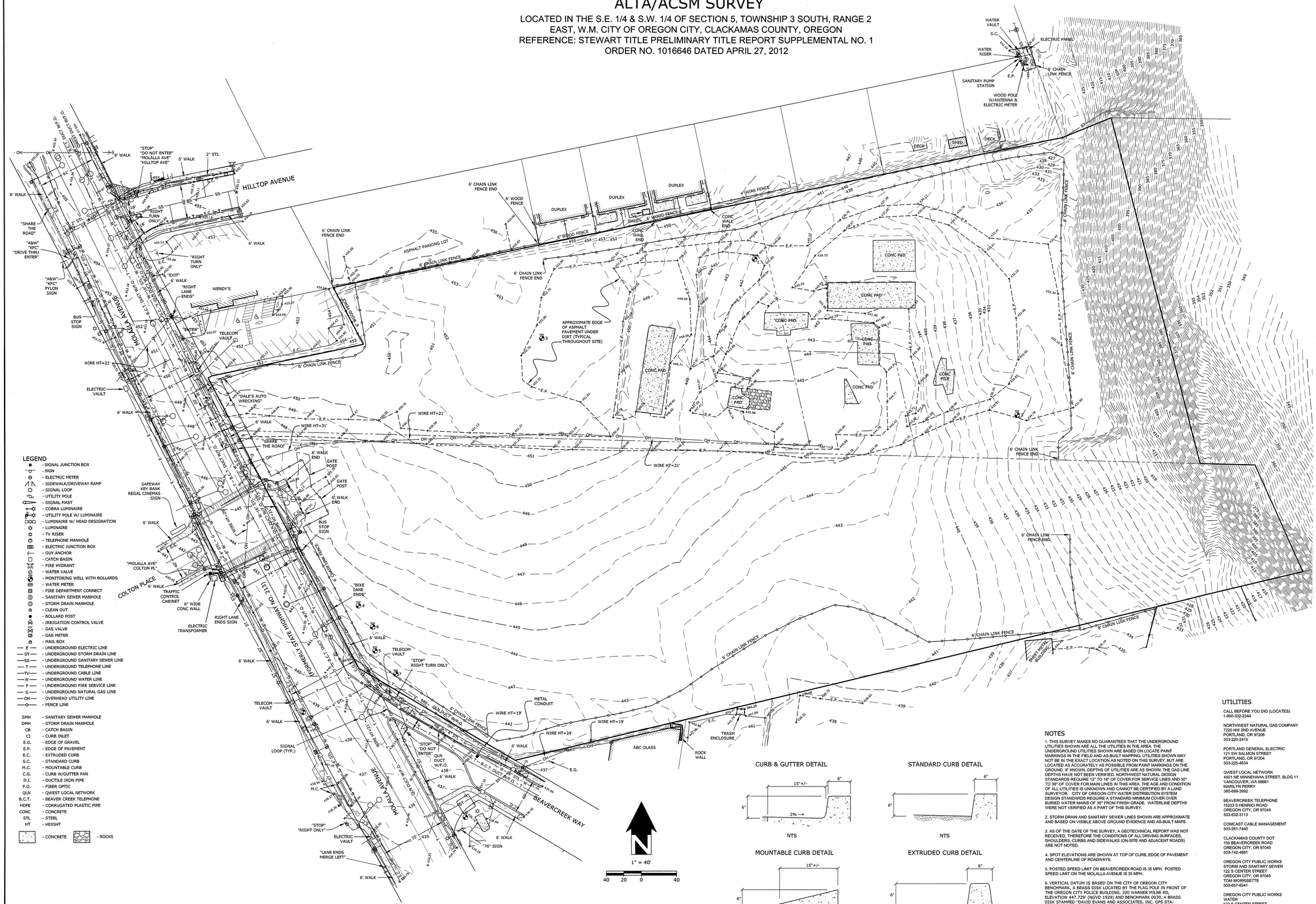
PROJECT NO. 3051-00: 2689
DRAWN BY: JBJ
DATE: 07-09-12
CHECKED BY: RHG

TITLE EXCEPTIONS

SHEET 2
OF 5

ALTA/ACSM SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON
REFERENCE: STEWART TITLE PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 1
ORDER NO. 1016646 DATED APRIL 27, 2012



LEGEND

- SIGNAL JUNCTION BOX
- SIGN
- ELECTRIC METER
- SIDEWALK/DRIVEWAY RAMP
- SIGNAL LOOP
- UTILITY POLE
- SIGNAL MAST
- COBRA LUMINAIRE
- UTILITY POLE W/ LUMINAIRE
- LUMINAIRE W/ HEAD DESIGNATION
- LUMINAIRE
- TV RISER
- TELEPHONE MANHOLE
- ELECTRIC JUNCTION BOX
- GUY ANCHOR
- CATCH BASIN
- FIRE HYDRANT
- WATER VALVE
- MONITORING WELL WITH BOLLARDS
- WATER METER
- FIRE DEPARTMENT CONNECT
- SANITARY SEWER MANHOLE
- STORM DRAIN MANHOLE
- CLEAN OUT
- BOLLARD POST
- IRRIGATION CONTROL VALVE
- GAS VALVE
- GAS METER
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- W — UNDERGROUND WATER LINE
- F — UNDERGROUND FIRE SERVICE LINE
- G — UNDERGROUND NATURAL GAS LINE
- OH — OVERHEAD UTILITY LINE
- FENCE LINE

SMH	SANITARY SEWER MANHOLE
DMH	STORM DRAIN MANHOLE
CB	CATCH BASIN
CI	CURB INLET
E.G.	EDGE OF GRAVEL
E.P.	EDGE OF PAVEMENT
E.C.	EXTRUDED CURB
S.C.	STANDARD CURB
M.C.	MOUNTABLE CURB
C.G.	CURB W/GUTTER PAN
D.I.	DUCTILE IRON PIPE
F.O.	FIBER OPTIC
QLN	QWEST LOCAL NETWORK
B.C.T.	BEAVER CREEK TELEPHONE
HDPE	CORRUGATED PLASTIC PIPE
CONC	CONCRETE
STL	STEEL
HT	HEIGHT

- CONCRETE
- ROCKS

CURB & GUTTER DETAIL

NTS

STANDARD CURB DETAIL

NTS

MOUNTABLE CURB DETAIL

NTS

EXTRUDED CURB DETAIL

NTS

NOTES

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UTILITIES

CALL BEFORE YOU DIG (LOCATES)
1-800-332-2344

NORTHWEST NATURAL GAS COMPANY
7220 NW 2ND AVENUE
PORTLAND, OR 97206
503-220-2415

PORTLAND GENERAL ELECTRIC
121 SW SALMON STREET
PORTLAND, OR 97204
503-225-4634

QWEST LOCAL NETWORK
4501 NE MINNEHAHA STREET, BLDG 11
VANCOUVER, WA 98661
MARILYN PERRY
360-696-3992

BEAVERCREEK TELEPHONE
15223 S HENRICI ROAD
OREGON CITY, OR 97045
503-632-3113

COMCAST CABLE MANAGEMENT
503-261-7440

CLACKAMAS COUNTY DOT
150 BEAVERCREEK ROAD
OREGON CITY, OR 97045
503-742-4681

OREGON CITY PUBLIC WORKS
STORM AND SANITARY SEWER
122 S CENTER STREET
OREGON CITY, OR 97045
TOM MORRISETTE
503-657-8241

OREGON CITY PUBLIC WORKS
WATER
122 S CENTER STREET
OREGON CITY, OR 97045
SCOTT KATRENA
503-657-8241

REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
DECEMBER 15, 2007
RYAN H. GODSEY
65604
RENEWS: 6/30/13

OREGON CITY
PROJECT NO. 3051-00

PACLAND
6400 SE LAKE ROAD, SUITE 300
PORTLAND, OR 97222

CES|NW
13190 SW 68TH PKWY, STE 150
TIGARD, OREGON 97223
(503)968-6655 www.cesnw.com

REVISIONS
7-13-12 UPDATED TO REFLECT COMMENTS

DATE: 07-09-12
CHECKED BY: RHG

PROJECT NO. 3051-00: 2689
DRAWN BY: JBJ

2689-ALTA.DWG

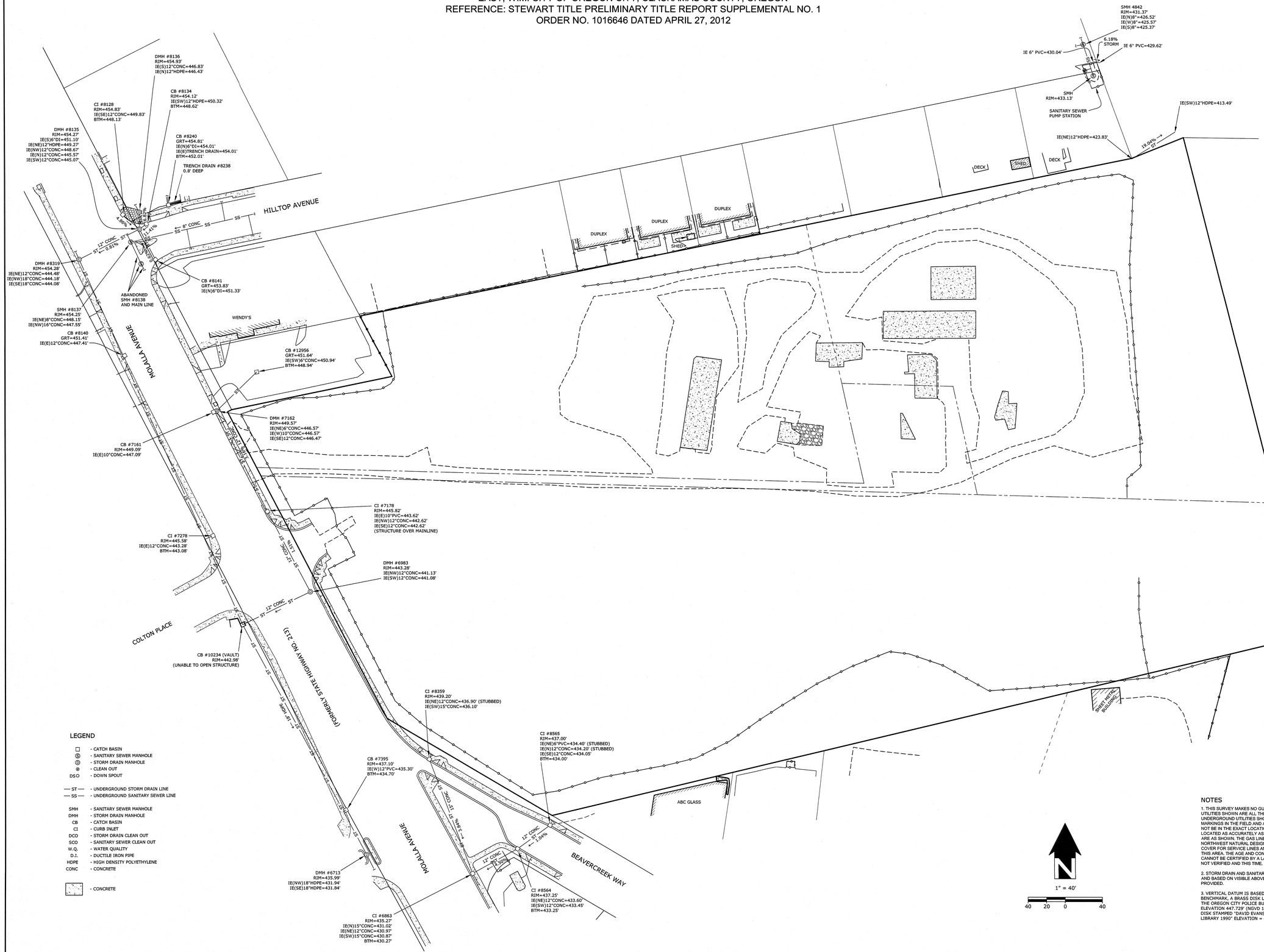
ALTA SURVEY

TOPOGRAPHIC SURVEY

SHEET 3
OF 5

ALTA/ACSM SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2
EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON
REFERENCE: STEWART TITLE PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 1
ORDER NO. 1016646 DATED APRIL 27, 2012



LEGEND

- □ - CATCH BASIN
- Ⓢ - SANITARY SEWER MANHOLE
- Ⓒ - STORM DRAIN MANHOLE
- ⊕ - CLEAN OUT
- DSO - DOWN SPOUT
- — ST — - UNDERGROUND STORM DRAIN LINE
- — SS — - UNDERGROUND SANITARY SEWER LINE
- SMH - SANITARY SEWER MANHOLE
- DMH - STORM DRAIN MANHOLE
- CB - CATCH BASIN
- CI - CURB INLET
- DCO - STORM DRAIN CLEAN OUT
- SCO - SANITARY SEWER CLEAN OUT
- W.Q. - WATER QUALITY
- D.I. - DUCTILE IRON PIPE
- HDPE - HIGH DENSITY POLYETHYLENE
- CONC - CONCRETE
- - CONCRETE

NOTES

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REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
DECEMBER 13, 2007
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ALTA SURVEY

REVISIONS

2689-ALTA.DWG

PROJECT NO.: 3051-00 | DATE: 07-09-12
DRAWN BY: JBP | CHECKED BY: RGG

STORM AND SANITARY SEWER

SHEET 4
OF 5

ALTA/ACSM SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2
EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON
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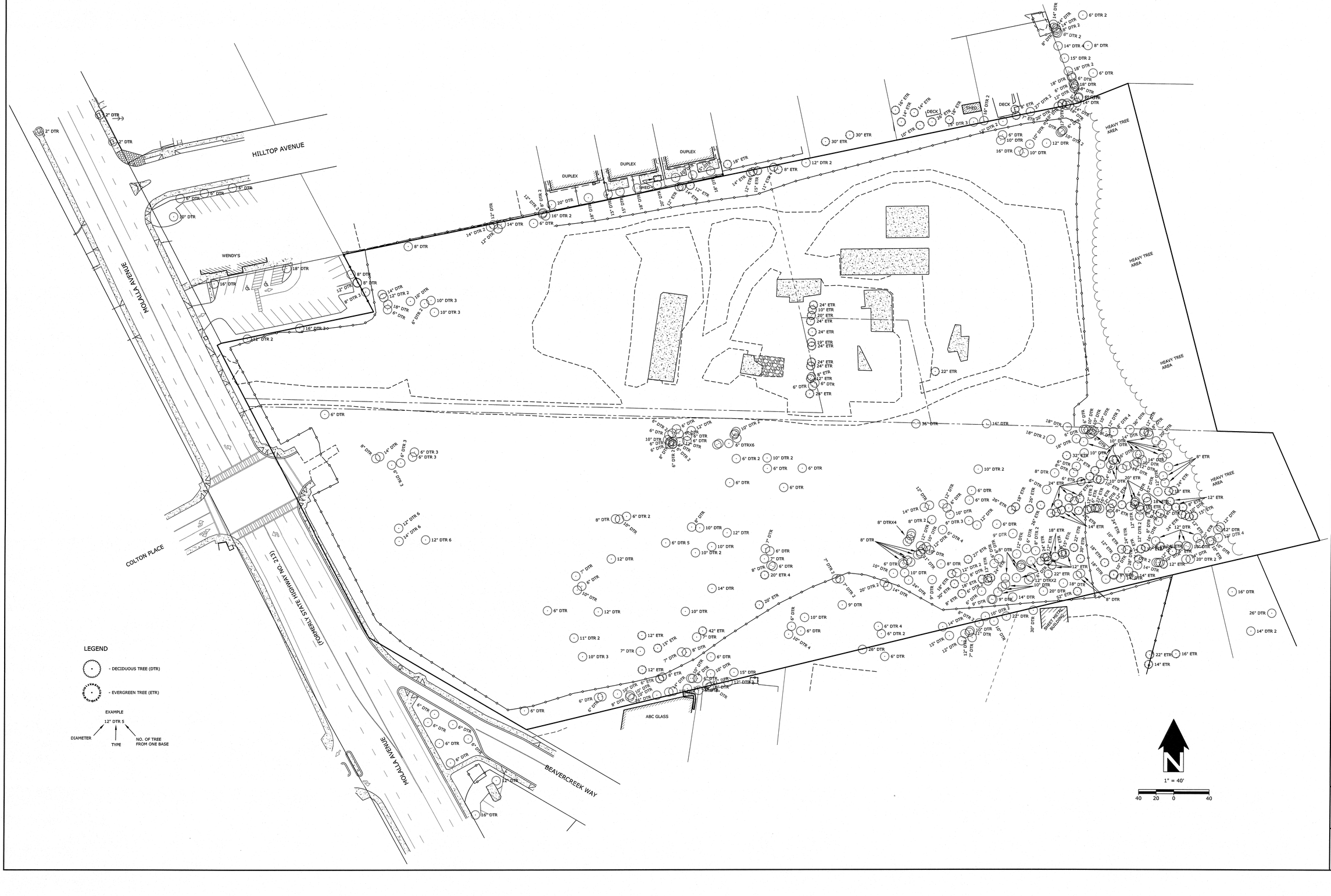

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ALTA SURVEY

TREE SURVEY

REVISIONS

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2689-ALTA.DWG

SHEET 5
OF 5

TOPOGRAPHIC SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2
EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON

TOPOGRAPHIC SURVEY

LEGEND

- SIGN
- ELECTRIC METER
- SIDEWALK/DRIVEWAY RAMP
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- UTILITY POLE
- SIGNAL MAST
- COBRA LUMINAIRE
- UTILITY POLE W/ LUMINAIRE
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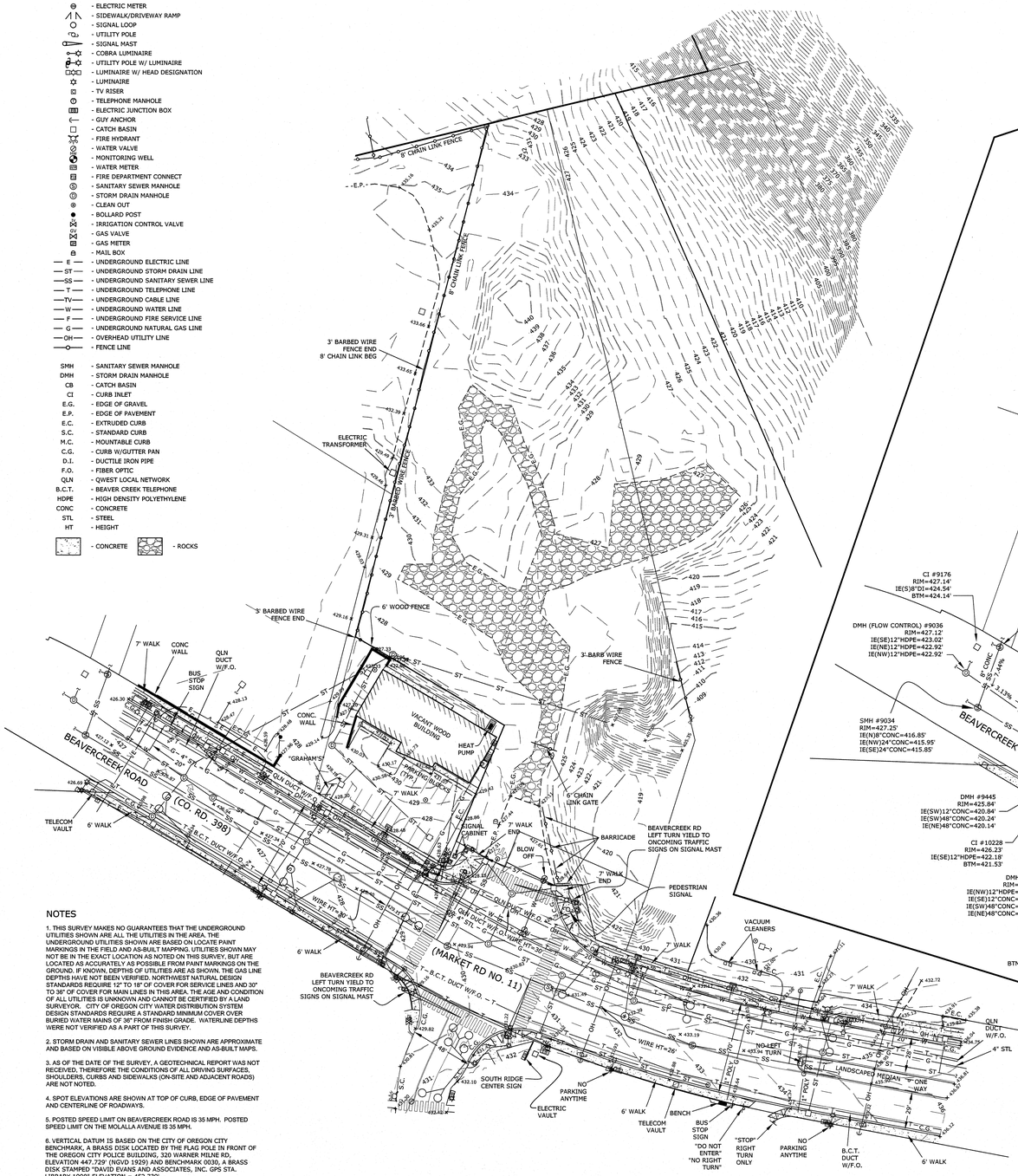

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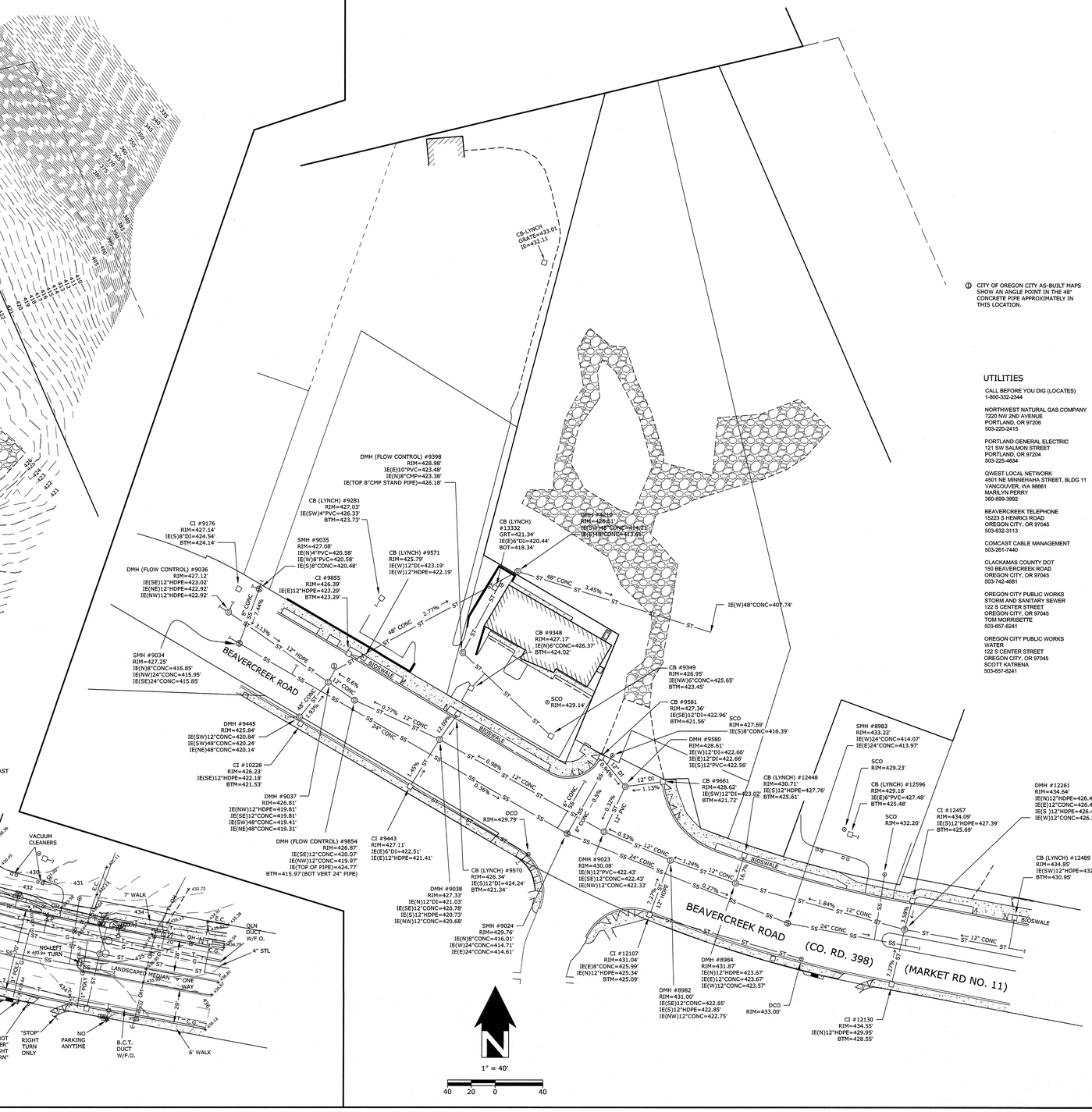
STORM AND SANITARY SEWER



① CITY OF OREGON CITY AS-BUILT MAPS SHOW AN ANGLE POINT IN THE 48" CONCRETE PIPE APPROXIMATELY IN THIS LOCATION.

UTILITIES

CALL BEFORE YOU DIG (LOCATES)
1-800-332-2344

NORTHWEST NATURAL GAS COMPANY
7220 NW 2ND AVENUE
PORTLAND, OR 97206
503-220-2415

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OREGON CITY PUBLIC WORKS
WATER
122 S CENTER STREET
OREGON CITY, OR 97045
SCOTT KATRENA
503-657-8241

1" = 40'
40 20 0 40

REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
DECEMBER 13, 2007
RYAN H. GODSEY
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(503)968-6655 www.cesnw.com

TOPOGRAPHIC SURVEY

REVISIONS	DATE:	CHECKED BY:
7-13-12 REVISED ADA RAMP PER COMMENTS	07-09-12	KNG

2689-ALTA.DWG

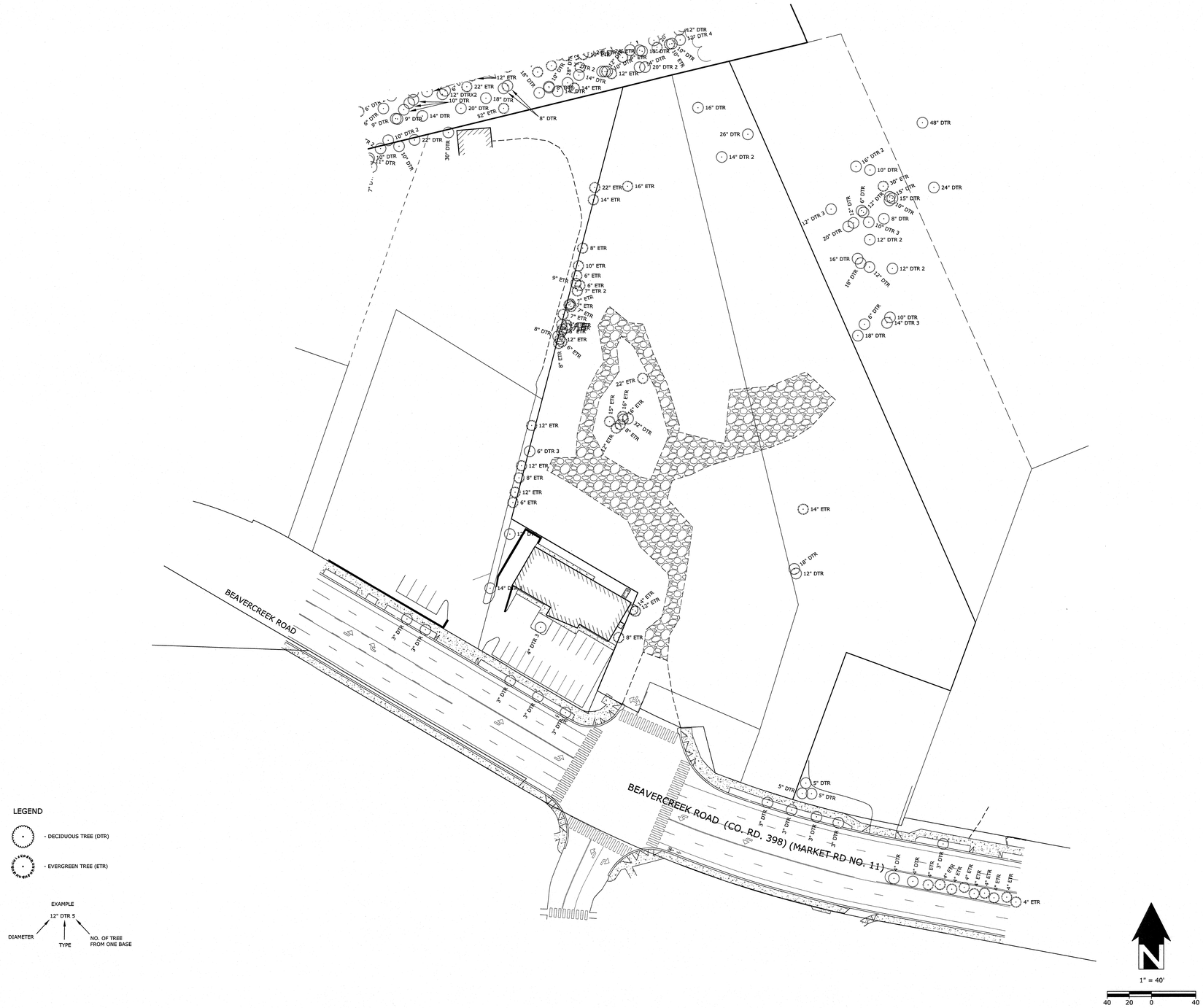
PROJECT NO. 3051-00
2689
DRAWN BY: JBO

TOPOGRAPHIC SURVEY

SHEET 1
OF 3

TOPOGRAPHIC SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2
EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON



REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
DECEMBER 13, 2007
RYAN H. GODSEY
65604
RENEWS: 6/30/13

OREGON CITY
PROJECT NO. 3051-00

PACLAND
6400 SE LAKE ROAD, SUITE 300
PORTLAND, OR 97222

CES|NW
13190 SW 68TH PKWY, STE 150
TIGARD, OREGON 97223
(503)968-6655 www.cesnw.com

TOPOGRAPHIC SURVEY

REVISIONS

2689-ALTA.DWG

PROJECT NO. 3051-00: 2689
DATE: 07-09-12
DRAWN BY: JBJ
CHECKED BY: RHG

TREE SURVEY

SHEET 2 OF 3

TOPOGRAPHIC SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON

SPECIAL EXCEPTIONS AS SHOWN ON PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 2, ORDER NUMBER 01049-4020, DATED JUNE 13, 2012

6. CITY LIENS, IF ANY, OF THE CITY OF OREGON CITY.

7. ACCORDING TO THE RECORD, THE SUBJECT PROPERTY APPEARS TO LIE WITHIN THE BOUNDARIES OF THE OREGON CITY URBAN RENEWAL/NEIGHBORHOOD DEVELOPMENT DISTRICT OF THE CITY OF OREGON CITY.

8. EASEMENT AND THE TERMS AND CONDITIONS THEREOF:
   GRANTEE: METRO, A MUNICIPAL CORPORATION
   PURPOSE: ACCESS EASEMENT
   AFFECTS: TAX LOT 500 AND THE NORTHERLY PORTION OF TAX LOT 401
   RECORDED: MAY 21, 1998
   FEE NO.: 98044597
(15' WIDE ACCESS EASEMENT - LOCATION NOT CLEARLY DEFINED)

9. EASEMENT AND THE TERMS AND CONDITIONS THEREOF:
   GRANTEE: STEVEN N. MOLNER
   PURPOSE: PRIVATE UTILITY EASEMENT
   AFFECTS: PORTION OF TAX LOT 401
   RECORDED: SEPTEMBER 10, 1999
   FEE NO.: 99089214
(PLOTTED)

10. ORDINANCE NO. 00-1013 AND THE TERMS AND CONDITIONS THEREOF:
    RECORDED: MAY 18, 2000
    RECORDING NO.: 2000032147
(NOT SURVEY RELATED)

11. ANY UNRECORDED LEASEHOLDS, RIGHT OF VENDORS AND HOLDERS OF SECURITY INTEREST ON PERSONAL PROPERTY INSTALLED UPON SAID PROPERTY, AND RIGHT OF TENANTS TO REMOVE TRADE FIXTURES AT THE EXPIRATION OF THE TERM.

12. THE ATTACHED COMMERCIAL TITLE AFFIDAVIT MUST BE COMPLETED IN FULL, NOTARIZED, AND SUBMITTED TO THE COMPANY FOR REVIEW PRIOR TO CLOSING.

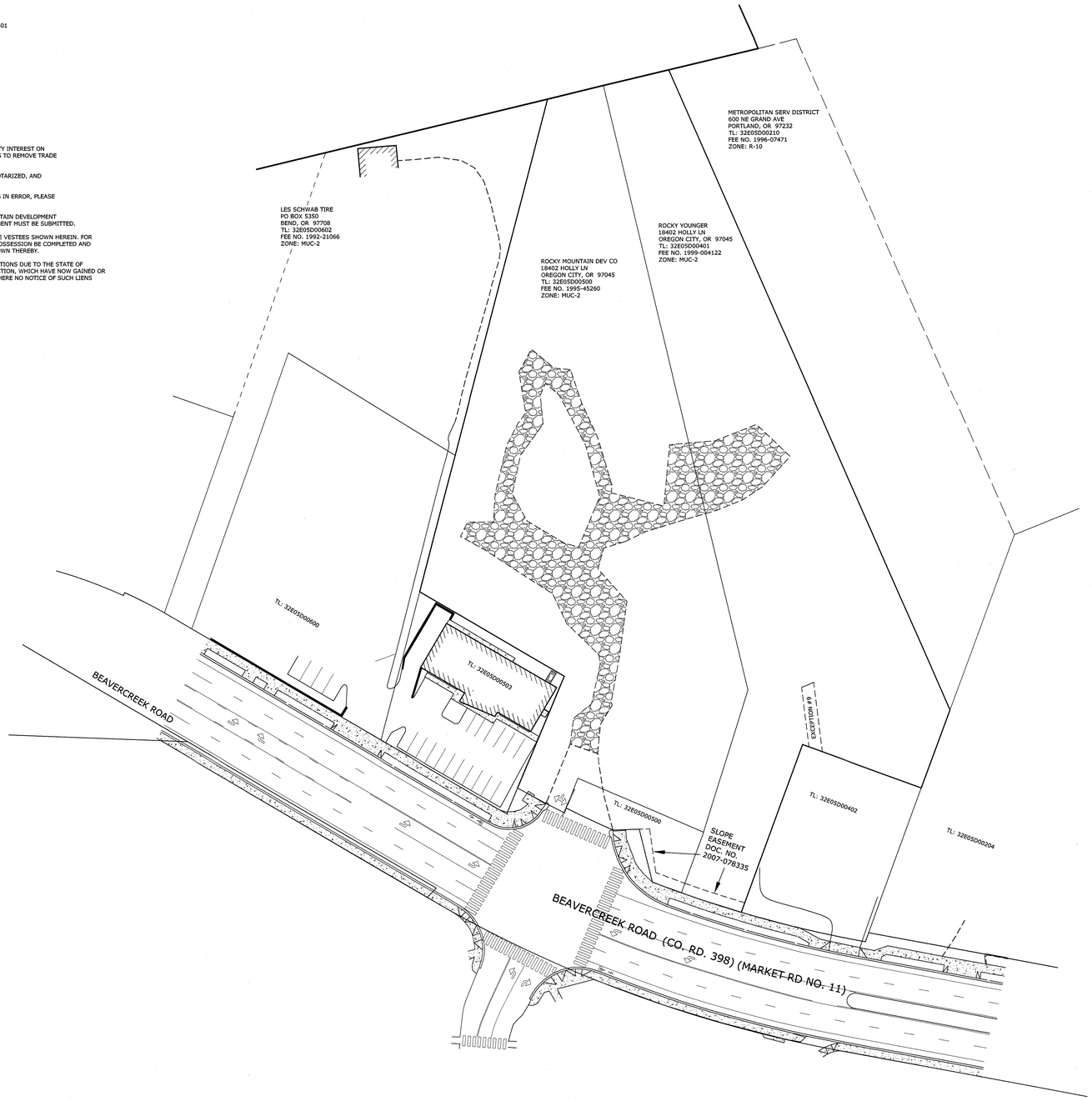
13. WE FIND NO TRUST DEEDS OF RECORD FOR THIS PROPERTY. IF THE COMPANY IS IN ERROR, PLEASE NOTIFY YOUR TITLE OFFICER IMMEDIATELY.

14. EVIDENCE OF THE IDENTITY AND AUTHORITY OF THE OFFICERS OF ROCKY MOUNTAIN DEVELOPMENT COMPANY, AS OREGON CORPORATION TO EXECUTE THE FORTHCOMING INSTRUMENT MUST BE SUBMITTED.

15. PARTIES IN POSSESSION, OR CLAIMING TO BE IN POSSESSION, OTHER THAN THE VESTEES SHOWN HEREIN. FOR PURPOSE OF ALTA EXTENDED COVERAGE, WE WILL REQUIRE AN AFFIDAVIT OF POSSESSION BE COMPLETED AND RETURNED TO US. EXCEPTION MAY BE TAKEN TO SUCH MATTERS AS MAY BE SHOWN THEREBY.

16. STATUTORY LIENS FOR LABOR OR MATERIALS, INCLUDING LIENS FOR CONTRIBUTIONS DUE TO THE STATE OF OREGON FOR UNEMPLOYMENT COMPENSATION AND FOR WORKMEN'S COMPENSATION, WHICH HAVE NOW GAINED OR HEREAFTER MAY GAIN PRIORITY OVER THE LIEN OF THE INSURED MORTGAGE WHERE NO NOTICE OF SUCH LIENS APPEAR OF RECORD.

TL = TAX LOT NUMBER, CLACKAMAS COUNTY



N

1" = 40'

40 20 0 40

REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
DECEMBER 13, 2007
RYAN H. GODSEY
65604
RENEWS: 6/30/13

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TOPOGRAPHIC SURVEY

REVISIONS

2689-ALTA.DWG

EASEMENTS

PROJECT NO. 3051-00: 2689
DRAWN BY: JBJ
DATE: 07-09-12
CHECKED BY: RHG

SHEET 3
OF 3

CYPRESS EQUITIES OREGON CITY MIXED USE MASTERPLAN - DETAILED DEVELOPMENT PLAN

1367 MOLALLA AVENUE
OREGON CITY, OR 97045



VICNITY MAP
NTS



LOCATION MAP
NTS

PROPERTY DESCRIPTION

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON

VERTICAL BENCHMARK

VERTICAL DATUM IS BASED ON THE CITY OF OREGON CITY BENCHMARK, A BRASS DISK LOCATED BY THE FLAG POLE IN FRONT OF THE OREGON CITY POLICE BUILDING, 320 WARNER MILNE ROAD, ELEVATION 447.729' (NGVD 1929) AND BENCHMARK 0030, A BRASS DISK STAMPED "DAVID EVANS AND ASSOCIATES, INC. GPS STA. LIBRARY 1990".
ELEVATION = 452.739'.

SURVEY MONUMENT PROTECTION

EXISTING SURVEY MONUMENT ARE TO BE PROTECTED DURING CONSTRUCTION OR REPLACED IN ACCORDANCE WITH OREGON REVISED STATUTES 209.140 – 209.155.

GENERAL NOTES

1. ALL WORK AND MATERIALS SHALL COMPLY WITH ALL OREGON CITY REGULATIONS AND CODES AND O.S.H.A. STANDARDS, INCLUDING BUT NOT LIMITED TO THE CURRENT OREGON CITY ROAD DESIGN AND CONSTRUCTION STANDARDS, CLEAN WATER SERVICES DESIGN AND CONSTRUCTION STANDARDS, THE OREGON TRANSPORTATION COMMISSION STANDARDS FOR ACCESSIBLE PARKING DATED AUGUST 2018, AND THE APWA STANDARDS WHICH ARE HEREBY REFERENCED AS PART OF THESE PLANS.

2. THE DESIGN SHOWN IS BASED UPON THE ENGINEER'S UNDERSTANDING OF THE EXISTING CONDITIONS. THE PLAN DOES NOT REPRESENT A DETAILED FIELD SURVEY. THE EXISTING CONDITIONS SHOWN ON THIS PLAN SHEET ARE BASED UPON THE ALTA SURVEY PREPARED BY CES | NW, DATED JULY 9, 2012. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING FIELD CONDITIONS PRIOR TO BIDDING THE PROPOSED SITEWORK IMPROVEMENTS. IF CONFLICTS ARE DISCOVERED, THE CONTRACTOR SHALL NOTIFY THE OWNER/DEVELOPER PRIOR TO INSTALLATION OF ANY PORTION OF THE SITEWORK WHICH WOULD BE AFFECTED. IF CONTRACTOR DOES NOT ACCEPT EXISTING SURVEY, INCLUDING TOPOGRAPHY AS SHOWN ON THE PLANS, WITHOUT EXCEPTION, HE SHALL HAVE MADE, AT HIS OWN EXPENSE, A TOPOGRAPHIC SURVEY BY A REGISTERED LAND SURVEYOR AND SUBMIT IT TO THE OWNER FOR REVIEW.

3. CAUTION – NOTICE TO CONTRACTOR
THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 48 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.

4. IN THE EVENT OF CONFLICTS BETWEEN THE VARIOUS PROVISIONS OF THIS PLAN SET, THE MORE STRINGENT PROVISION APPLY.

5. ATTENTION: OREGON LAW REQUIRES YOU TO FOLLOW RULES ADOPTED BY THE OREGON UTILITY NOTIFICATION CENTER. THOSE RULES ARE SET FORTH IN OAR 952–001–0001 (ADOPTION OF MODEL RULES) THROUGH 952–001–0100 (RECORD KEEPING REQUIREMENTS). YOU MAY OBTAIN COPIES OF THE RULES BY CALLING THE CENTER.
NOTES: THE TELEPHONE NUMBER FOR THE OREGON UTILITY NOTIFICATION CENTER IS (503) 232–1987.

6. A ROAD CLOSURE WILL NO BE PERMITTED WITHOUT A SEPARATE ROAD CLOSURE PERMIT THROUGH WASHINGTON COUNTY TRAFFIC ENGINEERING.

7. THE CONTRACTOR, AT THE TIME OF MEETING WITH COUNTY INSPECTION STAFF FOR A PRE–CONSTRUCTION MEETING, SHALL PROVIDE THEIR WORK TRAFFIC CONTROL PLAN.

8. ACCOMMODATE ALL ROAD USERS AT ALL TIMES INCLUDING MOTORISTS, BICYCLISTS, PEDESTRIANS, AND THOSE WITH DISABILITIES OR IMPAIRMENTS. INSTALL AND MAINTAIN ADDITIONAL TEMPORARY SIGNING AND TRAFFIC CONTROL DEVICES FOR THE CONTROL OF NON–MOTORIZED VEHICLES AND PEDESTRIANS WHERE A REASONABLE VOLUME OF THESE USERS ARE EXPECTED AND WHERE WORK IS EXPECTED TO LAST LONGER THAN ONE HOUR. MAINTAIN SAFE ACCESSIBILITY OR PROVIDE SUITABLE ALTERNATE ROUTES IN, THROUGH, OR AROUND WORK AREAS.

9. ESTABLISH AND MAINTAIN WORK ZONE TRAFFIC CONTROL IN COMPLIANCE WITH THE OREGON TEMPORARY TRAFFIC CONTROL HANDBOOK FOR OPERATIONS OF THREE DAYS OR LESS (DECEMBER 2011) ANY TIME VEHICLE OR PEDESTRIAN TRAFFIC IS INFLUENCED BY THE WORK. FOR WORK REQUIRING DEVICES IN PLACE LONGER THAN THREE (3) DAYS, A SITE SPECIFIC TRAFFIC CONTROL PLAN BASED ON THE PRINCIPLES IN PART 6 OF THE MUTCD, THE OREGON SUPPLEMENT AND ODOT'S 2015 STANDARD DRAWINGS TM800 – TM871, IS REQUIRED. ALL TRAFFIC CONTROL DEVICES SHALL MEET OR EXCEED THE NCHRP 350 REQUIREMENTS FOR CRASHWORTHINESS. COMPLETED SIGNAL SHUT DOWN REQUESTS MUST BE RECEIVED BY THE COUNTY A MINIMUM OF 3 WORKING DAYS PRIOR TO ANY PROPOSED SIGNAL SHUT DOWN.

PROJECT CONTACTS

CONSULTANTS

CIVIL ENGINEER:
LANGAN ENGINEERING
10135 SE SUNNYSIDE RD., SUITE 200
CLACKAMAS, OR 97015
(503) 680–0029
CONTACT: SCOTT FRANKLIN, PE

SURVEYOR
CES | NW
15115 SW SEQUOIA PARKWAY, SUITE 150
TIGARD, OR 97224
(503) 684–0652
CONTACT: RYAN GODSEY

LANDSCAPE ARCHITECT
LANGAN ENGINEERING
18575 JAMBOREE ROAD, SUITE 150
IRVINE, CA 92612
(949) 255–8640
CONTACT: ANNA ILAO

CULTURAL RESOURCES
LANGAN ENGINEERING
104 W ANAPAMU STREET, SUITE 204B
SANTA BARBARA, CA 93101
(805) 957–6013
CONTACT: HEATHER MCDANIEL MCDEVITT

WETLANDS
LANGAN ENGINEERING
104 W ANAPAMU STREET, SUITE 204B
SANTA BARBARA, CA 93101
(805) 957–6034
CONTACT: STEVEN NEUMANN

APPLICANT/DEVELOPER

CYPRESS ACQUISITIONS, LLC
8144 WALNUT HILL LANE, SUITE 1200
DALLAS, TX 75231
(214) 561–8838
CONTACT: KIRK WILLIAMS

GOVERNING AGENCY

OREGON CITY PUBLIC WORKS DEPARTMENT
13895 FIR STREET
OREGON CITY, OR 97045
(503) 204–4631
CONTACT: ERIK NICHOLS

TRAFFIC

TRANSPO GROUP
12131 113TH AVENUE NE, SUITE 203
KIRKLAND, WA 98034
(425) 896–5208
CONTACT: MIKE SWENSON PE, PTOE
KASSI LEINGANG PE

SHEET INDEX

DDP-C0.0	CIVIL COVER SHEET
DDP-C0.1	PRELIMINARY ROUGH GRADING AND EROSION CONTROL PLAN
DDP-C1.0	CIVIL SITE PLAN
DDP-C1.1	MOLALLA AVENUE STREET PLAN AND TYPICAL SECTIONS
DDP-C1.2	PROPOSED PUBLIC ROAD PLAN, PROFILE, AND TYPICAL SECTIONS
DDP-C1.3	PROPOSED PUBLIC ROAD PLAN, PROFILE, AND TYPICAL SECTIONS
DDP-C1.4	TRUCK TURNING - LEFT TURN ONTO BEAVERCREEK ROAD
DDP-C1.5	TRUCK TURNING - RIGHT TURN ONTO BEAVERCREEK ROAD
DDP-C2.0	PRELIMINARY CIVIL GRADING AND DRAINAGE PLAN
DDP-C3.0	PRELIMINARY CIVIL UTILITY PLAN
DDP-L0.1	TREE REMOVAL PLAN
DDP-L0.2	ARBORIST REPORT MAP
DDP-L0.3	ARBORIST REPORT TABLES
DDP-L1.0	OVERALL LANDSCAPE PLAN
DDP-L2.0	OVERALL LIGHTING PLAN

EXISTING CONDITIONS PLANS

ALTA / BOUNDARY SURVEY SHEETS:

1	BOUNDARY SURVEY
2	TITLE EXCEPTIONS
3	TOPOGRAPHIC SURVEY
4	STORM AND SANITARY SEWER
5	TREE SURVEY

OFF-SITE TOPOGRAPHIC SURVEY SHEETS:

1	TOPOGRAPHIC SURVEY
2	TREE SURVEY
3	EASEMENTS

Know what's **below.**
Call before you dig.

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Langan Engineering, Environmental, Surveying, Landscape Architecture, and Geology, D.P.C.
10135 SE Sunnyside Road Suite 200
Clackamas, OR 97015
T: 503.659.9500 www.langan.com

CLIENT/OWNER
CYPRESS EQUITIES

PROJECT NAME
OREGON CITY MIXED USE DETAILED DEVELOPMENT PLAN

LANGAN PROJECT NUMBER: 794-002-701
PROJECT ADDRESS
1367 MOLALLA AVENUE
OREGON CITY, OR 97045

STAMP

REVISIONS

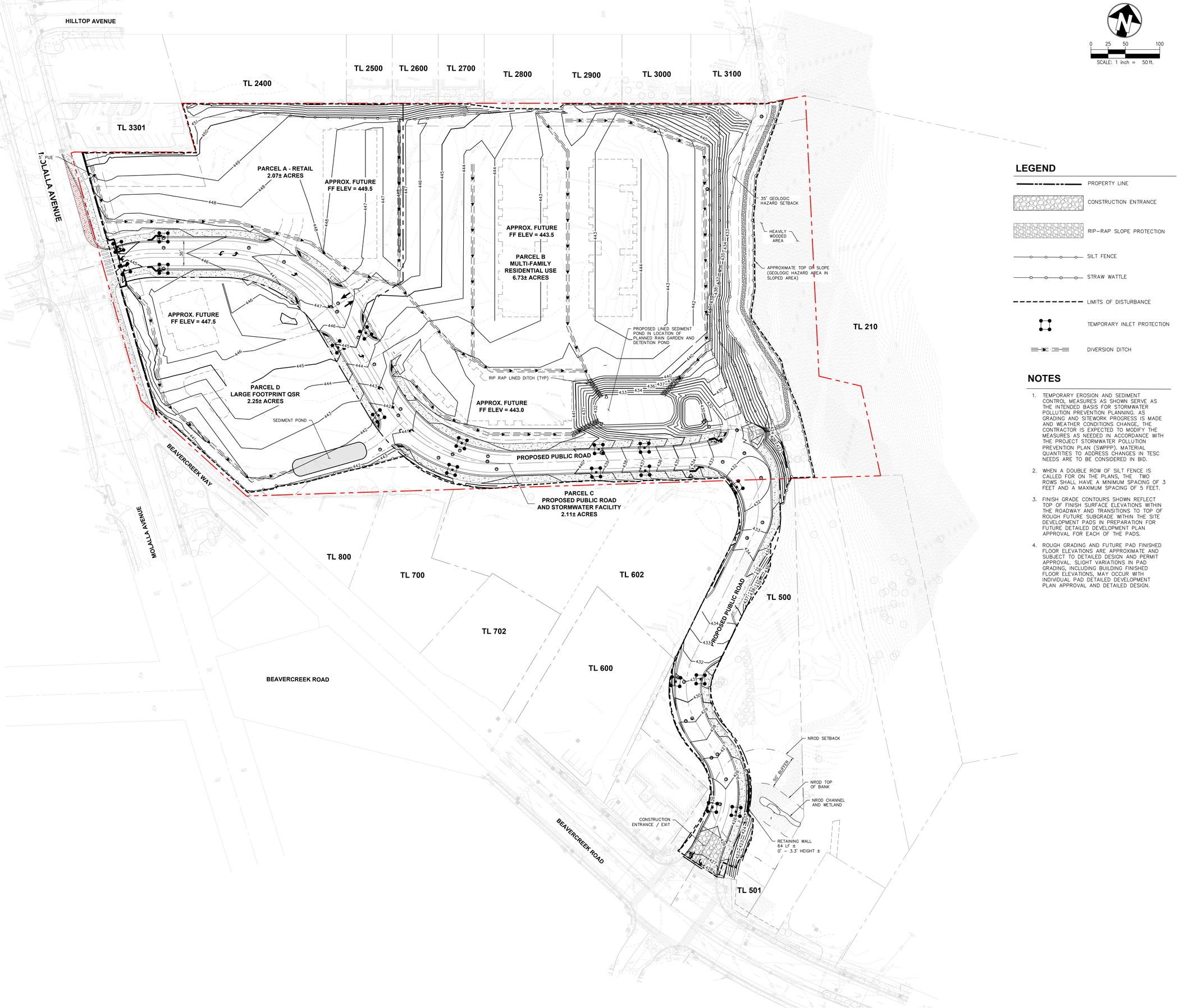
REV	ISSUED FOR:	DATE
0	DDP SUBMITTAL	11/14/2025
1	DDP SUBMITTAL	12/09/2025
2	DDP SUBMITTAL	03/02/2026

SECTION, TOWNSHIP, RANGE:
SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME
CIVIL COVER SHEET

SHEET NUMBER
DDP-C0.0



0 25 50 100

SCALE: 1 inch = 50 ft.

LEGEND

- PROPERTY LINE
- CONSTRUCTION ENTRANCE
- RIP–RAP SLOPE PROTECTION
- SILT FENCE
- STRAW WATTLE
- LIMITS OF DISTURBANCE
- TEMPORARY INLET PROTECTION
- DIVERSION DITCH

NOTES

1. TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES AS SHOWN SERVE AS THE INTENDED BASIS FOR STORMWATER POLLUTION PREVENTION PLANNING. AS GRADING AND SITEWORK PROGRESS IS MADE AND WEATHER CONDITIONS CHANGE, THE CONTRACTOR IS EXPECTED TO MODIFY THE MEASURES AS NEEDED IN ACCORDANCE WITH THE PROJECT STORMWATER POLLUTION PREVENTION PLAN (SWPPP). MATERIAL QUANTITIES TO ADDRESS CHANGES IN TESC NEEDS ARE TO BE CONSIDERED IN BID.
2. WHEN A DOUBLE ROW OF SILT FENCE IS CALLED FOR ON THE PLANS, THE TWO ROWS SHALL HAVE A MINIMUM SPACING OF 3 FEET AND A MAXIMUM SPACING OF 5 FEET.
3. FINISH GRADE CONTOURS SHOWN REFLECT TOP OF FINISH SURFACE ELEVATIONS WITHIN THE ROADWAY AND TRANSITIONS TO TOP OF ROUGH FUTURE SUBGRADE WITHIN THE SITE DEVELOPMENT PADS IN PREPARATION FOR FUTURE DETAILED DEVELOPMENT PLAN APPROVAL FOR EACH OF THE PADS.
4. ROUGH GRADING AND FUTURE PAD FINISHED FLOOR ELEVATIONS ARE APPROXIMATE AND SUBJECT TO DETAILED DESIGN AND PERMIT APPROVAL. SLIGHT VARIATIONS IN PAD GRADING, INCLUDING BUILDING FINISHED FLOOR ELEVATIONS, MAY OCCUR WITH INDIVIDUAL PAD DETAILED DEVELOPMENT PLAN APPROVAL AND DETAILED DESIGN.

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CLIENT/OWNER

CYPRESS EQUITIES

PROJECT NAME

OREGON CITY MIXED USE DETAILED DEVELOPMENT PLAN

LANGAN PROJECT NUMBER: 794-002-701

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SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

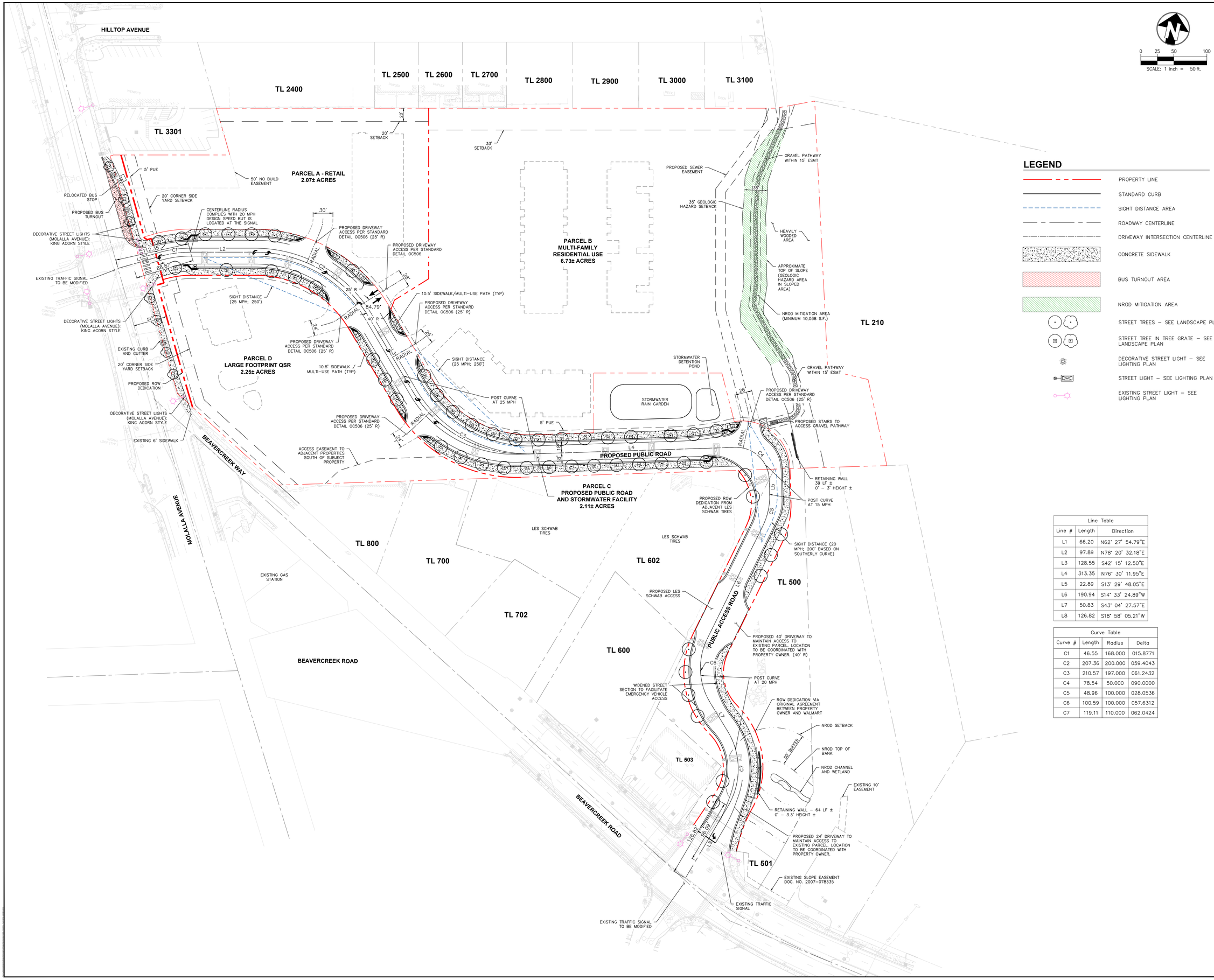
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

PRELIMINARY ROUGH GRADING AND EROSION CONTROL PLAN

SHEET NUMBER

DDP-C0.1



LEGEND

- PROPERTY LINE
- STANDARD CURB
- SIGHT DISTANCE AREA
- ROADWAY CENTERLINE
- DRIVEWAY INTERSECTION CENTERLINE
- CONCRETE SIDEWALK
- BUS TURNOUT AREA
- NROD MITIGATION AREA
- STREET TREES – SEE LANDSCAPE PLAN
- STREET TREE IN TREE GRATE – SEE LANDSCAPE PLAN
- DECORATIVE STREET LIGHT – SEE LIGHTING PLAN
- STREET LIGHT – SEE LIGHTING PLAN
- EXISTING STREET LIGHT – SEE LIGHTING PLAN

Line Table		
Line #	Length	Direction
L1	66.20	N62° 27' 54.79"E
L2	97.89	N78° 20' 32.18"E
L3	128.55	S42° 15' 12.50"E
L4	313.35	N76° 30' 11.95"E
L5	22.89	S13° 29' 48.05"E
L6	190.94	S14° 33' 24.89"W
L7	50.83	S43° 04' 27.57"E
L8	126.82	S18° 58' 05.21"W

Curve Table			
Curve #	Length	Radius	Delta
C1	46.55	168.000	015.8771
C2	207.36	200.000	059.4043
C3	210.57	197.000	061.2432
C4	78.54	50.000	090.0000
C5	48.96	100.000	028.0536
C6	100.59	100.000	057.6312
C7	119.11	110.000	062.0424

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CLIENT/OWNER

CYPRESS EQUITIES

PROJECT NAME

OREGON CITY MIXED USE DETAILED DEVELOPMENT PLAN

LANGAN PROJECT NUMBER: 794-002-701

PROJECT ADDRESS

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SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

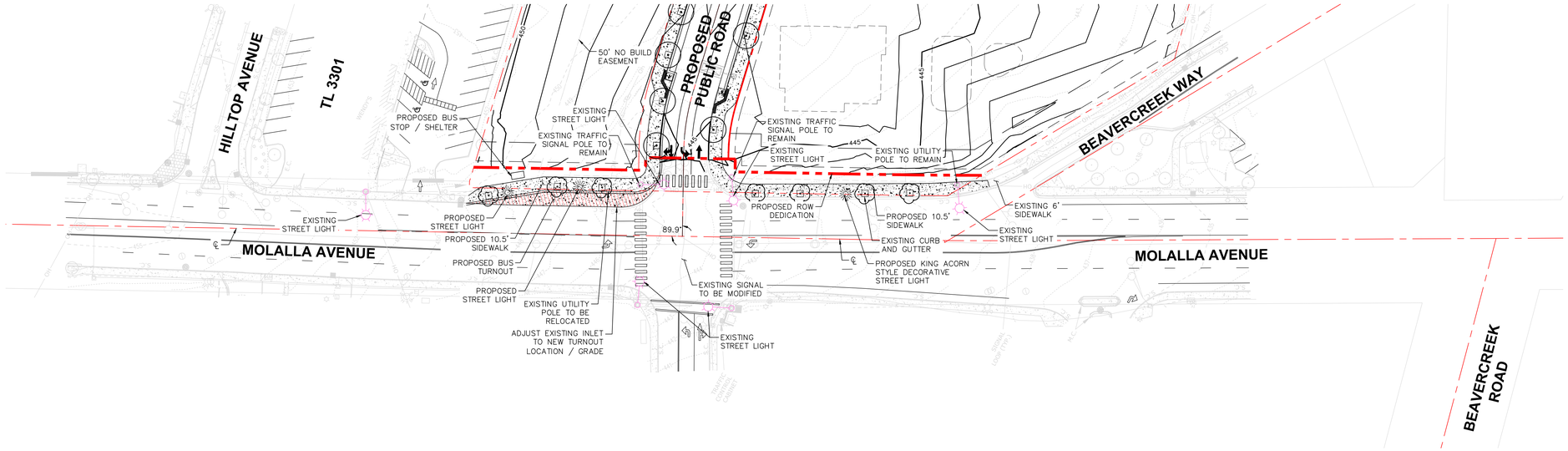
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

CIVIL SITE PLAN

SHEET NUMBER

DDP-C1.0

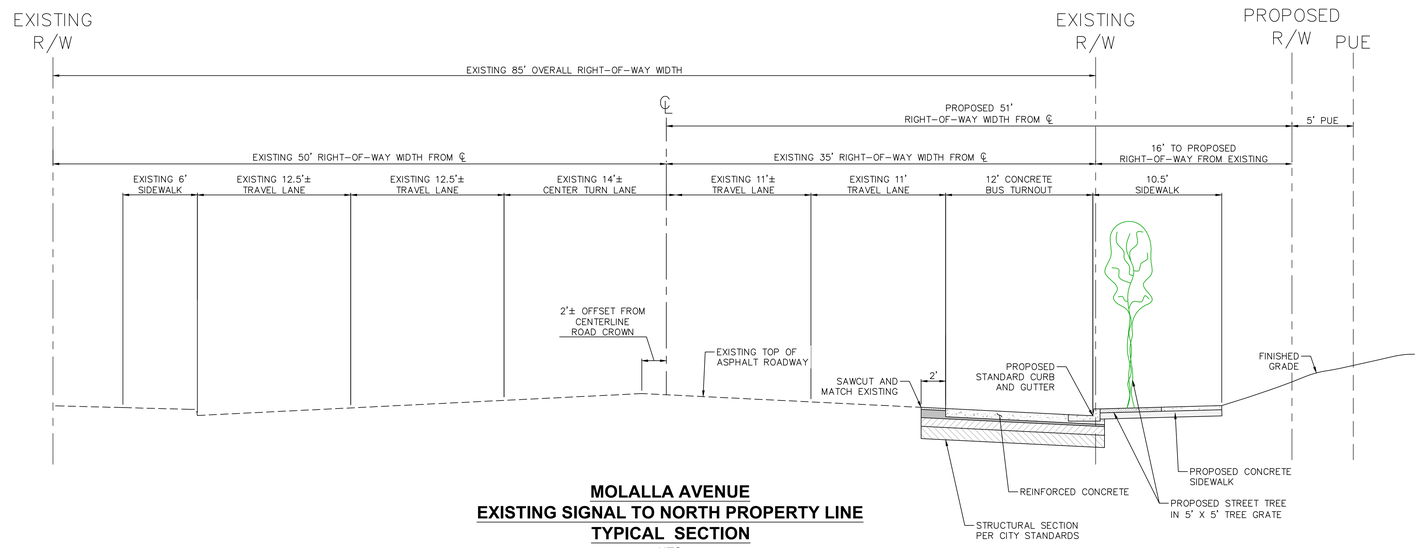


0 20 40 80

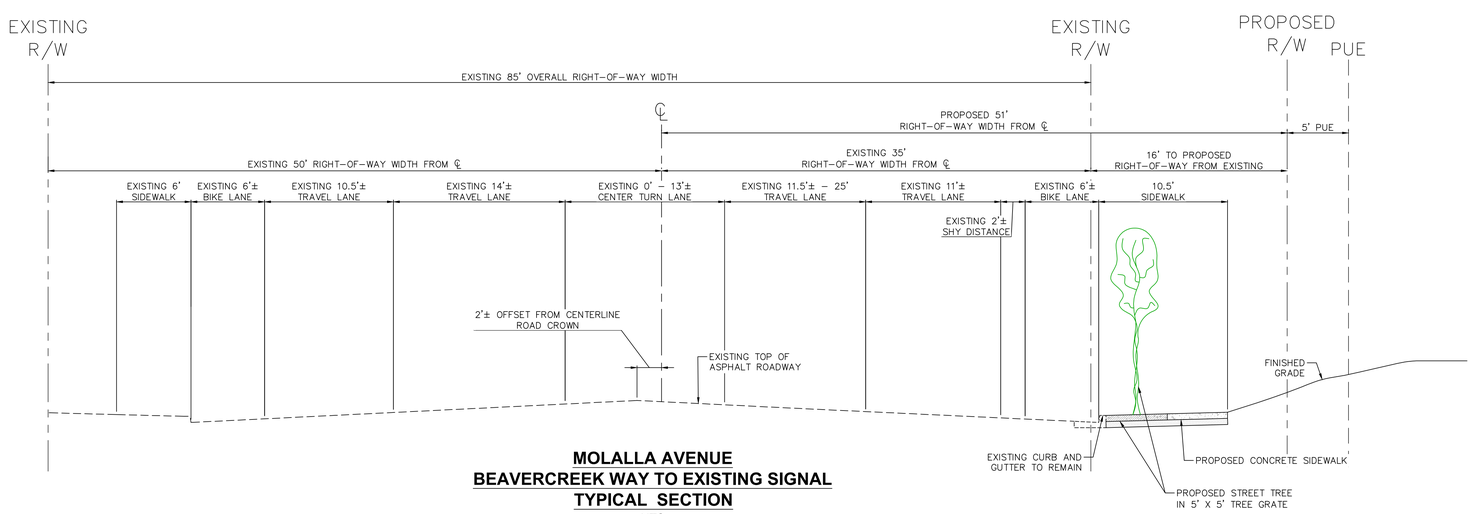
SCALE: 1 inch = 40 ft.

LEGEND

- PROPERTY LINE
- STANDARD CURB
- ROAD CENTER LINE
- 5' PUE
- CONCRETE SIDEWALK
- STREET TREE IN TREE GRATE – SEE LANDSCAPE PLAN
- DECORATIVE STREET LIGHT – SEE LIGHTING PLAN
- STREET LIGHT – SEE LIGHTING PLAN
- EXISTING STREET LIGHT – SEE LIGHTING PLAN



MOLALLA AVENUE
EXISTING SIGNAL TO NORTH PROPERTY LINE
TYPICAL SECTION
NTS



MOLALLA AVENUE
BEAVERCREEK WAY TO EXISTING SIGNAL
TYPICAL SECTION
NTS

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SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

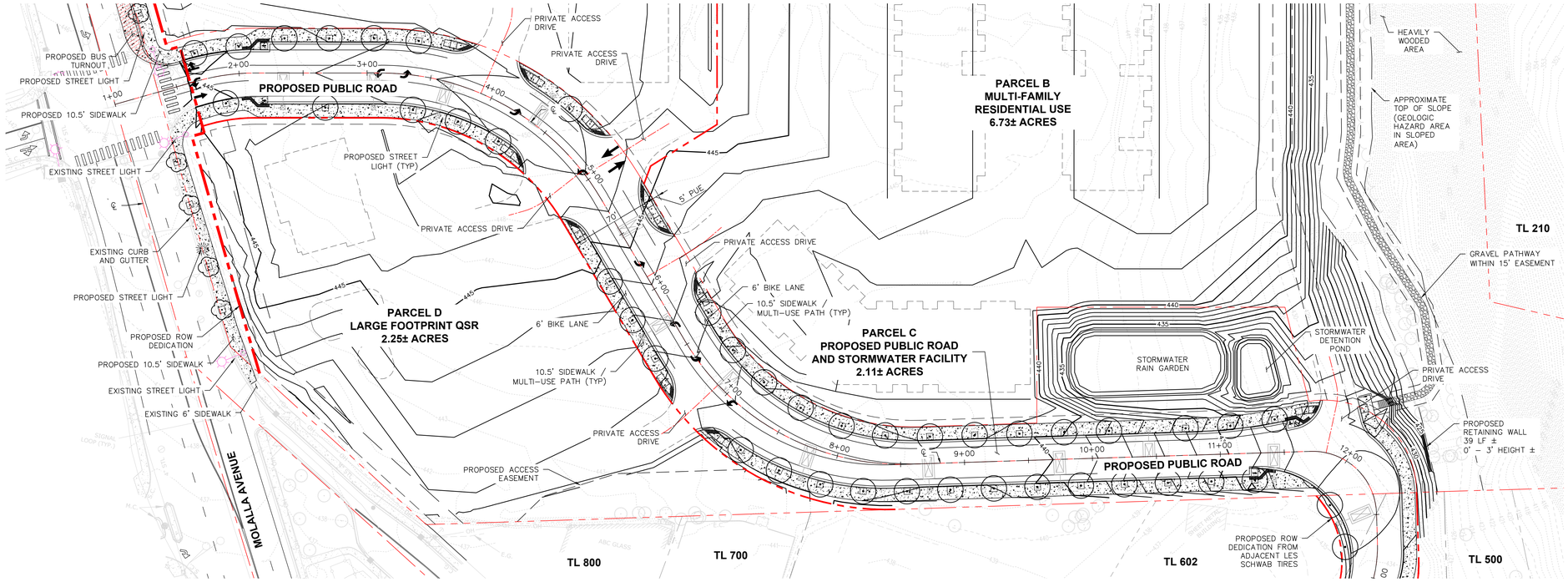
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

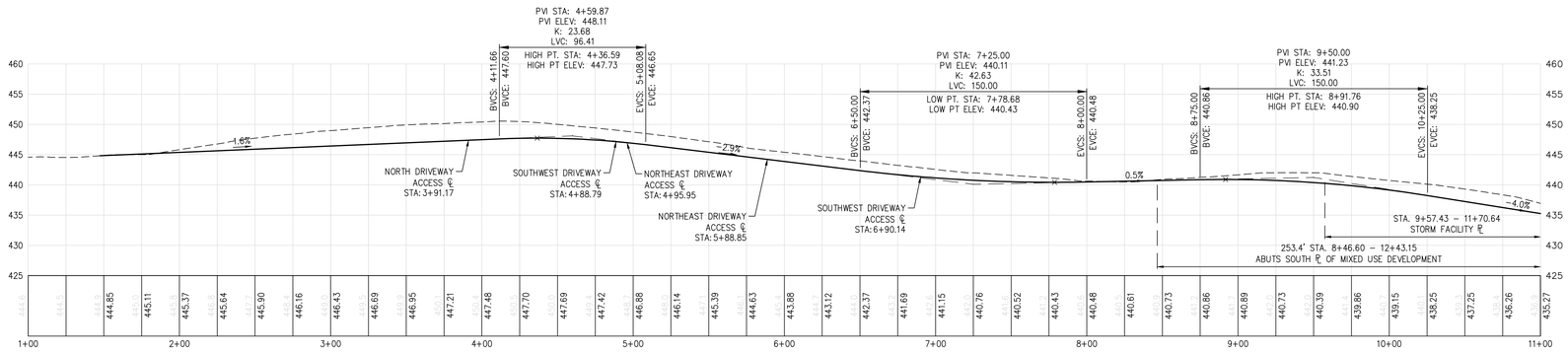
SHEET NAME

MOLALLA AVENUE STREET PLAN AND TYPICAL SECTIONS

SHEET NUMBER

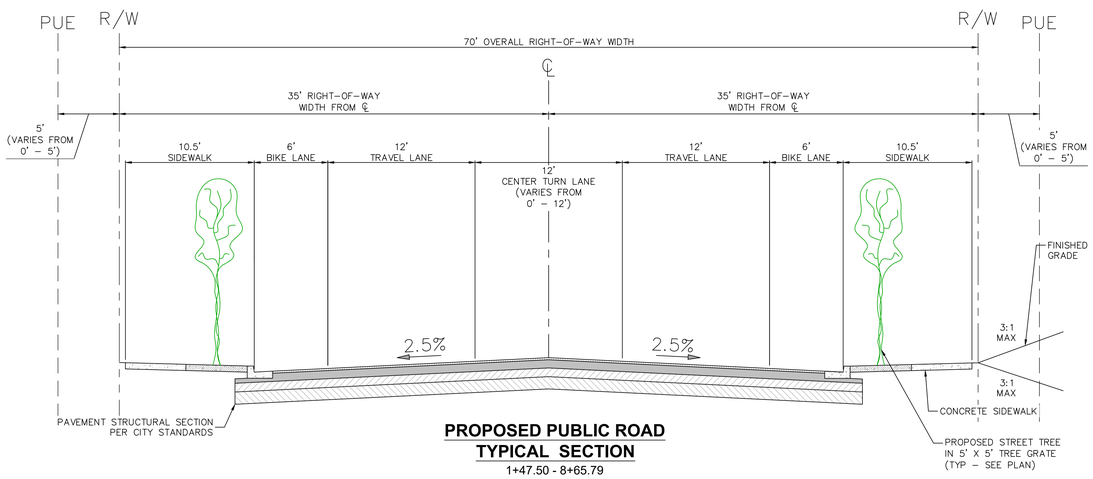
DDP-C1.1





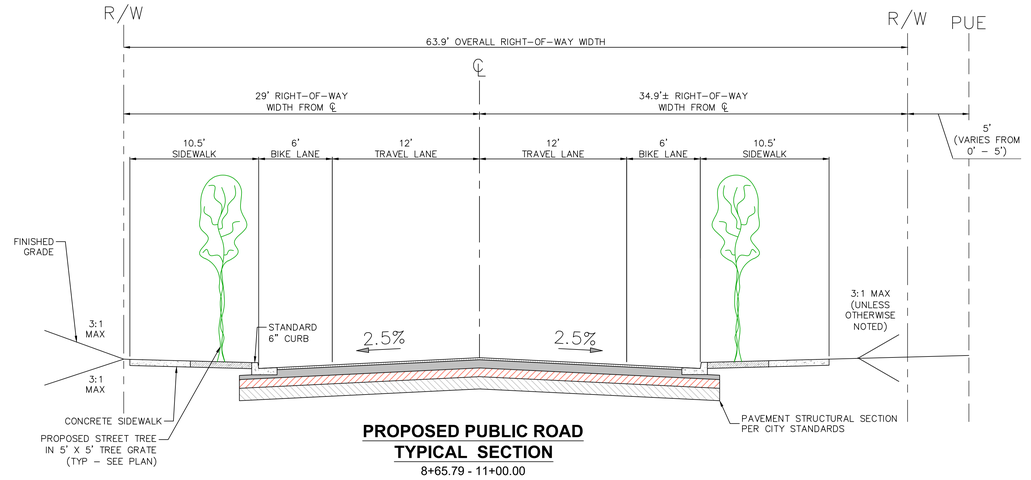
PROPOSED PUBLIC ROAD PROFILE

SCALE:
HORIZONTAL: 1" = 40'
VERTICAL: 1" = 10'



PROPOSED PUBLIC ROAD TYPICAL SECTION

1+47.50 - 8+65.79
NTS



PROPOSED PUBLIC ROAD TYPICAL SECTION

8+65.79 - 11+00.00
NTS

0 20 40 80
SCALE: 1 inch = 40 ft.

LEGEND

- PROPERTY LINE
- STANDARD CURB
- ROAD CENTER LINE
- 5' PUE
- CONCRETE SIDEWALK
- STREET TREES – SEE LANDSCAPE PLAN
- STREET TREE IN TREE GRATE – SEE LANDSCAPE PLAN
- DECORATIVE STREET LIGHT – SEE LIGHTING PLAN
- STREET LIGHT – SEE LIGHTING PLAN
- EXISTING STREET LIGHT – SEE LIGHTING PLAN

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CLIENT/OWNER

CYPRESS EQUITIES

PROJECT NAME

OREGON CITY MIXED USE DETAILED DEVELOPMENT PLAN

LANGAN PROJECT NUMBER: 794-002-701

PROJECT ADDRESS

1367 MOLALLA AVENUE
OREGON CITY, OR 97045

STAMP

REVISIONS

REV	ISSUED FOR:	DATE
0	DDP SUBMITTAL	11/14/2025
1	DDP SUBMITTAL	12/09/2025
2	DDP SUBMITTAL	03/02/2026

811

SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

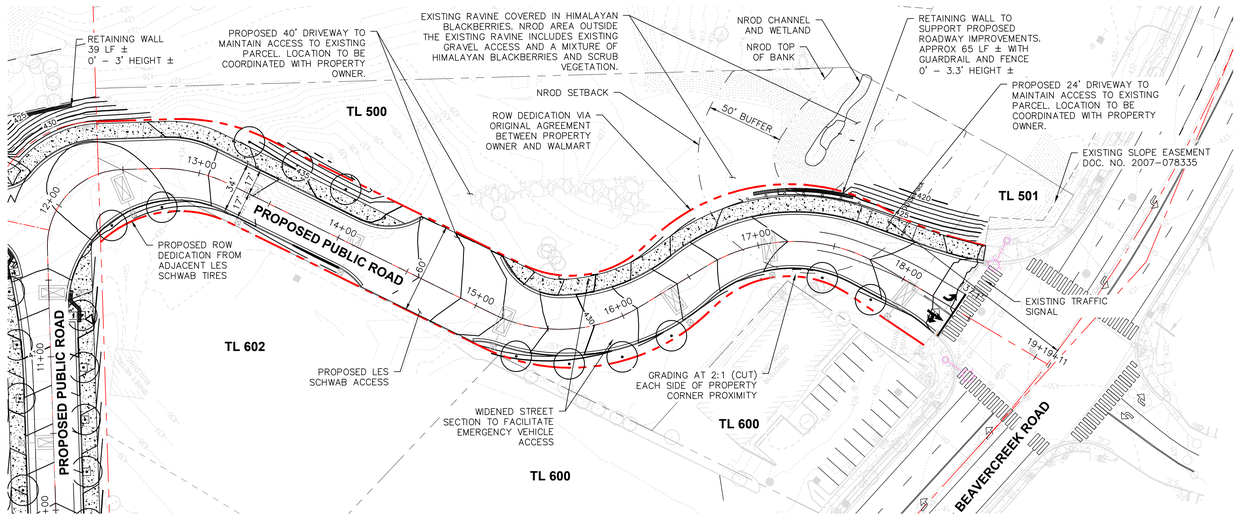
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

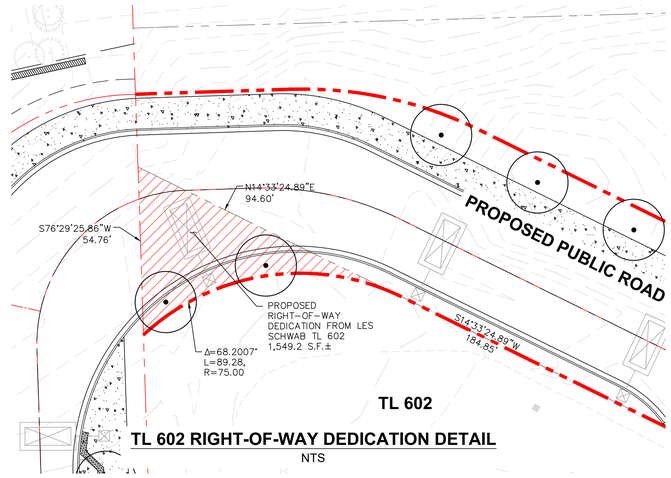
SHEET NAME

PROPOSED PUBLIC ROAD PLAN, PROFILE, AND TYPICAL SECTIONS

SHEET NUMBER

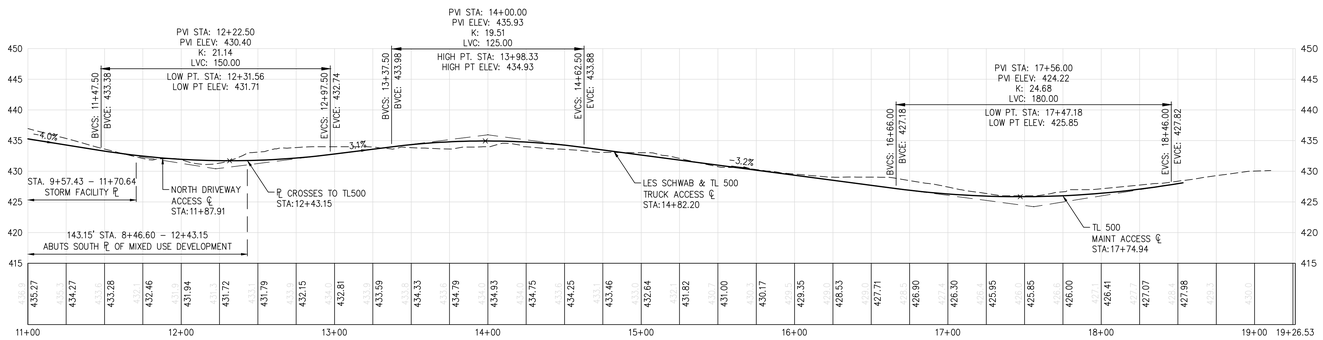
DDP-C1.2





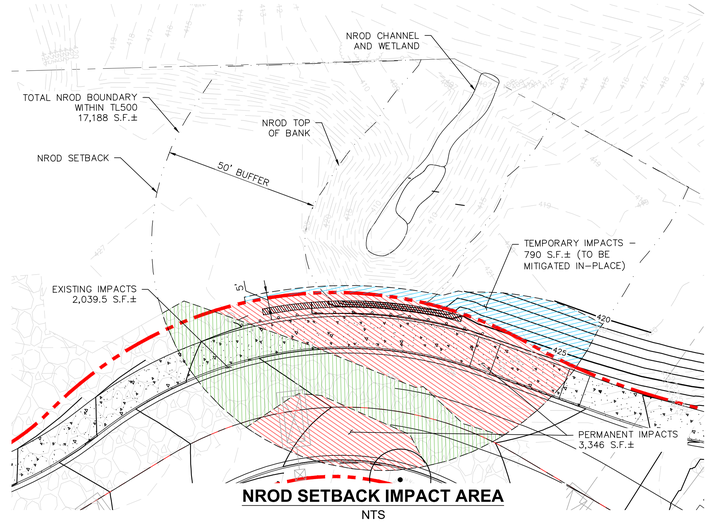
TL 602 RIGHT-OF-WAY DEDICATION DETAIL

NTS



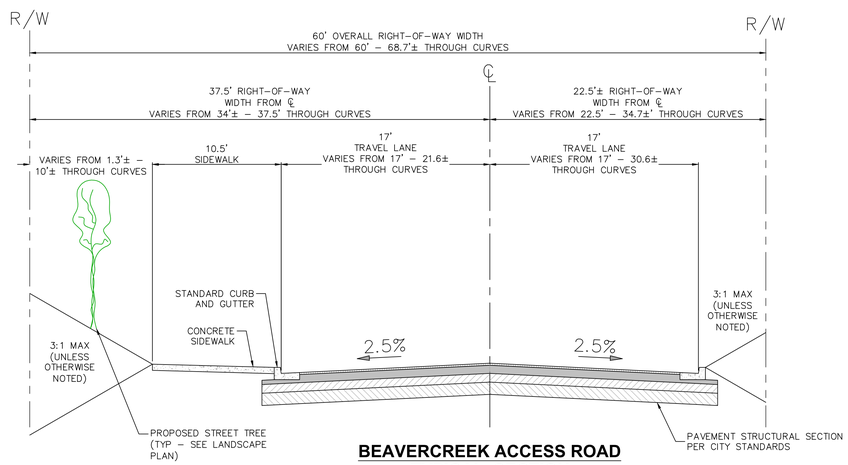
PROPOSED PUBLIC ROAD PROFILE

SCALE:
HORIZONTAL: 1" = 40'
VERTICAL: 1" = 10'



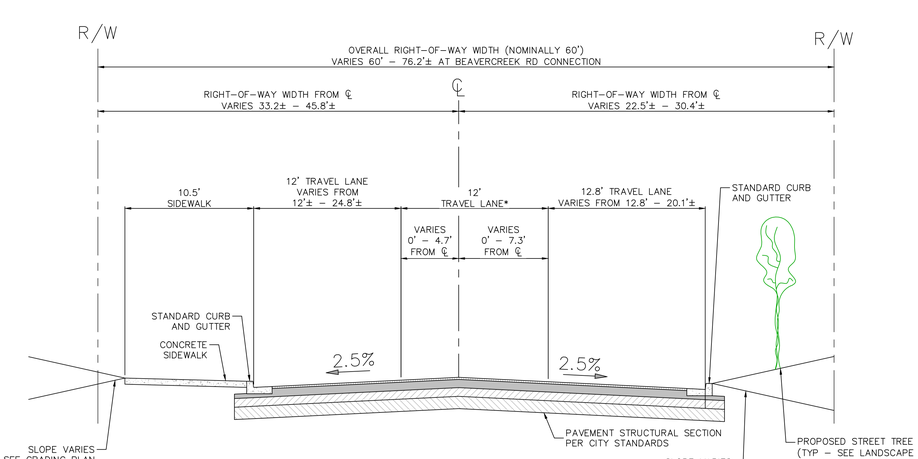
NROD SETBACK IMPACT AREA

NTS



BEAVERCREEK ACCESS ROAD TYPICAL SECTION

12+33.65 - 14+92.03
NTS



BEAVERCREEK ACCESS ROAD TYPICAL SECTION

14+92.03 - 18+59
NTS

NOTES:

* CENTER TRAVEL LANE BEGINS AT STATION 17+39.33.

LEGEND

- PROPERTY LINE
- STANDARD CURB
- ROAD CENTER LINE
- 5' PUE
- CONCRETE SIDEWALK
- STREET TREES – SEE LANDSCAPE PLAN
- STREET TREE IN TREE GRATE – SEE LANDSCAPE PLAN
- DECORATIVE STREET LIGHT – SEE LIGHTING PLAN
- STREET LIGHT – SEE LIGHTING PLAN
- EXISTING STREET LIGHT – SEE LIGHTING PLAN

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SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

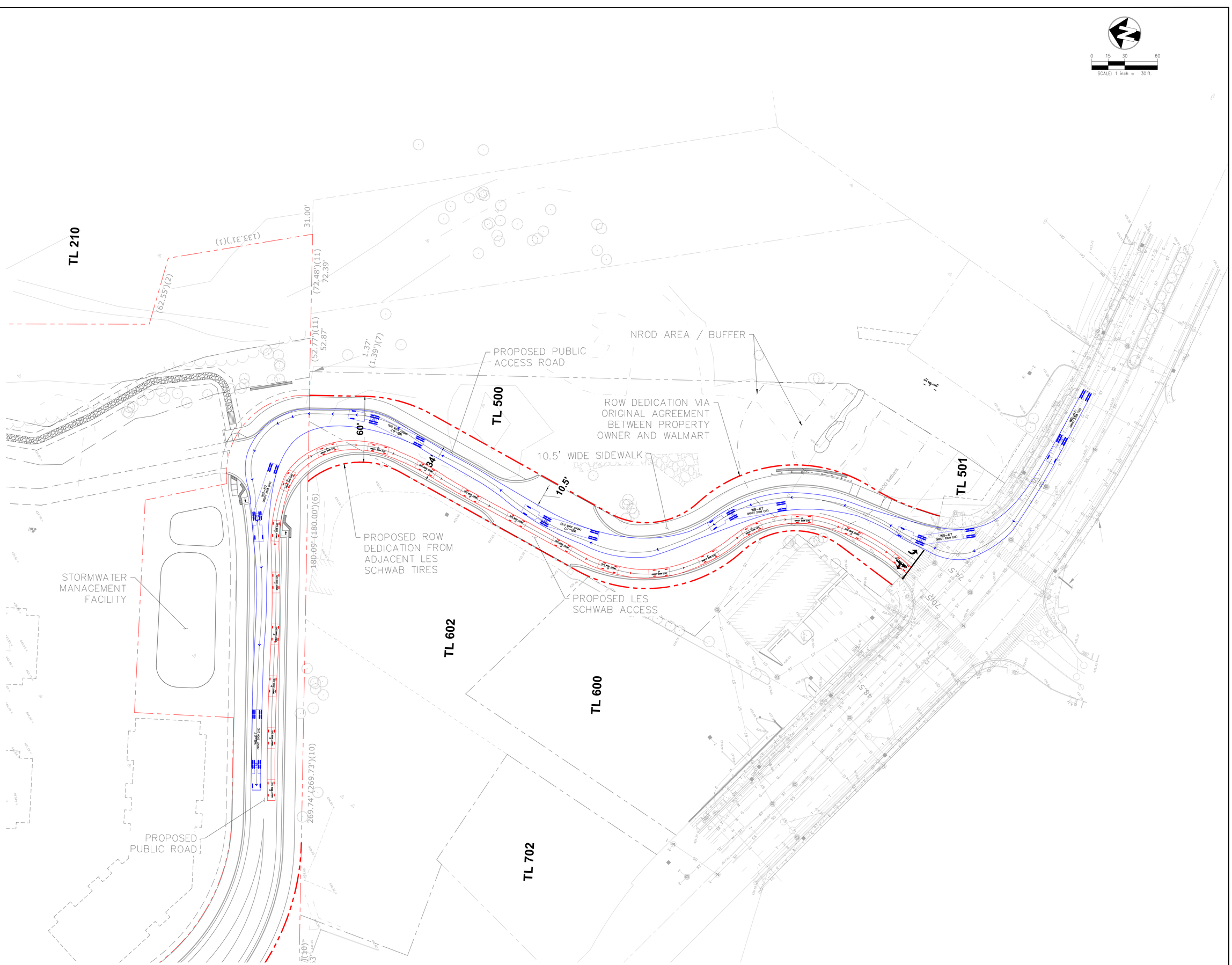
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

PROPOSED PUBLIC ROAD PLAN, PROFILE, AND TYPICAL SECTIONS

SHEET NUMBER

DDP-C1.3



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SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

TRUCK TURNING - RIGHT TURN ONTO PROPOSED PUBLIC ROAD

SHEET NUMBER

DDP-C1.4

0 15 30 60

SCALE: 1 inch = 30 ft.

TL 210

TL 500

TL 501

TL 602

TL 600

TL 702

(133.31')(1)

31.00'

(62.55')(2)

(72.48')(11)
72.39'

(52.77')(11)
52.87'

1.37'
(1.39')(7)

NROD AREA / BUFFER

PROPOSED PUBLIC ACCESS ROAD

ROW DEDICATION VIA ORIGINAL AGREEMENT BETWEEN PROPERTY OWNER AND WALMART

10.5' WIDE SIDEWALK

60'

34'

10.5'

PROPOSED ROW DEDICATION FROM ADJACENT LES SCHWAB TIRES

PROPOSED LES SCHWAB ACCESS

STORMWATER MANAGEMENT FACILITY

PROPOSED PUBLIC ROAD

180.09' (180.00')(6)

269.74' (269.73')(10)

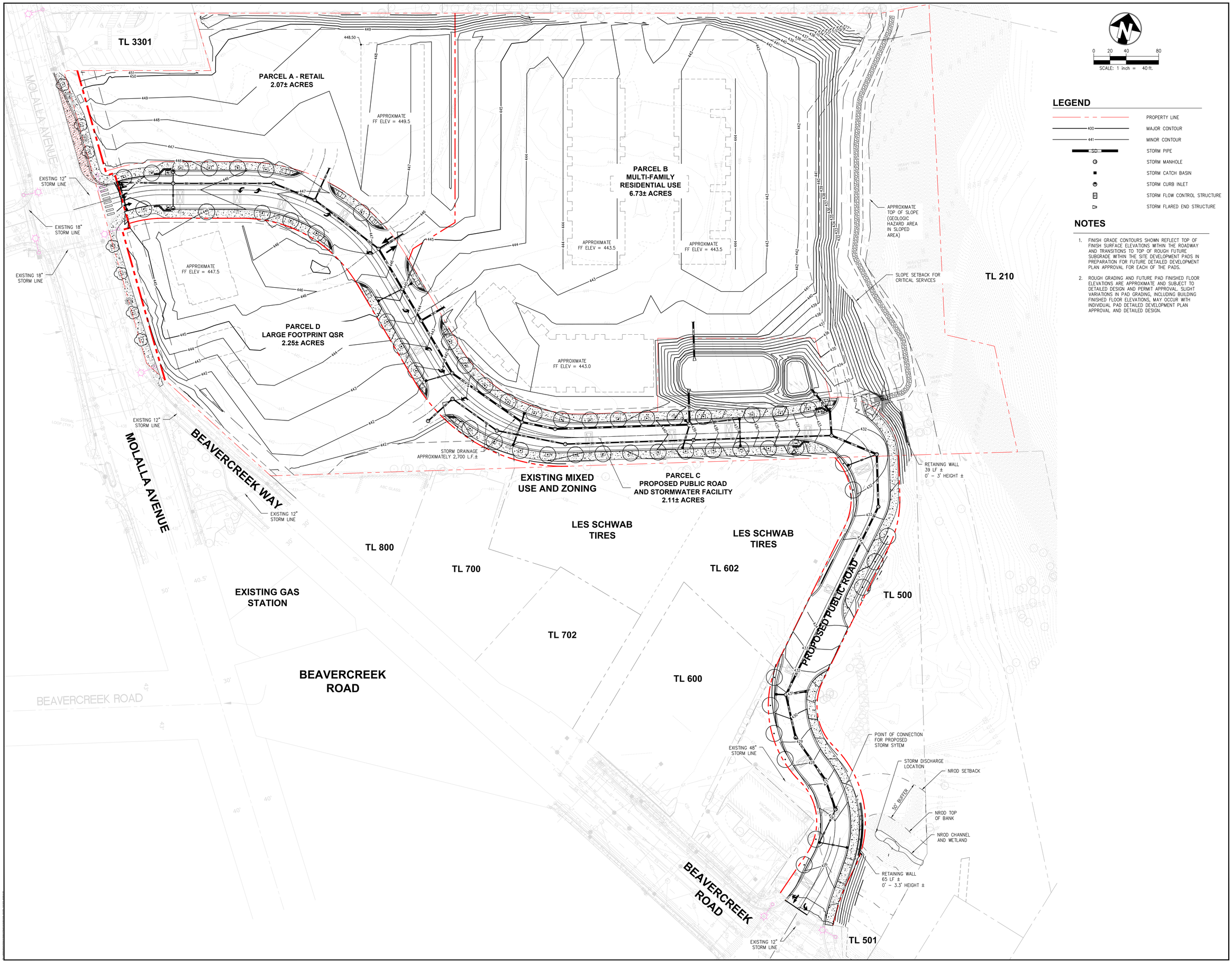
(10)

R50 Setback

WB-67
ORDOT 2006 (US)

WB-67
ORDOT 2006 (US)

WB-67
ORDOT 2006 (US)



0 20 40 80

SCALE: 1 inch = 40 ft.

LEGEND

- PROPERTY LINE
- 400 MAJOR CONTOUR
- 441 MINOR CONTOUR
- SD STORM PIPE
- STORM MANHOLE
- STORM CATCH BASIN
- STORM CURB INLET
- STORM FLOW CONTROL STRUCTURE
- STORM FLARED END STRUCTURE

NOTES

1. FINISH GRADE CONTOURS SHOWN REFLECT TOP OF FINISH SURFACE ELEVATIONS WITHIN THE ROADWAY AND TRANSITIONS TO TOP OF ROUGH FUTURE SUBGRADE WITHIN THE SITE DEVELOPMENT PADS IN PREPARATION FOR FUTURE DETAILED DEVELOPMENT PLAN APPROVAL FOR EACH OF THE PADS.
2. ROUGH GRADING AND FUTURE PAD FINISHED FLOOR ELEVATIONS ARE APPROXIMATE AND SUBJECT TO DETAILED DESIGN AND PERMIT APPROVAL. SLIGHT VARIATIONS IN PAD GRADING, INCLUDING BUILDING FINISHED FLOOR ELEVATIONS, MAY OCCUR WITH INDIVIDUAL PAD DETAILED DEVELOPMENT PLAN APPROVAL AND DETAILED DESIGN.

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SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

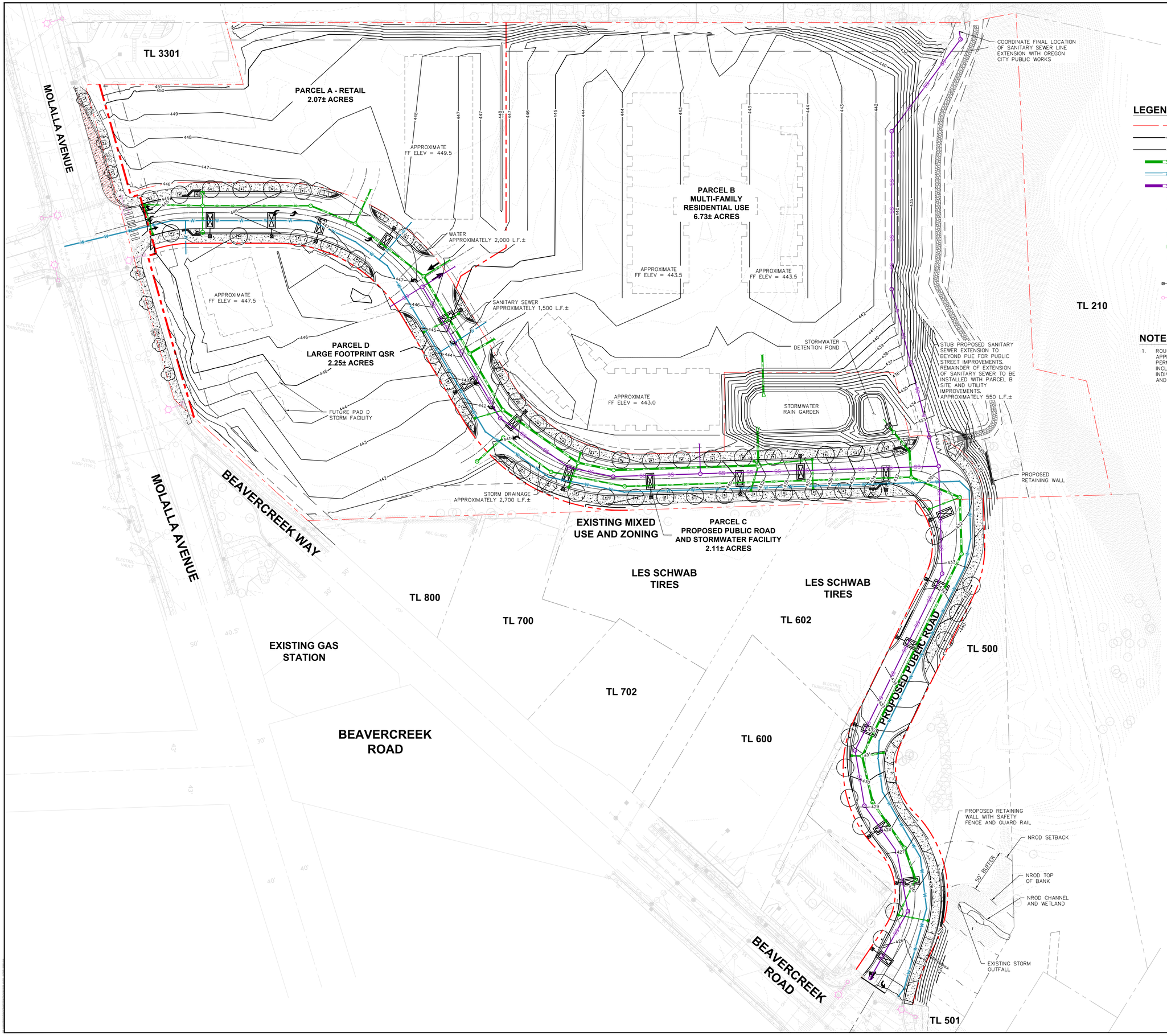
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

PRELIMINARY CIVIL GRADING AND DRAINAGE PLAN

SHEET NUMBER

DDP-C2.0



LEGEND

- PROPERTY LINE
- 400 MAJOR CONTOUR
- 441 MINOR CONTOUR
- STORM PIPE
- WATER PIPE
- SANITARY SEWER PIPE
- STORM MANHOLE
- STORM CATCH BASIN
- STORM CURB INLET
- STORM FLOW CONTROL STRUCTURE
- STORM FLARED END STRUCTURE
- SANITARY SEWER MANHOLE
- DECORATIVE STREET LIGHT – SEE LIGHTING PLAN
- STREET LIGHT – SEE LIGHTING PLAN
- EXISTING STREET LIGHT – SEE LIGHTING PLAN

NOTES

1. ROUGH GRADING AND FUTURE PAD FF ELEVATIONS ARE APPROXIMATE AND SUBJECT TO DETAILED DESIGN AND PERMIT APPROVAL. SLIGHT VARIATIONS IN PAD GRADING, INCLUDING BUILDING FF ELEVATIONS, MAY OCCUR WITH INDIVIDUAL PAD DETAILED DEVELOPMENT PLAN APPROVAL AND DETAILED DESIGN.

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SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

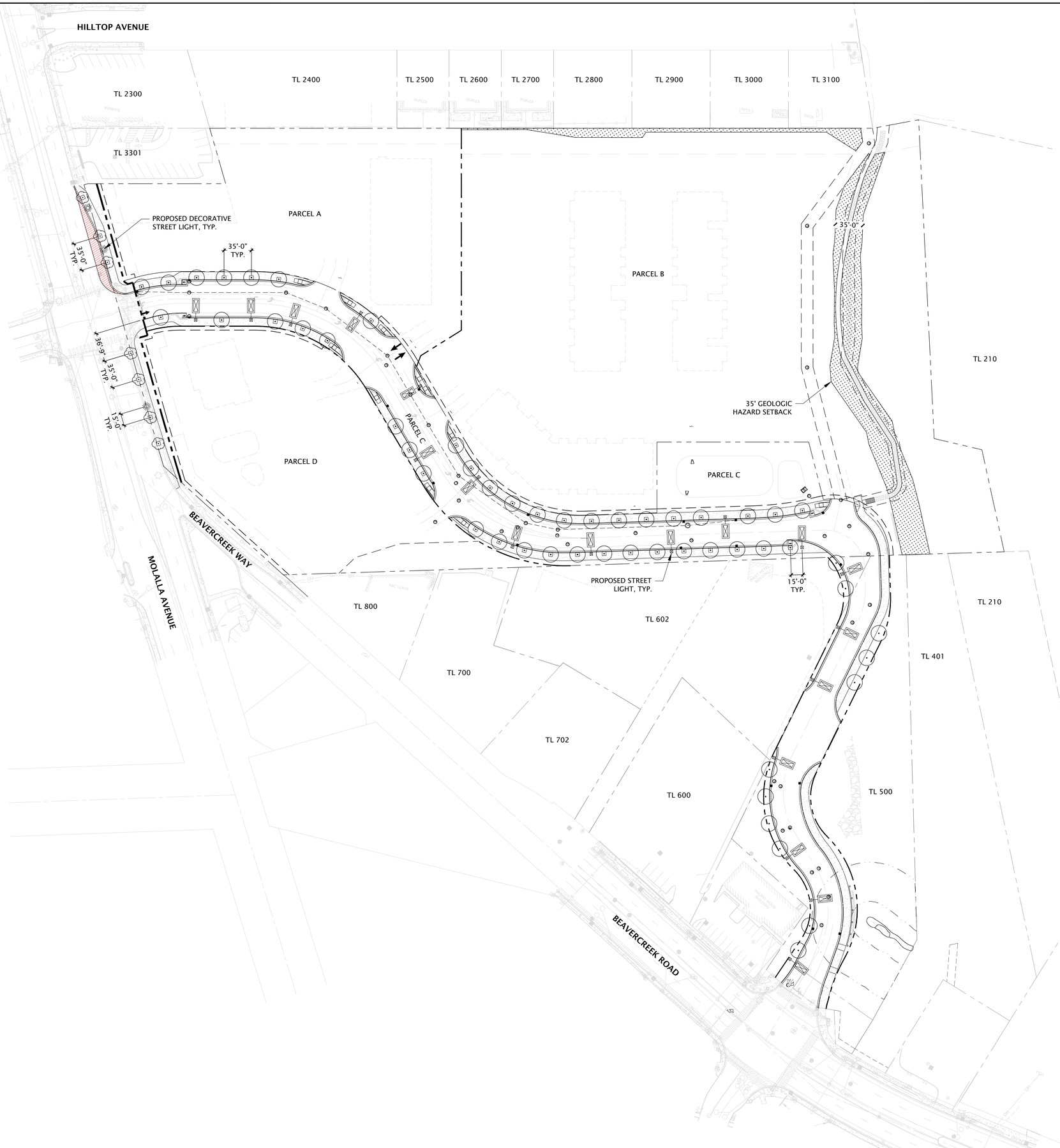
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

PRELIMINARY CIVIL UTILITY PLAN

SHEET NUMBER

DDP-C3.0



0 25 50 100

SCALE: 1 inch = 50 ft.

PLANT SCHEDULE

SYMBOL	QTY	BOTANICAL / COMMON NAME	SIZE
SHRUBS			
	53	GINKGO BILOBA 'PRINCETON SENTRY' / PRINCETON SENTRY MAIDENHAIR TREE	3" CAL.
	7	ACER BUERGERIANUM / TRIDENT MAPLE	3" CAL.
		PLANTING AREA FOR TREE MITIGATION AND NROD MITIGATION	

LEGEND

SYMBOL	DESCRIPTION
	TREE GRATE PER CITY STANDARD
	PROPERTY LINE
	RIGHT OF WAY
	EASEMENT
	NROD SETBACK

NOTES:

1. SOIL AMENDMENTS ARE PER SOILS REPORT.
2. ALL NEW PLANTING AREAS TO BE IRRIGATED IF REQUIRED BY THE CITY ENGINEER.
3. ROOT BARRIERS SHALL BE PROVIDED FOR ALL TREES THAT WILL BE LOCATED WITHIN SIX FEET OF ANY STRUCTURE, PAVEMENT, OR ALTERNATE MATERIAL SUCH AS WATERLINES, BUILDING FOUNDATIONS, CONCRETE FLATWORK, OR TURF AREA.
4. ALL TREES SHALL BE STAKED WITH AT LEAST TWO STAKES ONE SHALL BE LOCATED ON THE PREVAILING WINDWARD SIDE.
5. SCOPE OF WORK IS ONLY FOR THE RIGHT-OF-WAY. PRIVATE/ONSITE IS EXCLUDED.
6. PARCEL A, B, AND D TO HAVE THEIR OWN DETAILED MITIGATION PLAN.

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SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

REVIEWED BY: A.ILAO
DESIGNED BY: D.LOPEZ

SHEET NAME

OVERALL LANDSCAPE PLAN

SHEET NUMBER

DDP-L1.0



0 25 50 100

SCALE: 1 inch = 50 ft.

LEGEND

SYMBOL	DESCRIPTION
×	TREE TO BE REMOVED
⊙	EXISTING EVERGREEN TREE
⊙	EXISTING DECIDUOUS TREE
——— — — ———	PROPERTY LINE
- - - - - - - - - - - -	LIMITS OF DISTURBANCE

NOTES:

1. NUMBER OF TREES TO BE REMOVED: 375±
2. SEE ARBORIST REPORT FROM WALTER H. KNAPP & ASSOCIATES, LLC DATED FEBRUARY 20, 2013.
3. ARBORIST REPORT TO BE UPDATED IN CONJUNCTION WITH FINAL DESIGN TO CONFIRM WHETHER IMPACTS FROM FINAL OFF-SITE STREET IMPROVEMENT DESIGN IMPACTS FINDINGS WITHIN THE REPORT.

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CYPRESS EQUITIES

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SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

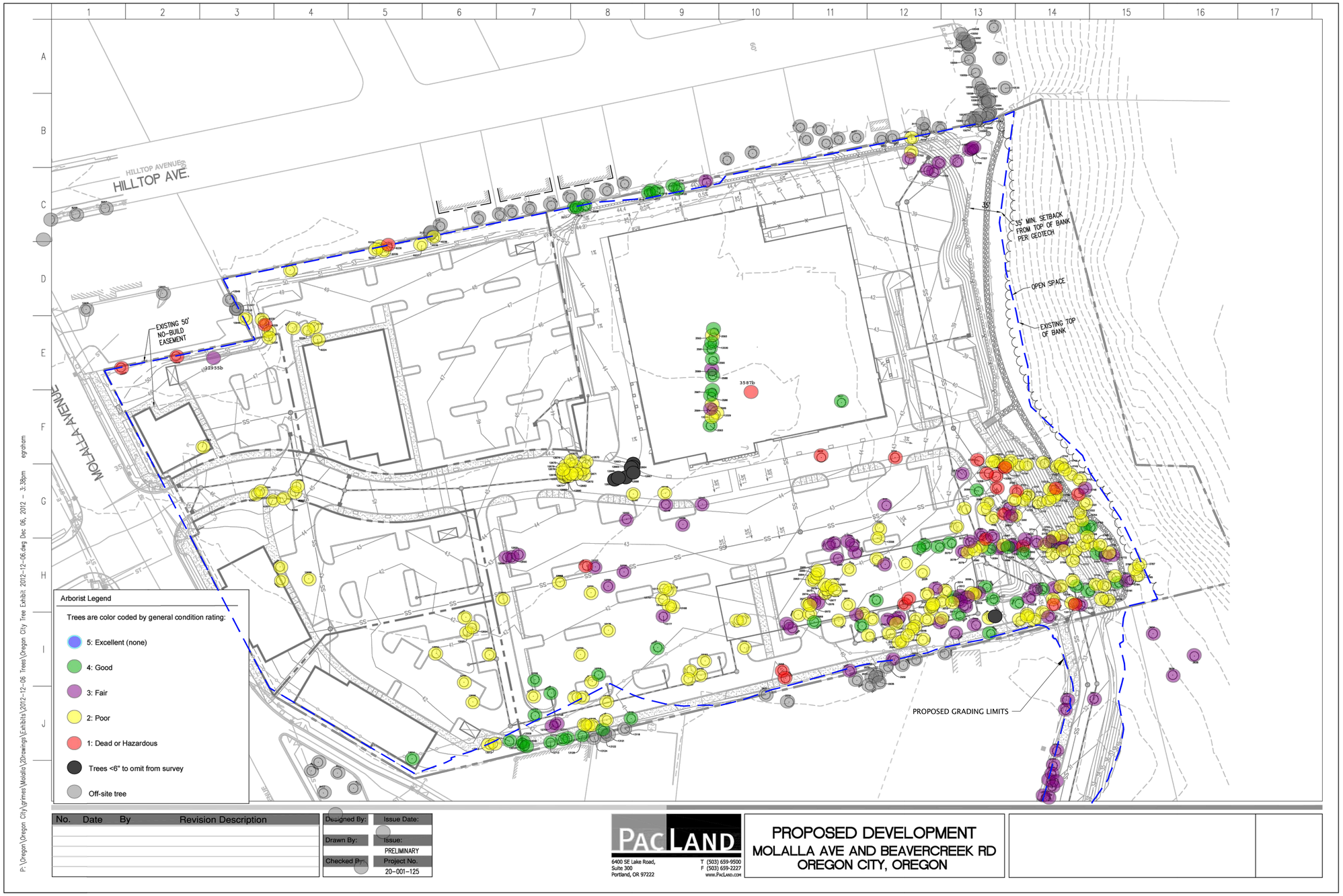
REVIEWED BY: A.ILAO
DESIGNED BY: D.LOPEZ

SHEET NAME

TREE REMOVAL PLAN

SHEET NUMBER

DDP-L0.1



P:\Oregon\Oregon City\grimes\Molalla\2Drawings\Exhibits\2012-12-06 Trees\Oregon City Tree Exhibit 2012-12-06.dwg Dec 06, 2012 - 3:38pm egraham

No.	Date	By	Revision Description

Designed By:	Issue Date:
Drawn By:	Issue: PRELIMINARY
Checked By:	Project No. 20-001-125

PACLAND
6400 SE Lake Road, Suite 300
Portland, OR 97222
T (503) 659-9500
F (503) 659-2227
www.PacLand.com

PROPOSED DEVELOPMENT
MOLALLA AVE AND BEAVERCREEK RD
OREGON CITY, OREGON

NOTES:
1. THIS SHEET IS FOR REFERENCE ONLY. SEE ARBORIST REPORT FROM WALTER H. KNAPP & ASSOCIATES, LLC DATED FEBRUARY 20, 2013.

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SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

REVIEWED BY: A.ILAO
DESIGNED BY: D.LOPEZ

SHEET NAME

ARBORIST REPORT MAP

SHEET NUMBER

DDP-L0.2

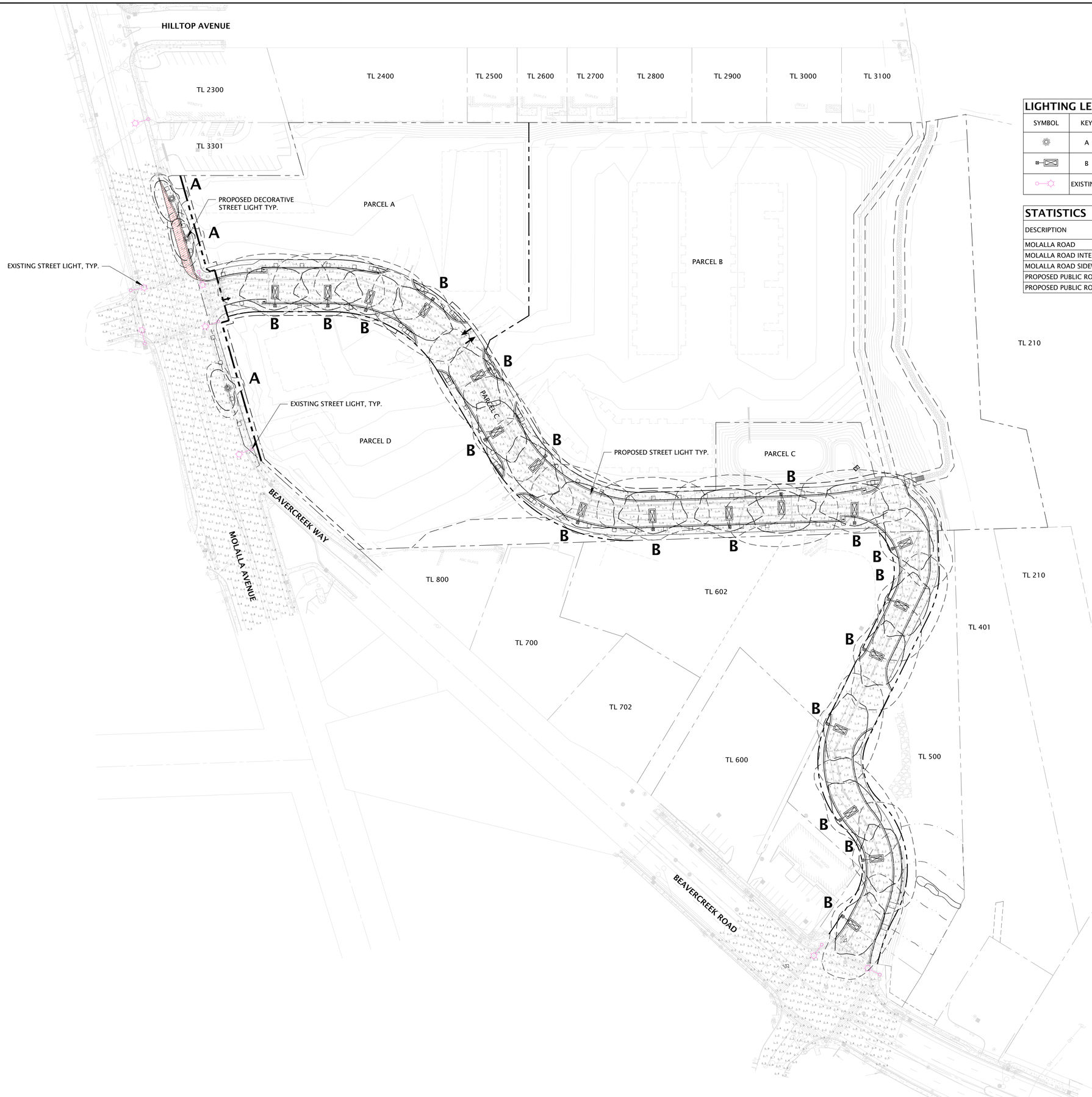
No.	Outside (O) or Within (W) Construction	Common Name	Species Name	DBH[1]	C-Rad[2]	Cond[3]	Comments	Invasive Species	Treatment	Mitigation
2931	O	Oregon white oak	*Quercus garryana*	26		0	not accessible		off-site	0
2932	O	adjacent tree		6		0			off-site	0
2935	O	adjacent tree		7		0			off-site	0
2936	O	adjacent tree		10	10	0			off-site	0
2937	O	adjacent tree		12	12	0			off-site	0
2938	O	adjacent tree		11	10	0			off-site	0
2939	O	adjacent tree		12	12	0			off-site	0
2940	O	adjacent tree		15	12	0			off-site	0
2941	W	bigleaf maple	*Acer macrophyllum*	14	12	3			retain	0
2953	O	adjacent tree		22		0			off-site	0
2954	O	adjacent tree		10	10	0			off-site	0
2955	W	bigleaf maple	*Acer macrophyllum*	10	10	3			retain	0
2956	O	adjacent tree		11	10	0			off-site	0
2957	W	sweet cherry	*Prunus avium*	8	8	1		Yes	remove	0
2958	W	Scouler's willow	*Salix scouleriana*	12	12	1			remove	0
2966	O	bigleaf maple	*Acer macrophyllum*	14	14	3			remove	6
2967	O	bigleaf maple	*Acer macrophyllum*	28	22	3			remove	12
2968	O	sweet cherry	*Prunus avium*	10	10	2		Yes	remove	0
2969	O	sweet cherry	*Prunus avium*	10	10	2		Yes	remove	0
2970	O	bigleaf maple	*Acer macrophyllum*	24	20	4			remove	9
2971	O	bigleaf maple	*Acer macrophyllum*	9	9	2			remove	3
2972	O	sweet cherry	*Prunus avium*	6		2		Yes	remove	0
2973	O	bigleaf maple	*Acer macrophyllum*	8	8	2			remove	3
2974	O	bigleaf maple	*Acer macrophyllum*	10	8	3			remove	3
2975	O	bigleaf maple	*Acer macrophyllum*	10	8	3			remove	3
2976	O	bigleaf maple	*Acer macrophyllum*	8	8	2			remove	3
2977	O	bigleaf maple	*Acer macrophyllum*	8	8	2			remove	3
2978	O	bigleaf maple	*Acer macrophyllum*	11		2			remove	3
2979	O	bigleaf maple	*Acer macrophyllum*	10	10	2			remove	3
2980	O	bigleaf maple	*Acer macrophyllum*	10	10	2			remove	3
2981	O	bigleaf maple	*Acer macrophyllum*	12	10	2			remove	3
2982	O	bigleaf maple	*Acer macrophyllum*	12	15	2			remove	3
2983	O	bigleaf maple	*Acer macrophyllum*	10	8	2			remove	3
2984	O	bigleaf maple	*Acer macrophyllum*	10	8	2			remove	3
2985	O	bigleaf maple	*Acer macrophyllum*	10	8	2			remove	3
2986	O	bigleaf maple	*Acer macrophyllum*	10	8	2			remove	3
2987	O	bigleaf maple	*Acer macrophyllum*	14	10	3			remove	6
2988	O	bigleaf maple	*Acer macrophyllum*	12	10	3			remove	3
2989	O	Oregon ash	*Fraxinus latifolia*	11	10	3			remove	3
2990	O	bigleaf maple	*Acer macrophyllum*	12	8	3			remove	3
2991	O	bigleaf maple	*Acer macrophyllum*	6		3			remove	3
2992	O	bigleaf maple	*Acer macrophyllum*	10	10	3			remove	3
2996	O	adjacent tree		30		0			off-site	0
2998	W	bigleaf maple	*Acer macrophyllum*	20		3			remove	3
2999	W	bigleaf maple	*Acer macrophyllum*	18		3			remove	2
3000	W	Douglas-fir	*Pseudotsuga menziesii*	52		4			remove	5
3005	O	Douglas-fir	*Pseudotsuga menziesii*	30		4			remove	12
3006	O	Douglas-fir	*Pseudotsuga menziesii*	22		4			remove	9
3007	O	Douglas-fir	*Pseudotsuga menziesii*	8		2			remove	3
3008	O	Douglas-fir	*Pseudotsuga menziesii*	15	10	3			remove	6
3009	O	Douglas-fir	*Pseudotsuga menziesii*	8		2			remove	3
3010	O	Douglas-fir	*Pseudotsuga menziesii*	20		3			remove	9
3011	O	Douglas-fir	*Pseudotsuga menziesii*	15		3			remove	6
3012	O	Douglas-fir	*Pseudotsuga menziesii*	18		3			remove	6
3013	O	Douglas-fir	*Pseudotsuga menziesii*	12		3			remove	3
3014	O	Douglas-fir	*Pseudotsuga menziesii*	24	15	4			remove	9
3015	O	Douglas-fir	*Pseudotsuga menziesii*	15		2	old broken top		remove	6
3016	W	Douglas-fir	*Pseudotsuga menziesii*	22	12	4			remove	3
3017	W	bigleaf maple	*Acer macrophyllum*	15		3			remove	0
3018	W	sweet cherry	*Prunus avium*	12		2		Yes	remove	0
3019	O	sweet cherry	*Prunus avium*	6		2		Yes	remove	0
3021	O	sweet cherry	*Prunus avium*	8		2		Yes	remove	0
3022	O	sweet cherry	*Prunus avium*	8		2		Yes	remove	0
3023	O	sweet cherry	*Prunus avium*	8		2		Yes	remove	0
3024	O	sweet cherry	*Prunus avium*	11	10	2		Yes	remove	0
3026	O	sweet cherry	*Prunus avium*	12	10	2		Yes	remove	0

No.	Outside (O) or Within (W) Construction	Common Name	Species Name	DBH[1]	C-Rad[2]	Cond[3]	Comments	Invasive Species	Treatment	Mitigation
3027	O	sweet cherry	*Prunus avium*	6		2		Yes	remove	0
3028	O	bigleaf maple	*Acer macrophyllum*	9	8	2	broken top		remove	3
3030	O	sweet cherry	*Prunus avium*	6		1	dead	Yes	remove	0
3031	O	sweet cherry	*Prunus avium*	6		1	dying, not viable	Yes	remove	0
3032	O	Douglas-fir	*Pseudotsuga menziesii*	27	20	4			remove	12
3033	O	bigleaf maple	*Acer macrophyllum*	8	8	2			remove	3
3034	O	bigleaf maple	*Acer macrophyllum*	12	12	2			remove	3
3035	O	Douglas-fir	*Pseudotsuga menziesii*	18		3			remove	6
3036	O	bigleaf maple	*Acer macrophyllum*	8		2			remove	3
3037	O	Douglas-fir	*Pseudotsuga menziesii*	30		4			remove	12
3038	W	Douglas-fir	*Pseudotsuga menziesii*	8		2			remove	1
3039	W	pear	*Pyrus* spp.	6		2			remove	1
3040	O	Douglas-fir	*Pseudotsuga menziesii*	18	10	3			remove	6
3041	O	Douglas-fir	*Pseudotsuga menziesii*	13	10	3			remove	6
3042	O	sweet cherry	*Prunus avium*	8	8	2		Yes	remove	0
3043	O	Douglas-fir	*Pseudotsuga menziesii*	24	12	3			remove	9
3044	O	sweet cherry	*Prunus avium*	8		2		Yes	remove	0
3046	W	sweet cherry	*Prunus avium*	8		2		Yes	remove	0
3047	W	sweet cherry	*Prunus avium*	8		2		Yes	remove	0
3048	W	sweet cherry	*Prunus avium*	10		2		Yes	remove	0
3049	W	sweet cherry	*Prunus avium*	9	8	2		Yes	remove	0
3050	W	sweet cherry	*Prunus avium*	9	8	2		Yes	remove	0
3051	W	sweet cherry	*Prunus avium*	14	10	2		Yes	remove	0
3052	O	bigleaf maple	*Acer macrophyllum*	6		2			remove	3
3063	W	bigleaf maple	*Acer macrophyllum*	25	12	3			remove	4
3070	O	Oregon ash	*Fraxinus latifolia*	12	10	3			remove	3
3071	O	bigleaf maple	*Acer macrophyllum*	6		2			remove	3
3072	O	Douglas-fir	*Pseudotsuga menziesii*	26		4			remove	12
3073	O	Douglas-fir	*Pseudotsuga menziesii*	18	18	4			remove	6
3074	O	Douglas-fir	*Pseudotsuga menziesii*	26	22	4			remove	12
3075	O	Douglas-fir	*Pseudotsuga menziesii*	26	22	4			remove	12
3076	O	English hawthorn	*Crataegus monogyna*	6		2		Yes	remove	0
3077	O	Douglas-fir	*Pseudotsuga menziesii*	26		3			remove	12
3078	O	Douglas-fir	*Pseudotsuga menziesii*	38		3	codominant stems		remove	15
3079	O	Douglas-fir	*Pseudotsuga menziesii*	15		2			remove	6
3080	O	Douglas-fir	*Pseudotsuga menziesii*	15		2			remove	6
3081	O	Douglas-fir	*Pseudotsuga menziesii*	12		2			remove	3
3082	O	Douglas-fir	*Pseudotsuga menziesii*	26		3			remove	12
3083	O	Douglas-fir	*Pseudotsuga menziesii*	10		1			remove	0
3084	O	Douglas-fir	*Pseudotsuga menziesii*	22	10	4			remove	9
3085	O	Douglas-fir	*Pseudotsuga menziesii*	24	20	3			remove	9
3086	O	Douglas-fir	*Pseudotsuga menziesii*	17	12	3			remove	6
3087	O	Douglas-fir	*Pseudotsuga menziesii*	6	10	2			remove	3
3088	O	Douglas-fir	*Pseudotsuga menziesii*	22	10	4			remove	9
3089	O	Douglas-fir	*Pseudotsuga menziesii*	16		3			remove	6
3090	O	Douglas-fir	*Pseudotsuga menziesii*	12	10	3			remove	3
3091	W	Douglas-fir	*Pseudotsuga menziesii*	10	6	2			remove	1
3092	W	Douglas-fir	*Pseudotsuga menziesii*	24		3			remove	3
3093	W	Douglas-fir	*Pseudotsuga menziesii*	8		1			remove	0
3095	W	Douglas-fir	*Pseudotsuga menziesii*	17		3			remove	2
3096	O	Douglas-fir	*Pseudotsuga menziesii*	6		2			remove	3
3097	O	sweet cherry	*Prunus avium*	8		2		Yes	remove	0
3098	W	sweet cherry	*Prunus avium*	6		2		Yes	remove	0
3099	W	Douglas-fir	*Pseudotsuga menziesii*	32		4			remove	5
3100	O	Oregon ash	*Fraxinus latifolia*	8		2			remove	3
3101	O	bigleaf maple	*Acer macrophyllum*	14	10	4			remove	6
3102	O	English hawthorn	*Crataegus monogyna*	10	10	2		Yes	remove	0
3103	O	English hawthorn	*Crataegus monogyna*	12	12	2		Yes	remove	0
3107	O	Douglas-fir	*Pseudotsuga menziesii*	22	12	3	ROW access		protect off-site tree	0
3108	O	adjacent tree		20	20	0			off-site	0
3109	O	bigleaf maple	*Acer macrophyllum*	17	15	2			remove	6
3110	W	adjacent tree		7	7	0			off-site	0
3111	O	adjacent tree		8	10	0			off-site	0
3112	O	adjacent tree		10	10	0			off-site	0
3113	O	adjacent tree		14	10	0			off-site	0
3114	O	adjacent tree		16	10	0			off-site	0

No.	Outside (O) or Within (W) Construction	Common Name	Species Name	DBH[1]	C-Rad[2]	Cond[3]	Comments	Invasive Species	Treatment	Mitigation
3115	O	adjacent tree		14	10	0			off-site	0
3116	O	Port-Orford-cedar	*Chamaecyparis lawsoniana*	14	15	4			retain	0
3117	O	Port-Orford-cedar	*Chamaecyparis lawsoniana*	12	12	4			retain	0
3118	O	Port-Orford-cedar	*Chamaecyparis lawsoniana*	15	15	4			retain	0
3119	O	Port-Orford-cedar	*Chamaecyparis lawsoniana*	22	12	4			retain	0
3120	O	Port-Orford-cedar	*Chamaecyparis lawsoniana*	8	8	4			retain	0
3137	O	adjacent tree		11	10	0			off-site	0
3208	O	Port-Orford-cedar	*Chamaecyparis lawsoniana*	12	10	4			retain	0
3216	O	Port-Orford-cedar	*Chamaecyparis lawsoniana*	14	10	4			retain	0
3217	O	Port-Orford-cedar	*Chamaecyparis lawsoniana*	12	10	4			retain	0
3273	W	sweet cherry	*Prunus avium*	10		2		Yes	remove	0
3583	W	Douglas-fir	*Pseudotsuga menziesii*	24	14	4	retain in group only		remove	3
3584	W	Douglas-fir	*Pseudotsuga menziesii*	12	12	3	retain in group only		remove	1
3585	W	Douglas-fir	*Pseudotsuga menziesii*	8	8	2			remove	1
3586	W	Douglas-fir	*Pseudotsuga menziesii*	24	15	4	retain in group only		remove	3
3587	W	Douglas-fir	*Pseudotsuga menziesii*	24	15	4	retain in group only		remove	3
3587b	O	Scouler's willow	*Salix scouleriana*	14		1			remove	0
3588	W	Douglas-fir	*Pseudotsuga menziesii*	24	20	4	retain in group only		remove	3
3589	W	Douglas-fir	*Pseudotsuga menziesii*	19	18	3	retain in group only		remove	3
3590	W	Douglas-fir	*Pseudotsuga menziesii*	24	20	4	retain in group only		remove	3
3591	W	Douglas-fir	*Pseudotsuga menziesii*	24	18	4	retain in group only		remove	3
3592	W	Douglas-fir	*Pseudotsuga menziesii*	10	10	2			remove	1
3593	W	Douglas-fir	*Pseudotsuga menziesii*	24	20	4	retain in group only		remove	3
3627	W	Douglas-fir	*Pseudotsuga menziesii*	22	12	4			remove	3
3628	W	bigleaf maple	*Acer macrophyllum*	36	15	1	*Ganoderma* conks		remove	0
3665	O	adjacent tree		38	23	0			off-site	0
3670	O	sweet cherry	*Prunus avium*	17	12	3		Yes	remove	0
3672	O	adjacent tree		30	25	0			off-site	0
3673	O	adjacent tree		30	25	0			off-site	0
3682	O	adjacent tree		23	20	0			off-site	0
3683	O	adjacent tree		26	12	0			off-site	0
3684	O	adjacent tree		18	12	0			off-site	0
3685	O	adjacent tree		26	15	0			off-site	0
3691	W	Douglas-fir	*Pseudotsuga menziesii*	12		3			remove	1
3692	W	Douglas-fir	*Pseudotsuga menziesii*	8		1	dying, suppressed		remove	0
3693	W	Douglas-fir	*Pseudotsuga menziesii*	24		4			remove	3
3696	W	Douglas-fir	*Pseudotsuga menziesii*	18		4			remove	2
3697	W	bigleaf maple	*Acer macrophyllum*	18		2			remove	2
3698	W	bigleaf maple	*Acer macrophyllum*	14		2			remove	2
3699	W	bigleaf maple	*Acer macrophyllum*	10	10	2			remove	1
3700	W	Douglas-fir	*Pseudotsuga menziesii*	12	8	3			remove	1
3701	W	Oregon white oak	*Quercus garryana*	28		2			remove	4
3702	W	Douglas-fir	*Pseudotsuga menziesii*	14		3			remove	2
3703	W	bigleaf maple	*Acer macrophyllum*	14		1	stem decay		remove	0
3704	W	Douglas-fir	*Pseudotsuga menziesii*	12	8	3			remove	1
3706	W	bigleaf maple	*Acer macrophyllum*	12		1	broken top, not viable		remove	0
3707	W	Douglas-fir	*Pseudotsuga menziesii*	12		3			remove	1
3708	W	Douglas-fir	*Pseudotsuga menziesii*	24		4			remove	3
3709	W	bigleaf maple	*Acer macrophyllum*	12		2			remove	1
3710	W	Douglas-fir	*Pseudotsuga menziesii*	24	10	4			remove	3
3711	W	Douglas-fir	*Pseudotsuga menziesii*	10	8	2			remove	1
3712	W	Douglas-fir	*Pseudotsuga menziesii*	24	12	4			remove	3
3713	W	Douglas-fir	*Pseudotsuga menziesii*	6		3			remove	1
3714	W	Douglas-fir	*Pseudotsuga menziesii*	26		3			remove	4
3715	W	bigleaf maple	*Acer macrophyllum*	12		2			remove	1
3716	W	Douglas-fir	*Pseudotsuga menziesii*	20	10	3			remove	3
3717	W	bigleaf maple	*Acer macrophyllum*	17	10	2			remove	2
3719	W	sweet cherry	*Prunus avium*	6		2		Yes	remove	0
3720	W	sweet cherry	*Prunus avium*	14		2		Yes	remove	0
3721	W	sweet cherry	*Prunus avium*	10	10	2		Yes	remove	0
3722	W	sweet cherry	*Prunus avium*	14		2		Yes	remove	0
3724	W	sweet cherry	*Prunus avium*	8		1	lean	Yes	remove	0
3725	W	sweet cherry	*Prunus avium*	16		2		Yes	remove	0
3726	W	sweet cherry	*Prunus avium*	10		1	dying, not viable	Yes	remove	0
3728	W	bigleaf maple	*Acer macrophyllum*	18		1	hollow with decay		remove	0
3734	W	bigleaf maple	*Acer macrophyllum*	16		1	decay, history of failure		remove	0

No.	Outside (O) or Within (W) Construction	Common Name	Species Name	DBH[1]	C-Rad[2]	Cond[3]	Comments	Invasive Species	Treatment	Mitigation
3737	W	bigleaf maple	*Acer macrophyllum*	18		1	stem decay		remove	0
3739	O	sweet cherry	*Prunus avium*	21	12	2		Yes	remove	0
3740	O	bigleaf maple	*Acer macrophyllum*	16	12	2			remove	6
3741	O	sweet cherry	*Prunus avium*	36		1	stem decay, branch failures	Yes	remove	0
3742	O	sweet cherry	*Prunus avium*	14	10	2		Yes	remove	0
3743	O	sweet cherry	*Prunus avium*	12		2		Yes	remove	0
3744	O	sweet cherry	*Prunus avium*	8		2		Yes	remove	0
3745	O	sweet cherry	*Prunus avium*	10		2		Yes	remove	0
3746	O	bigleaf maple	*Acer macrophyllum*	20		2			retain	0
3747	O	bigleaf maple	*Acer macrophyllum*	11	8	2			retain	0
3748	O	bigleaf maple	*Acer macrophyllum*	12	8	3			retain	0
3749	O	bigleaf maple	*Acer macrophyllum*	6		1			remove	0
3750	O	bigleaf maple	*Acer macrophyllum*	14		2			remove	6
3751	O	bigleaf maple	*Acer macrophyllum*	12		1			remove	0
3752	O	sweet cherry	*Prunus avium*	10	10	2		Yes	remove	0
3753	O	sweet cherry	*Prunus avium*	12		2		Yes	remove	0
3754	W	Douglas-fir	*Pseudotsuga menziesii*	20	10	3			remove	3
3755	W	bigleaf maple	*Acer macrophyllum*	9		2			remove	1
3756	W	Douglas-fir	*Pseudotsuga menziesii*	16		3			remove	2
3757	W	bigleaf maple	*Acer macrophyllum*	8		2			remove	1
3758	W	Douglas-fir	*Pseudotsuga menziesii*	12		3			remove	1
3759	W	bigleaf maple	*Acer macrophyllum*	8		2			remove	1
3760	O	Douglas-fir	*Pseudotsuga menziesii*	18	8	3			remove	6
3761	O	bigleaf maple	*Acer macrophyllum*	12		2			remove	3
3762	O	sweet cherry	*Prunus avium*	12		2		Yes	remove	0
3763	O	bigleaf maple	*Acer macrophyllum*	10	8	2			remove	3
3764	O	Douglas-fir	*Pseudotsuga menziesii*	18	10	4			remove	6
3765	O	Douglas-fir	*Pseudotsuga menziesii*	24	12	4			retain	0
3766	O	Douglas-fir	*Pseudotsuga menziesii*	17		2	old broken top		remove	6
3767	O	Douglas-fir	*Pseudotsuga menziesii*	20		2			remove	9
3768	O	Douglas-fir	*Pseudotsuga menziesii*	12		2			remove	3
3769	O	Douglas-fir	*Pseudotsuga menziesii*	24		4			remove	9
3770	O	bigleaf maple	*Acer macrophyllum*	10		2			retain	0
3771	O	Douglas-fir	*Pseudotsuga menziesii*	12	7	3			retain	0
3772	O	Douglas-fir	*Pseudotsuga menziesii*	15	8	3			retain	0
3773	W	bigleaf maple	*Acer macrophyllum*	16		2			remove	2
3775	O	bigleaf maple	*Acer macrophyllum*	12		2			remove	3
3777	O	bigleaf maple	*Acer macrophyllum*	14		2			remove	6
3778	O	bigleaf maple	*Acer macrophyllum*	28	25	2			remove	12
3779	O	bigleaf maple	*Acer macrophyllum*	12		2			remove	3
3780	O	bigleaf maple	*Acer macrophyllum*	10		2			remove	3
3781	O	Douglas-fir	*Pseudotsuga menziesii*	20	10	4			retain	0
3782	O	bigleaf maple	*Acer macrophyllum*	12		2			remove	3
3783	O	Douglas-fir	*Pseudotsuga menziesii*	10		3			retain	0
3784	O	bigleaf maple	*Acer macrophyllum*	10		2			retain	0
3785	O	bigleaf maple	*Acer macrophyllum*	24	12	2			retain	0
3786	O	bigleaf maple	*Acer macrophyllum*	12		2			retain	0
3787	O	bigleaf maple	*Acer macrophyllum*	12		2			retain	0
3834	O	bigleaf maple	*Acer macrophyllum*	16		3	ROW access		protect off-site tree	0
3838	O	Oregon white oak	*Quercus garryana*	26		3	ROW access		protect off-site tree	0
3839	O	Oregon white oak	*Quercus garryana*	20	20	3	ROW access		protect off-site tree	0
3864	W	Douglas-fir	*Pseudotsuga menziesii*	16		3	ROW access		remove off-site tree	2
3904	W	Douglas-fir	*Pseudotsuga menziesii*	22		3	ROW access		protect off-site tree	0
3905	W	Douglas-fir	*Pseudotsuga menziesii*	14		3	ROW access		protect off-site tree	0
4184	O	adjacent tree		14	10	0	ROW access		protect off-site tree	0
4185	O	adjacent tree		12	8	0	ROW access		protect off-site tree	0
4211	W	Douglas-fir	*Pseudotsuga menziesii*	15		4	ROW access		remove off-site tree	2
4212	W	Douglas-fir	*Pseudotsuga menziesii*	12	10	4	ROW access		remove off-site tree	1
4213	W	Douglas-fir	*Pseudotsuga menziesii*	8	8	3	ROW access		remove off-site tree	1
4214	W	Douglas-fir	*Pseudotsuga menziesii*	16	12	4	ROW access		remove off-site tree	2
4215	W	Douglas-fir	*Pseudotsuga menziesii*	16	12	4	ROW access		remove off-site tree	2
4216	W	bigleaf maple	*Acer macrophyllum*	32	15	3	ROW access		remove off-site tree	5
4725	O	adjacent tree		15	12	0			off-site	0
4726	O	adjacent tree		15	12	0			off-site	0
4748	O	adjacent tree		18	20	0			off-site	0
4757	O	adjacent tree		18	12	0			off-site	0

No.	Outside (O) or Within (W) Construction	Common Name	Species Name	DBH[1]	C-Rad[2]	Cond[3]	Comments	Invasive Species	Treatment	Mitigation
4758	O	adjacent tree		20	15	0			off-site	0
4775	O	adjacent tree		10	10	0			off-site	0
4786	O	adjacent tree		18	15	0			off-site	0
4787	O	adjacent tree		15	15	0			off-site	0
4998	O	adjacent tree		18	12	0			off-site	0
6005	O	Douglas-fir	*Pseudotsuga menziesii*	14	10	0			off-site	0
6224	O	bigleaf maple	*Acer macrophyllum*	17	10	2			remove	6
6225	O	bigleaf maple	*Acer macrophyllum*	17	10	2			remove	6
6226	O	sweet cherry	*Prunus avium*	8	8	2		Yes	remove	0
6227	O	sweet cherry	*Prunus avium*	10	10	2		Yes	remove	0
6228	W	bigleaf maple	*Acer macrophyllum*	6	8	2			remove	1
6229	W	bigleaf maple	*Acer macrophyllum*	18	15	2			remove	2
6230	O	Scouler's willow	*Salix scouleriana*	17	12	1			remove	0
6231	O	bigleaf maple	*Acer macrophyllum*	14	12	2			remove	6
6232	O	bigleaf maple	*Acer macrophyllum*	8	8	2			remove	3
6233	O	sweet cherry	*Prunus avium*	20	14	2		Yes	remove	0
6234	O	sweet cherry	*Prunus avium*	12	10	2		Yes	remove	0
6235	O	sweet cherry	*Prunus avium*	12	10	2		Yes	remove	0
6236	O	sweet cherry	*Prunus avium*	16	14	1		Yes	remove	0
6237	O	sweet cherry	*Prunus avium*	6	10	2		Yes	remove	0
6238	O	sweet cherry	*Prunus avium*	23	20	2		Yes	remove	0
6239	O	adjacent tree		17	15	0			off-site	0
6289	W	bigleaf maple	*Acer macrophyllum*	10	15	2			remove	1
6290	W	bigleaf maple	*Acer macrophyllum*	10	15	2			remove	1
6291	O	bigleaf maple	*Acer macrophyllum*	10	15	2			remove	3
6293	W	bigleaf maple	*Acer macrophyllum*	10	15	2			remove	1
6294	W	bigleaf maple	*Acer macrophyllum*	14	15	2			remove	2
6295	W	bigleaf maple	*Acer macrophyllum*	8	12	2			remove	1
7353	W	sweet cherry	*Prunus avium*	6	8	2		Yes	remove	0
7702	O	black cottonwood	*Populus trichocarpa*	6	8	2			remove	3
7703	O	black cottonwood	*Populus trichocarpa*	10	10	3			remove	3
7704	O	Oregon ash	*Fraxinus latifolia*	10	10	3			remove	3
7705	O	black cottonwood	*Populus trichocarpa*	12	15	3			remove	3
7706	W	black cottonwood	*Populus trichocarpa*	14	6	3			remove	2
7707	W	black cottonwood	*Populus trichocarpa*	6	10	3			remove	1
7708	W	black cottonwood	*Populus trichocarpa*	6	10	3			remove	1
7709	O	black cottonwood	*Populus trichocarpa*	10	15	3			remove	3
7710	O	black cottonwood	*Populus trichocarpa*	16	20	3			remove	6
8257	O	adjacent tree		6	6	0			off-site	0
8258	O	adjacent tree		6	6	0			off-site	0
8259	O	adjacent tree		6	6	0			off-site	0
8276	O	adjacent tree		10	15	0			off-site	0
8452	O	adjacent tree		6	5	0			off-site	0
8453	O	adjacent tree		6	5	0			off-site	0
8454	O	adjacent tree		6	5	0



LIGHTING LEGEND

SYMBOL	KEY	QTY.	DESCRIPTION
	A	3	DECORATIVE STREET LIGHT (KING ACORN STYLE) PER CITY STANDARD
	B	19	STREET LIGHT PER CITY STANDARD
	EXISTING STREET LIGHT		

STATISTICS

DESCRIPTION	AVG.	MAX.	MIN.	MAX./MIN.	AVG./MIN.
MOLALLA ROAD	1.59	5.9 FC	0.5 FC	14.7	3.98
MOLALLA ROAD INTERSECTION	2.95	3.5 FC	2.0 FC	1.75	1.48
MOLALLA ROAD SIDEWALK	1.65	5.3 FC	0.7 FC	7.57	2.36
PROPOSED PUBLIC ROAD	1.95	3.0 FC	0.6 FC	5.00	3.25
PROPOSED PUBLIC ROAD SIDEWALK	1.50	2.6 FC	0.5 FC	5.20	2.96

LEGEND

SYMBOL	DESCRIPTION
	PROPERTY LINE
	RIGHT OF WAY
	EASEMENT
	NROD SETBACK
	EXISTING ISOLINE 1.0 FOOT-CANDLE
	EXISTING ISOLINE 0.5 FOOT-CANDLE
	PROPOSED ISOLINE 1.0 FOOT-CANDLE
	PROPOSED ISOLINE 0.5 FOOT-CANDLE

NOTES:

1. ONLY LIGHTS WITHIN THE RIGHT OF WAY HAVE BEEN STUDIED/MODELED AND ASSESSED FOR COMPLIANCE. EXISTING LIGHTS AND ISOLINES SHOWN ARE FOR REFERENCE ONLY.
2. THERE ARE NO AS-BUILTS AVAILABLE AT THE TIME OF THIS PRELIMINARY DESIGN. EXISTING LIGHT INFORMATION IS NOT VERIFIED IN THE FIELD. EXISTING LIGHTS ARE TO REMAIN AND BE PROTECTED UNLESS SHOWN OTHERWISE.
3. CONTRACTOR TO VERIFY EXISTING CONDITIONS PRIOR TO REPLACING OR INSTALLING NEW LIGHT FIXTURES.
4. NEW LIGHT POLES SHALL NOT BE LOCATED IN THE PATH OF TRAVEL AND MAINTAIN A 3' CLEARANCE FROM THE FRONT OF CURB PER CITY STANDARDS.
5. PLAN IS DIAGRAMMATIC.
6. SCOPE OF WORK IS ONLY FOR THE RIGHT-OF-WAY. PRIVATE/ONSITE IS EXCLUDED.
7. ALL STREET LIGHTING RELATED WORK AND MATERIALS SHALL COMPLY WITH CITY, COUNTY, AND OTHER APPLICABLE GOVERNING AUTHORITY REQUIREMENTS.

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture, and Geology, D.P.C.
10135 SE Sunnyside Road Suite 200
Clackamas, OR 97015
T: 503.659.9500 www.langan.com

CLIENT/OWNER

CYPRESS EQUITIES

PROJECT NAME

OREGON CITY MIXED USE DETAILED DEVELOPMENT PLAN

LANGAN PROJECT NUMBER: 794-002-701

PROJECT ADDRESS

1367 MOLALLA AVENUE
OREGON CITY, OR 97045

STAMP

REVISIONS

REV	ISSUED FOR:	DATE
0	DDP SUBMITTAL	11/14/2025
1	DDP SUBMITTAL	12/09/2025
2	DDP SUBMITTAL	03/02/2026

811

SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

REVIEWED BY: A.ILAO
DESIGNED BY: D.LOPEZ

SHEET NAME

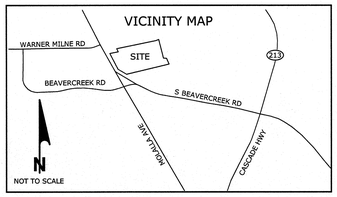
OVERALL LIGHTING PLAN

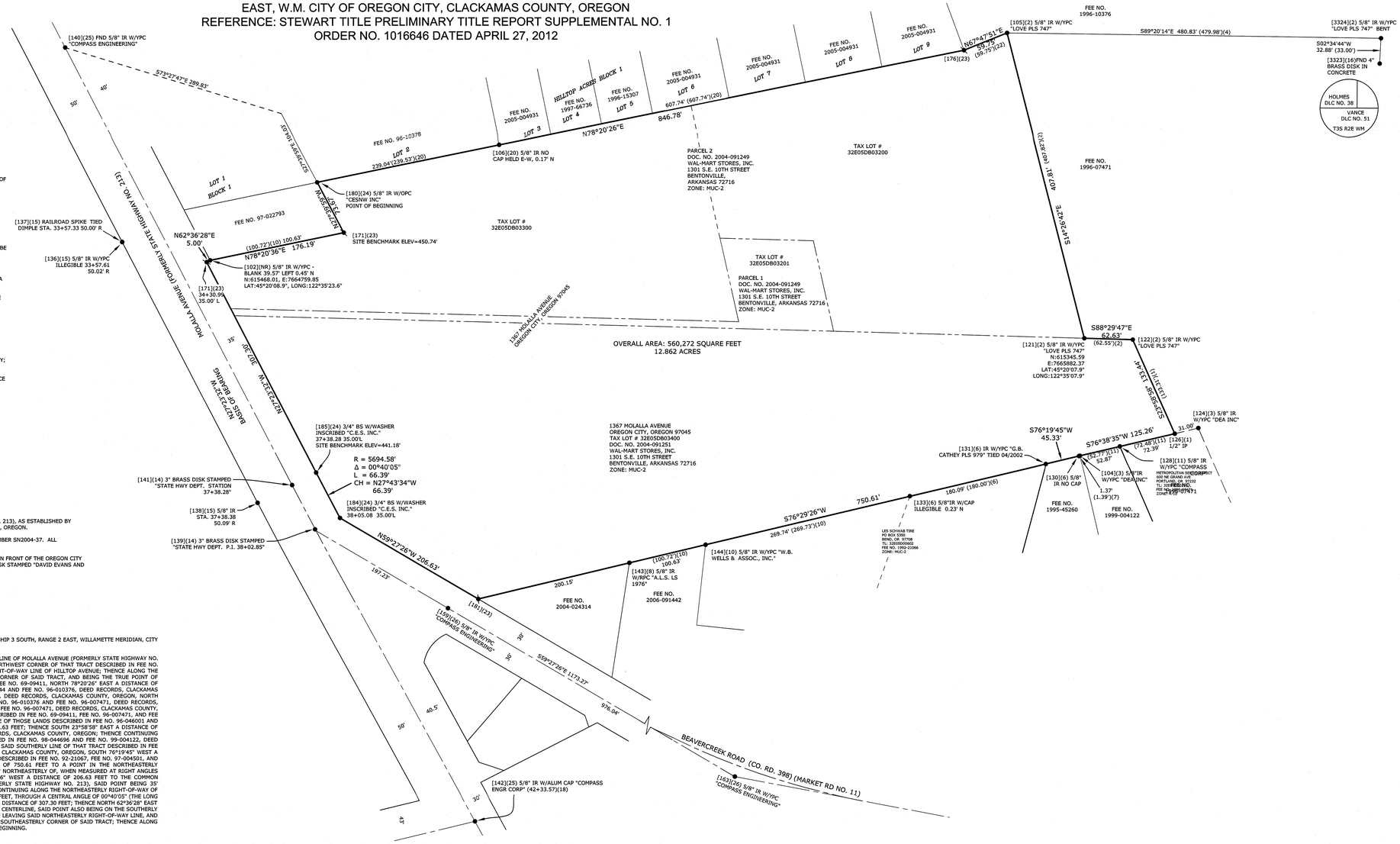
SHEET NUMBER

DDP-L2.0

ALTA/ACSM SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON
REFERENCE: STEWART TITLE PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 1
ORDER NO. 1016646 DATED APRIL 27, 2012





CERTIFICATION FOR SURVEY

1. THE SURVEY WAS MADE ON THE GROUND DURING APRIL AND MAY OF 2012, AND CORRECTLY SHOWS THE AREA OF THE SUBJECT PROPERTY, THE LOCATION AND TYPE OF ALL BUILDINGS, STRUCTURES AND OTHER IMPROVEMENTS SITUATED ON THE SUBJECT PROPERTY.

2. EXCEPT AS SHOWN ON THE SURVEY, THERE ARE NO OBSERVABLE, ABOVE GROUND ENCROACHMENTS BY THE IMPROVEMENTS ON THE SUBJECT PROPERTY UPON ADJOINING PROPERTIES, STREETS OR ALLEYS, OR BY THE IMPROVEMENTS ON ADJOINING PROPERTIES, STREETS OR ALLEYS UPON THE SUBJECT PROPERTY.

3. THE LOCATION OF EACH EASEMENT, RIGHT OF WAY, SERVITUDE, AND OTHER MATTER AFFECTING THE SUBJECT PROPERTY AND LISTED IN STEWART TITLE COMPANY, PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 1, ORDER NUMBER 1016646, DATED APRIL 27, 2012, WITH RESPECT TO THE SUBJECT PROPERTY, HAS BEEN SHOWN ON THE SURVEY, TOGETHER WITH THE APPROPRIATE RECORDING REFERENCES, TO THE EXTENT THAT SUCH MATTERS CAN BE LOCATED. THE PROPERTY SHOWN ON THE SURVEY IS THE PROPERTY DESCRIBED IN THAT TITLE REPORT.

4. THE SUBJECT PROPERTY HAS ACCESS TO AND FROM DULY DEDICATED AND ACCEPTED PUBLIC STREETS.

5. THE MEASURED BEARINGS AND DISTANCES SHOWN HEREON FORMS A MATHEMATICALLY CLOSED FIGURE WITH A MINIMUM LATITUDE AND DEPARTURE CLOSURE ERROR OF 1 IN 50,000.

6.THIS SITE LIES WITHIN WITHIN THE LIMITS OF FEMA MAP NUMBER 41005C0279D, WHICH IS NOT PRINTED SINCE THE ENTIRE MAP IS IN ZONE 'X' AS REITERATED ON FEMA MAP NUMBER 41005C1ND0A, EFFECTIVE DATE: JUNE 17, 2008.

7.SUBJECT PROPERTY IS ZONED, MUC-2 "MIXED USE CORRIDOR"

8. NO ORTHOPHOTOGRAPHY, PHOTOGRAMMETRIC MAPPING, LASER SCANNING, OR SIMILAR PRODUCTS WERE UTILIZED IN THE PREPARATION OF THIS SURVEY.

I HEREBY CERTIFY TO PACLAND; WAL-MART STORES, INC., A DELAWARE CORPORATION; WAL-MART REAL ESTATE BUSINESS TRUST, A DELAWARE STATUTORY TRUST; WAL-MART TRS, LLC, A DELAWARE LIMITED LIABILITY COMPANY; STEWART TITLE GUARANTY COMPANY;

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2011 "MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS", JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 1-6, 7(a), 7(b)(1), 7(c), 8, 9, 10(a), 11(b), 13, 14, 15-19, 20(a), 21 AND 22 OF TABLE 'A' THEREOF. THE FIELD WORK WAS COMPLETED ON JULY 9, 2012.

CES/NW MAKES NO WARRANTIES AS TO MATTER OF UNWRITTEN TITLE SUCH AS ACQUIESCENCE, ESTOPPEL, ADVERSE POSSESSION, ETC.

RYAN H. GODSEY
PROFESSIONAL LAND SURVEYOR
REGISTRATION NO.(OR) 65604

NARRATIVE

THE BASIS OF BEARINGS IS THE MONUMENTED CENTERLINE OF MOLALLA AVENUE (FORMERLY STATE HIGHWAY NO. 213), AS ESTABLISHED BY MONUMENTS NO. 140 AND NO. 139 AS SHOWN HEREON PER SN 2010-176, SURVEY RECORDS, CLACKAMAS COUNTY, OREGON.

THE PURPOSE OF THIS SURVEY IS TO RETRACE THE BOUNDARIES AS SHOWN ON CLACKAMAS COUNTY SURVEY NUMBER SN2004-37. ALL MONUMENTS SHOWN WERE VISITED IN THE PROCESS OF THIS RETRACEMENT.

VERTICAL DATUM IS BASED ON A CITY OF OREGON CITY BENCHMARK, A BRASS DISK LOCATED BY THE FLAG POLE IN FRONT OF THE OREGON CITY POLICE BUILDING, 320 WARNER MILNE RD, ELEVATION 447.729' (NGVD 1929) AND BENCHMARK 0030, A BRASS DISK STAMPED "DAVID EVANS AND ASSOCIATES, INC. GPS STA. LIBRARY 1990" ELEVATION = 452.739'

LEGAL DESCRIPTION PER TITLE REPORT

A TRACT OF LAND SITUATED IN THE SOUTHWEST QUARTER AND THE SOUTHEAST QUARTER OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, WILLAMETTE MERIDIAN, CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON, SAID TRACT IS MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT A THREE INCH BRASS DISK SET BY THE OREGON STATE HIGHWAY DEPARTMENT IN THE CENTERLINE OF MOLALLA AVENUE (FORMERLY STATE HIGHWAY NO. 213) AT ENGINEER'S STATION 31+00; THENCE SOUTH 73°27'47" EAST A DISTANCE OF 289.83 FEET TO THE NORTHWEST CORNER OF THAT TRACT DESCRIBED IN FEE NO. 96-010378, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SAID POINT ALSO BEING ON THE SOUTHERLY RIGHT-OF-WAY LINE OF HILLTOP AVENUE; THENCE ALONG THE WESTERLY LINE OF SAID TRACT, SOUTH 27°39'59" EAST A DISTANCE OF 104.03 FEET TO THE SOUTHWEST CORNER OF SAID TRACT, AND BEING THE TRUE POINT OF BEGINNING; THENCE ALONG THE NORTHERLY LINE OF THOSE TRACTS DESCRIBED IN FEE NO. 72-08888 AND FEE NO. 69-09411, NORTH 78°20'26" EAST A DISTANCE OF 846.78 FEET TO THE COMMON CORNER OF THOSE LANDS DESCRIBED IN FEE NO. 69-09411, FEE NO. 95-073144 AND FEE NO. 96-010376, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE SOUTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-010376, DEED RECORDS, CLACKAMAS COUNTY, OREGON, NORTH 67°47'51" EAST A DISTANCE OF 59.75 FEET TO THE COMMON CORNER OF THOSE LANDS DESCRIBED IN FEE NO. 96-010376 AND FEE NO. 96-007471, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE CONTINUING ALONG THE WESTERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-007471, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 14°26'42" EAST A DISTANCE OF 407.81 FEET TO THE COMMON CORNER OF THOSE LANDS DESCRIBED IN FEE NO. 69-09411, FEE NO. 96-007471, AND FEE NO. 96-046001, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE CONTINUING ALONG THE COMMON LINE OF THOSE LANDS DESCRIBED IN FEE NO. 96-046001 AND FEE NO. 96-007471, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 88°29'47" EAST A DISTANCE OF 62.63 FEET; THENCE SOUTH 23°58'58" EAST A DISTANCE OF 133.44 FEET TO THE SOUTHEASTERLY CORNER OF THAT TRACT DESCRIBED IN FEE NO. 96-046001, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE CONTINUING ALONG THE SOUTHERLY LINE OF SAID TRACT, AND ALONG THE NORTHERLY LINE OF THOSE LANDS DESCRIBED IN FEE NO. 98-044696 AND FEE NO. 99-004122, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 76°38'35" WEST A DISTANCE OF 125.26 FEET; THENCE ALONG SAID SOUTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-046001, AND THE NORTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 95-045260, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 76°19'45" WEST A DISTANCE OF 45.33 FEET; THENCE ALONG SAID SOUTHERLY LINE, AND THE NORTHERLY LINE OF THOSE LANDS DESCRIBED IN FEE NO. 97-004501, AND FEE NO. 98-041108, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 76°29'26" WEST A DISTANCE OF 750.61 FEET TO A POINT IN THE NORTHEASTERLY RIGHT-OF-WAY OF BEAVERCREEK ROAD (MARKET ROAD NO. 11) (COUNTY ROAD NO. 398), SAID POINT BEING 30' NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, THE CENTERLINE OF SAID ROAD; THENCE ALONG SAID NORTHEASTERLY RIGHT-OF-WAY, NORTH 59°27'26" WEST A DISTANCE OF 206.63 FEET TO THE COMMON NORTHEASTERLY RIGHT-OF-WAY INTERSECTION OF SAID BEAVERCREEK ROAD AND MOLALLA AVENUE (FORMERLY STATE HIGHWAY NO. 213), SAID POINT BEING 35' NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, SAID CENTERLINE OF MOLALLA AVENUE; THENCE CONTINUING ALONG THE NORTHEASTERLY RIGHT-OF-WAY OF SAID MOLALLA AVENUE, ALONG THE ARC OF A 5694.58 FOOT RADIUS CURVE TO THE RIGHT A DISTANCE OF 66.39 FEET, THROUGH A CENTRAL ANGLE OF 00°40'05" (THE LONG CHORD OF WHICH BEARS NORTH 27°43'34" WEST A DISTANCE OF 66.39 FEET); THENCE NORTH 27°23'32" WEST A DISTANCE OF 307.30 FEET; THENCE NORTH 62°36'28" EAST A DISTANCE OF 5.00 FEET TO A POINT 40 FEET NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, SAID CENTERLINE, SAID POINT ALSO BEING ON THE SOUTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 97-022793, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE LEAVING SAID NORTHEASTERLY RIGHT-OF-WAY LINE, AND CONTINUING ALONG SAID SOUTHERLY TRACT LINE, NORTH 78°20'26" EAST A DISTANCE OF 176.19 FEET TO THE SOUTHEASTERLY CORNER OF SAID TRACT; THENCE ALONG THE EASTERLY LINE OF SAID TRACT, NORTH 27°39'59" WEST A DISTANCE OF 73.67 FEET TO THE TRUE POINT OF BEGINNING.

CONTAINING AN AREA OF 560,272 SQUARE FEET, OR 12.862 ACRES, MORE OR LESS.

RECORD DESCRIPTIONS

2004-091249 PARCEL 1
A TRACT OF LAND SITUATED IN THE SOUTHWEST 1/4 AND THE SOUTHEAST 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, WILLAMETTE MERIDIAN, CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON. SAID TRACT IS MORE PARTICULARLY DESCRIBED AS FOLLOW:

COMMENCING AT THE EXTREME SOUTHERLY CORNER OF TRACT DESCRIBED IN CLACKAMAS COUNTY DEED BOOK "O", PAGE 265, SAID POINT BEING IN THE CENTERLINE OF MOLALLA AVENUE; THENCE SOUTH 88°29'47" EAST A DISTANCE OF 39.98 FEET TO A POINT BEING 35 FEET NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, THE CENTERLINE OF SAID ROAD, SAID POINT BEING THE TRUE POINT OF BEGINNING; THENCE ALONG THE NORTHEASTERLY RIGHT-OF-WAY OF SAID MOLALLA AVENUE, NORTH 27°23'32" WEST A DISTANCE OF 10.28 FEET; THENCE ALONG THE SOUTHERLY LINE THAT TRACT DESCRIBED IN FEE NO. 72-08888 DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 88°29'47" EAST A DISTANCE OF 653.92 FEET TO THE SOUTHEAST CORNER OF SAID TRACT; THENCE ALONG THE EASTERLY LINE OF SAID TRACT, NORTH 12°38'23" WEST A DISTANCE OF 110.72 FEET TO THE NORTHWEST CORNER OF THAT TRACT DESCRIBED IN FEE NO. 81-19662, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE NORTHERLY LINE OF SAID TRACT, SOUTH 88°29'47" EAST A DISTANCE OF 120.00 FEET TO THE NORTHEAST CORNER OF SAID TRACT; THENCE ALONG THE EASTERLY LINE OF SAID TRACT, SOUTH 12°38'23" EAST A DISTANCE OF 120.00 FEET TO A POINT ON THE NORTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-046001, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE NORTHERLY LINE OF SAID TRACT, NORTH 88°29'47" WEST A DISTANCE OF 771.22 FEET TO THE TRUE POINT OF BEGINNING.

CONTAINING AN AREA OF 19,837 SQUARE FEET, OR 0.455 ACRES, MORE OR LESS.

2004-091249 PARCEL 2
A TRACT OF LAND SITUATED IN THE SOUTHWEST 1/4 AND THE SOUTHEAST 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, WILLAMETTE MERIDIAN, CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON. SAID TRACT IS MORE PARTICULARLY DESCRIBED AS FOLLOW:

COMMENCING AT THE EXTREME SOUTHERLY CORNER OF TRACT DESCRIBED IN CLACKAMAS COUNTY DEED BOOK "O", PAGE 265, SAID POINT BEING IN THE CENTERLINE OF MOLALLA AVENUE; THENCE SOUTH 88°29'47" EAST A DISTANCE OF 39.98 FEET TO A POINT BEING 35 FEET NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, THE CENTERLINE OF SAID ROAD; THENCE ALONG THE NORTHEASTERLY RIGHT-OF-WAY OF SAID MOLALLA AVENUE, NORTH 27°23'32" WEST A DISTANCE OF 10.28 FEET TO THE TRUE POINT OF BEGINNING; THENCE CONTINUING ALONG THE NORTHEASTERLY RIGHT-OF-WAY OF SAID MOLALLA AVENUE, NORTH 27°23'32" WEST A DISTANCE OF 67.85 FEET; THENCE NORTH 62°36'28" EAST A DISTANCE OF 5.00 FEET TO A POINT 40 FEET NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, SAID CENTERLINE, SAID POINT ALSO BEING ON THE SOUTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 97-022793, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE LEAVING SAID NORTHEASTERLY RIGHT-OF-WAY LINE, AND CONTINUING ALONG SAID SOUTHERLY LINE, NORTH 78°20'26" EAST A DISTANCE OF 176.19 FEET TO THE SOUTHWEST CORNER OF THAT TRACT DESCRIBED IN FEE NO. 96-010378, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE NORTHERLY LINE OF THOSE TRACTS DESCRIBED IN FEE NO. 72-08888 AND FEE NO. 69-09411, NORTH 78°20'26" EAST A DISTANCE OF 846.78 FEET TO THE COMMON CORNER OF THOSE LANDS DESCRIBED IN FEE NO. 69-09411, FEE NO. 95-073144 AND FEE NO. 96-010376, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE SOUTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-010376, DEED RECORDS, CLACKAMAS COUNTY, OREGON, NORTH 67°47'51" EAST A DISTANCE OF 59.75 FEET TO THE COMMON CORNER OF THOSE LANDS DESCRIBED IN FEE NO. 96-010376 AND FEE NO. 96-007471, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE CONTINUING ALONG THE WESTERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-007471, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 14°26'42" EAST A DISTANCE OF 407.81 FEET TO THE COMMON CORNER OF THOSE TRACTS DESCRIBED IN FEE NO. 69-09411, FEE NO. 96-007471, AND FEE NO. 96-046001, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE SOUTHERLY LINE OF THAT TRACT OF LAND DESCRIBED IN FEE NO. 69-09411, DEED RECORDS, CLACKAMAS COUNTY, OREGON, NORTH 88°29'47" WEST A DISTANCE OF 322.36 FEET TO THE SOUTHEAST CORNER OF THAT TRACT DESCRIBED IN FEE NO. 81-19662, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE EASTERLY LINE OF SAID TRACT DESCRIBED IN FEE NO. 81-19662, NORTH 1238'23" WEST A DISTANCE OF 120.00 FEET; THENCE ALONG THE NORTHERLY LINE OF SAID TRACT, NORTH 8829'47" WEST A DISTANCE OF 120.00 FEET; THENCE ALONG THE WESTERLY LINE OF SAID TRACT, SOUTH 12°38'23" EAST A DISTANCE OF 110.72 FEET TO THE SOUTHEAST CORNER OF THAT TRACT DESCRIBED IN FEE NO. 72-08888, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE SOUTHERLY LINE OF SAID TRACT DESCRIBED IN FEE NO. 72-08888, NORTH 8829'47" WEST A DISTANCE OF 653.92 FEET TO THE TRUE POINT OF BEGINNING.

CONTAINING AN AREA OF 256,397 SQUARE FEET, OR 5.886 ACRES, MORE OR LESS.

2004-091251
A TRACT OF LAND SITUATED IN THE SOUTHWEST 1/4 AND THE SOUTHEAST 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, WILLAMETTE MERIDIAN, CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON. SAID TRACT IS MORE PARTICULARLY DESCRIBED AS FOLLOW:

COMMENCING AT THE EXTREME SOUTHERLY CORNER OF TRACT DESCRIBED IN CLACKAMAS COUNTY DEED BOOK "O", PAGE 265, SAID POINT BEING IN THE CENTERLINE OF MOLALLA AVENUE; THENCE SOUTH 88°29'47" EAST A DISTANCE OF 39.98 FEET TO A POINT BEING 35 FEET NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, THE CENTERLINE OF SAID ROAD, SAID POINT BEING THE TRUE POINT OF BEGINNING; THENCE ALONG THE SOUTHERLY LINE OF THOSE LANDS DESCRIBED IN FEE NO. 81-19662, FEE NO. 69-09411, AND FEE NO. 96-007471 DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 88°29'47" EAST A DISTANCE OF 1156.21 FEET; THENCE SOUTH 23°58'58" EAST A DISTANCE OF 133.44 FEET TO THE SOUTHEASTERLY CORNER OF THAT TRACT DESCRIBED IN FEE NO. 96-046001, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE CONTINUING ALONG THE SOUTHERLY LINE OF SAID TRACT, AND ALONG THE NORTHERLY LINE OF THOSE LANDS DESCRIBED IN FEE NO. 98-044696 AND FEE NO. 99-004122, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 76°38'35" WEST A DISTANCE OF 125.26 FEET; THENCE ALONG SAID SOUTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-046001, AND THE NORTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 95-045260, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 76°19'45" WEST A DISTANCE OF 45.33 FEET; THENCE ALONG SAID SOUTHERLY LINE, AND THE NORTHERLY LINE OF THOSE LANDS DESCRIBED IN FEE NO. 92-21067, FEE NO. 97-004501, AND FEE NO. 98-041108, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 76°29'26" WEST A DISTANCE OF 750.61 FEET TO A POINT IN THE NORTHEASTERLY RIGHT-OF-WAY OF BEAVERCREEK ROAD (MARKET ROAD NO. 11) (COUNTY ROAD NO. 398), SAID POINT BEING 30' NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, THE CENTERLINE OF SAID ROAD; THENCE ALONG SAID NORTHEASTERLY RIGHT-OF-WAY, NORTH 59°27'26" WEST A DISTANCE OF 206.63 FEET TO THE COMMON NORTHEASTERLY RIGHT-OF-WAY INTERSECTION OF SAID BEAVERCREEK ROAD AND MOLALLA AVENUE (FORMERLY STATE HIGHWAY NO. 213), SAID POINT BEING 35' NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, SAID CENTERLINE OF MOLALLA AVENUE; THENCE CONTINUING ALONG THE NORTHEASTERLY RIGHT-OF-WAY OF SAID MOLALLA AVENUE, ALONG THE ARC OF A 5694.58 FOOT RADIUS CURVE TO THE RIGHT A DISTANCE OF 66.39 FEET, THROUGH A CENTRAL ANGLE OF 00°40'05" (THE LONG CHORD OF WHICH BEARS NORTH 27°43'34" WEST A DISTANCE OF 66.39 FEET); THENCE NORTH 27°23'32" WEST A DISTANCE OF 229.17 FEET TO THE TRUE POINT OF BEGINNING.

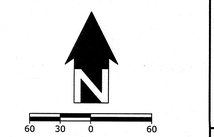
CONTAINING AN AREA OF 284,038 SQUARE FEET, OR 6.521 ACRES, MORE OR LESS.

REFERENCES

(1) PS-3291
(2) PS-24613
(3) PS-22135
(4) PS-27403
(5) PARTITION PLAT NO. 1996-14
(6) PS-18026
(7) PS-26512
(8) PS-23880
(9) PARTITION PLAT NO. 1992-49
(10) PS-24728
(11) PS-27729
(12) PS-28185
(13) PS-16481
(14) OREGON STATE HIGHWAY DEPARTMENT DRG. NO. 8B-12-9 DEC. 1958
(15) PS-27047
(16) BT BOOK 12, PAGE 6
(17) LP 060 SUPPLEMENTAL
(18) PS-25313
(19) PS-24286
(20) HILLTOP ACRES, PLAT BOOK 37 PAGE 26
(21) PS-18187
(22) PS-26713
(23) SN29636
(24) SN2004-377
(25) SN2010-176
(26) SN2008-034

LEGEND

● = FOUND SURVEY MONUMENT AS NOTED
◥ = FOUND 5/8" IRON ROD W/ORANGE PLASTIC CAP MARKED "CES NW, INC." PER S.N. 29636
BS W/WASHER = BRASS SCREW WITH WASHER
L = LENGTH ALONG ARC
W/YPC = WITH YELLOW PLASTIC CAP
DOC. NO. = DOCUMENT NUMBER, CLACKAMAS COUNTY RECORDS
FTC = FROM TRUE CORNER
NR = RECORD NOT LOCATED
PS = PRIVATE SURVEY NUMBER AS FILED, CLACKAMAS COUNTY SURVEYOR'S OFFICE
SN = SURVEY NUMBER AS FILED, CLACKAMAS COUNTY SURVEYOR'S OFFICE
FEE NO. RECORDING NUMBER, CLACKAMAS COUNTY RECORDER
###.## = DENOTES MEASURED DISTANCE
(###.##')(#) = DENOTES RECORD DISTANCE PER REFERENCE NUMBER
###.##'(#) = DENOTES MEASURED AND RECORD DISTANCE(HELD) PER REFERENCE NUMBER
[###](#) = DENOTES FOUND MONUMENT NUMBER AND REFERENCE NUMBER



SHEET INDEX

SHEET 1 - VICINITY MAP, BOUNDARY SURVEY & SURVEYORS CERT
SHEET 2 - ZONING & EXCEPTIONS
SHEET 3 - SITE TOPOGRAPHIC FEATURES, UTILITIES & ELEVATIONS
SHEET 4 - STORM & SANITARY SEWER
SHEET 5 - TREE SURVEY

REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON DECEMBER 13, 2007 RYAN H. GODSEY 65604
RENEWS: 6/30/13

OREGON CITY
PROJECT NO. 3051-00

PACLAND
6400 SE LAKE ROAD, SUITE 300
PORTLAND, OR 97222

CES NW
13190 SW 68TH PKWY, STE 150
TIGARD, OREGON 97223
(503)968-6655 www.cesnw.com

ALTA SURVEY

REVISIONS

2689-ALTA.DWG

DATE: 07-09-12
CHECKED BY: RHG
2689
283
PROJECT NO. 3051-00:
DRAWN BY:

BOUNDARY SURVEY

SHEET 1
OF 5

ALTA/ACSM SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2
EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON
REFERENCE: STEWART TITLE PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 1
ORDER NO. 1016646 DATED APRIL 27, 2012

SPECIAL EXCEPTIONS

6. CITY LIENS, IF ANY, OF THE CITY OF OREGON CITY.

7. PERSONAL PROPERTY TAXES, IF ANY

8. COVENANTS, CONDITIONS, RESTRICTIONS AND EASEMENTS IN DECLARATION OF RESTRICTIONS, AND ANY AMENDMENTS THERETO:
RECORDED: JUNE 3, 1981
RECORDING NO.: 81015230
(PLOTTED BUILDING RESTRICTION)

9. AN EASEMENT CREATED BY JUDGEMENT, AND THE TERMS AND CONDITIONS THEREOF:
ENTERED: DECEMBER 20, 1996
SUIT NO.: CV96-09-321
IN FAVOR OF: THE CITY OF OREGON CITY
FOR: RIGHT OF WAY
AFFECTS: THE WESTERLY PORTION OF SAID PREMISES
(PLOTTED RIGHT-OF-WAY EASEMENT)

10. EASEMENT AND THE TERMS AND CONDITIONS THEREOF:
GRANTEE: LES SCHWAB PROFIT SHARING TRUST
PURPOSE: INGRESS AND EGRESS
AFFECTS: REFERENCE SAID DOCUMENT FOR PARTICULARS
RECORDED: OCTOBER 1, 2004
RECORDING NO.: 2004091594
(NOT PLOTTED - EASEMENT AREA NOT CLEARLY DEFINED)

11. ANY UNRECORDED LEASEHOLDS, RIGHT OF VENDORS AND HOLDERS OF SECURITY INTEREST ON PERSONAL PROPERTY INSTALLED UPON SAID PROPERTY, AND RIGHT OF TENANTS TO REMOVE TRADE FIXTURES AT THE EXPIRATION OF THE TERM.

12. EVIDENCE OF THE INDEMNITY AND AUTHORITY OF THE OFFICES OF WAL-MART STORES, INC., A DELAWARE CORPORATION TO EXECUTE THE FORTHCOMING INSTRUMENT MUST BE SUBMITTED.

ZONING
MUC-2 - MIXED-USE CORRIDOR
OREGON CITY OREGON - MUNICIPAL CODE CHAPTER 17.29

SETBACKS 17.29.060 DIMENSIONAL STANDARDS

MAXIMUM ALLOWABLE SETBACKS:	
FRONT YARD	5'*
INTERIOR SIDE YARD	NONE
CORNER SIDE YARD ABUTTING STREET	25'**
REAR YARD	NONE
REAR YARD	NONE
MINIMUM REQUIRED INTERIOR AND REAR YARD SETBACKS IF ABUTTING A RESIDENTIAL ZONE	25'***
MAXIMUM BUILDING SQUARE FOOTAGE	NO MAXIMUM
MAXIMUM BUILDING HEIGHT	60'

*MAY BE EXPANDED WITH SITE PLAN AND DESIGN REVIEW REQUIREMENTS OF SECTION 17.62.055
**PROVIDED THE SITE PLAN AND DESIGN REVIEW REQUIREMENTS OF SECTION 17.62.055 ARE MET
***PLUS ONE FOOT ADDITIONAL YARD SETBACK FOR EVERY TWO FEET OF BUILDING HEIGHT OVER 35'

CITY OF OREGON CITY
PLANNING DEPARTMENT
221 MOLALLA AVENUE, SUITE 200
OREGON CITY, OR 97045
503-722-3789

NO REPRESENTATION IS MADE FOR THE ACCURACY OR COMPLETENESS OF SAID THIRD PARTY INFORMATION. THIS FIRM IS NOT AN EXPERT IN THE INTERPRETATION OF COMPLEX ZONING ORDINANCES. COMPLIANCE IS BEYOND THE SCOPE OF THIS SURVEY. ANY USER OF SAID INFORMATION IS URGED TO CONTACT THE LOCAL AGENCY DIRECTLY.



REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
DECEMBER 13, 2007
RYAN H. GODSEY
65604
RENEWS: 6/30/13

OREGON CITY
PROJECT NO. 3051-00

PACLAND
6400 SE LAKE ROAD, SUITE 300
PORTLAND, OR 97222

CES|NW
13190 SW 68TH PKWY, STE 150
TIGARD, OREGON 97223
(503)968-6655 www.cesnw.com

ALTA SURVEY

REVISIONS

2689-ALTA.DWG

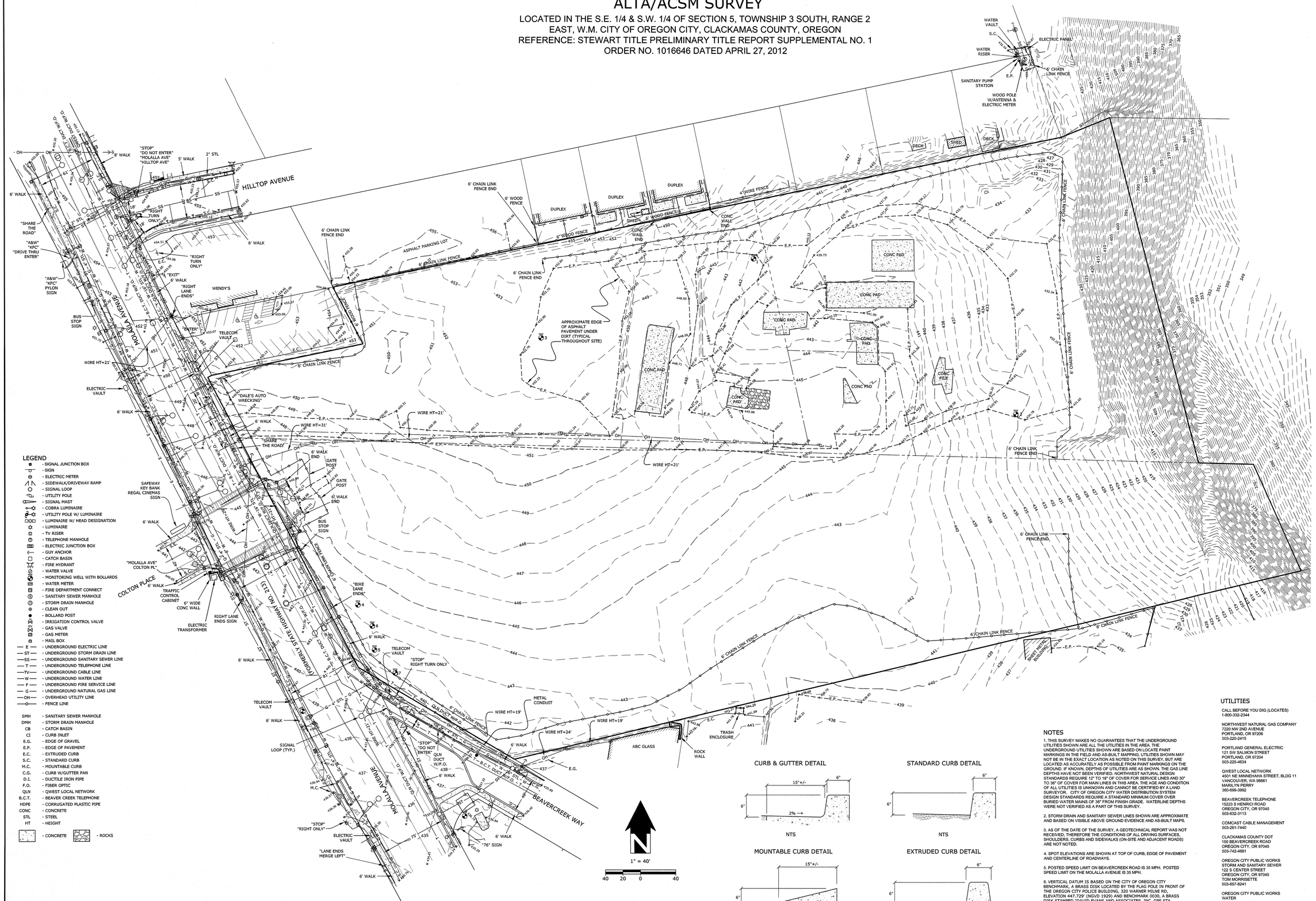
PROJECT NO. 3051-00: 2689
DRAWN BY: JBJ
DATE: 07-09-12
CHECKED BY: RHG

TITLE EXCEPTIONS

SHEET 2
OF 5

ALTA/ACSM SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON
REFERENCE: STEWART TITLE PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 1 ORDER NO. 1016646 DATED APRIL 27, 2012



LEGEND

- SIGNAL JUNCTION BOX
- SIGN
- ELECTRIC METER
- SIDEWALK/DRIVEWAY RAMP
- SIGNAL LOOP
- UTILITY POLE
- SIGNAL MAST
- COBRA LUMINAIRE
- UTILITY POLE W/ LUMINAIRE
- LUMINAIRE W/ HEAD DESIGNATION
- LUMINAIRE
- TV RISER
- TELEPHONE MANHOLE
- ELECTRIC JUNCTION BOX
- GUY ANCHOR
- CATCH BASIN
- FIRE HYDRANT
- WATER VALVE
- MONITORING WELL WITH BOLLARDS
- WATER METER
- FIRE DEPARTMENT CONNECT
- SANITARY SEWER MANHOLE
- STORM DRAIN MANHOLE
- CLEAN OUT
- BOLLARD POST
- IRRIGATION CONTROL VALVE
- GAS VALVE
- GAS METER
- MAIL BOX
- E — UNDERGROUND ELECTRIC LINE
- ST — UNDERGROUND STORM DRAIN LINE
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- T — UNDERGROUND TELEPHONE LINE
- TV — UNDERGROUND CABLE LINE
- W — UNDERGROUND WATER LINE
- F — UNDERGROUND FIRE SERVICE LINE
- G — UNDERGROUND NATURAL GAS LINE
- OH — OVERHEAD UTILITY LINE
- FENCE LINE

SMH	SANITARY SEWER MANHOLE
DMH	STORM DRAIN MANHOLE
CB	CATCH BASIN
CI	CURB INLET
E.G.	EDGE OF GRAVEL
E.P.	EDGE OF PAVEMENT
E.C.	EXTRUDED CURB
S.C.	STANDARD CURB
M.C.	MOUNTABLE CURB
C.G.	CURB W/GUTTER PAN
D.I.	DUCTILE IRON PIPE
F.O.	FIBER OPTIC
QLN	QWEST LOCAL NETWORK
B.C.T.	BEAVER CREEK TELEPHONE
HDPE	CORRUGATED PLASTIC PIPE
CONC	CONCRETE
STL	STEEL
HT	HEIGHT

- CONCRETE
- ROCKS

CURB & GUTTER DETAIL

NTS

STANDARD CURB DETAIL

NTS

MOUNTABLE CURB DETAIL

NTS

EXTRUDED CURB DETAIL

NTS

NOTES

1. THIS SURVEY MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN ARE ALL THE UTILITIES IN THE AREA. THE UNDERGROUND UTILITIES SHOWN ARE BASED ON LOCATE PAINT MARKINGS IN THE FIELD AND AS-BUILT MAPPING. UTILITIES SHOWN MAY NOT BE IN THE EXACT LOCATION AS NOTED ON THIS SURVEY, BUT ARE LOCATED AS ACCURATELY AS POSSIBLE FROM PAINT MARKINGS ON THE GROUND. IF KNOWN, DEPTHS OF UTILITIES ARE AS SHOWN. THE GAS LINE DEPTHS HAVE NOT BEEN VERIFIED. NORTHWEST NATURAL DESIGN STANDARDS REQUIRE 12" TO 18" OF COVER FOR SERVICE LINES AND 30" TO 36" OF COVER FOR MAIN LINES IN THIS AREA. THE AGE AND CONDITION OF ALL UTILITIES IS UNKNOWN AND CANNOT BE CERTIFIED BY A LAND SURVEYOR. CITY OF OREGON CITY WATER DISTRIBUTION SYSTEM DESIGN STANDARDS REQUIRE A STANDARD MINIMUM COVER OVER BURIED WATER MAINS OF 36" FROM FINISH GRADE. WATERLINE DEPTHS WERE NOT VERIFIED AS A PART OF THIS SURVEY.

2. STORM DRAIN AND SANITARY SEWER LINES SHOWN ARE APPROXIMATE AND BASED ON VISIBLE ABOVE GROUND EVIDENCE AND AS-BUILT MAPS.

3. AS OF THE DATE OF THE SURVEY, A GEOTECHNICAL REPORT WAS NOT RECEIVED, THEREFORE THE CONDITIONS OF ALL DRIVING SURFACES, SHOULDERS, CURBS AND SIDEWALKS (ON-SITE AND ADJACENT ROADS) ARE NOT NOTED.

4. SPOT ELEVATIONS ARE SHOWN AT TOP OF CURB, EDGE OF PAVEMENT AND CENTERLINE OF ROADWAYS.

5. POSTED SPEED LIMIT ON BEAVERCREEK ROAD IS 35 MPH. POSTED SPEED LIMIT ON THE MOLALLA AVENUE IS 35 MPH.

6. VERTICAL DATUM IS BASED ON THE CITY OF OREGON CITY BENCHMARK, A BRASS DISK LOCATED BY THE FLAG POLE IN FRONT OF THE OREGON CITY POLICE BUILDING, 320 WARNER MILNE RD, ELEVATION 447.729' (NGVD 1929) AND BENCHMARK 0030, A BRASS DISK STAMPED "DAVID EVANS AND ASSOCIATES, INC. GPS STA. LIBRARY 1990" ELEVATION = 452.739'

UTILITIES

CALL BEFORE YOU DIG (LOCATES)
1-800-332-2344

NORTHWEST NATURAL GAS COMPANY
7220 NW 2ND AVENUE
PORTLAND, OR 97206
503-220-2415

PORTLAND GENERAL ELECTRIC
121 SW SALMON STREET
PORTLAND, OR 97204
503-225-4634

QWEST LOCAL NETWORK
4501 NE MINNEHAHA STREET, BLDG 11
VANCOUVER, WA 98661
MARILYN PERRY
360-696-3992

BEAVERCREEK TELEPHONE
15223 S HENRICI ROAD
OREGON CITY, OR 97045
503-632-3113

COMCAST CABLE MANAGEMENT
503-261-7440

CLACKAMAS COUNTY DOT
150 BEAVERCREEK ROAD
OREGON CITY, OR 97045
503-742-4681

OREGON CITY PUBLIC WORKS
STORM AND SANITARY SEWER
122 S CENTER STREET
OREGON CITY, OR 97045
TOM MORRISETTE
503-657-8241

OREGON CITY PUBLIC WORKS
WATER
122 S CENTER STREET
OREGON CITY, OR 97045
SCOTT KATRENA
503-657-8241

REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
DECEMBER 15, 2007
RYAN H. GODSEY
65604
RENEWS: 6/30/13

OREGON CITY
PROJECT NO. 3051-00

PACLAND
6400 SE LAKE ROAD, SUITE 300
PORTLAND, OR 97222

CES|NW
13190 SW 68TH PKWY, STE 150
TIGARD, OREGON 97223
(503)968-6655 www.cesnw.com

ALTA SURVEY

REVISIONS	DATE:	CHECKED BY:
7-13-12 UPDATED TO REFLECT COMMENTS	07-09-12	RHG

2689-ALTA.DWG

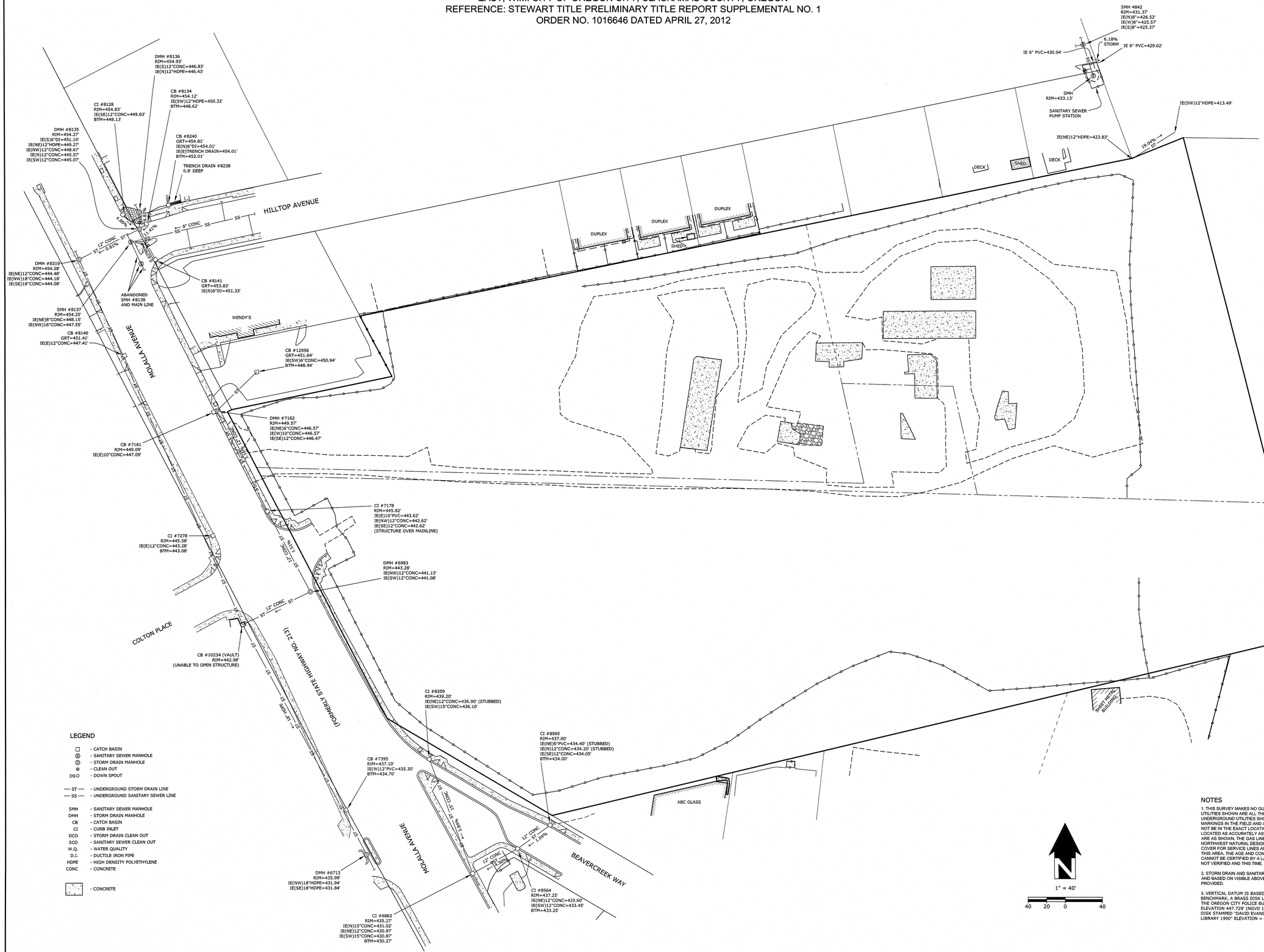
PROJECT NO. 3051-00:	2689
DRAWN BY:	JBJ

TOPOGRAPHIC SURVEY

SHEET 3
OF 5

ALTA/ACSM SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON
REFERENCE: STEWART TITLE PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 1
ORDER NO. 1016646 DATED APRIL 27, 2012



LEGEND

- □ - CATCH BASIN
- Ⓢ - SANITARY SEWER MANHOLE
- Ⓒ - STORM DRAIN MANHOLE
- ⊛ - CLEAN OUT
- DSO - DOWN SPOUT
- — ST — - UNDERGROUND STORM DRAIN LINE
- — SS — - UNDERGROUND SANITARY SEWER LINE
- SMH - SANITARY SEWER MANHOLE
- DMH - STORM DRAIN MANHOLE
- CB - CATCH BASIN
- CI - CURB INLET
- DCO - STORM DRAIN CLEAN OUT
- SCO - SANITARY SEWER CLEAN OUT
- W.Q. - WATER QUALITY
- D.I. - DUCTILE IRON PIPE
- HDPE - HIGH DENSITY POLYETHYLENE
- CONC - CONCRETE
- - CONCRETE

NOTES

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REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
DECEMBER 13, 2007
RYAN H. GODSEY
65604
RENEWS: 6/30/13

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PROJECT NO. 3051-00

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TIGARD, OREGON 97223
(503)968-6655 www.cesnw.com

ALTA SURVEY

REVISIONS

2689-ALTA.DWG

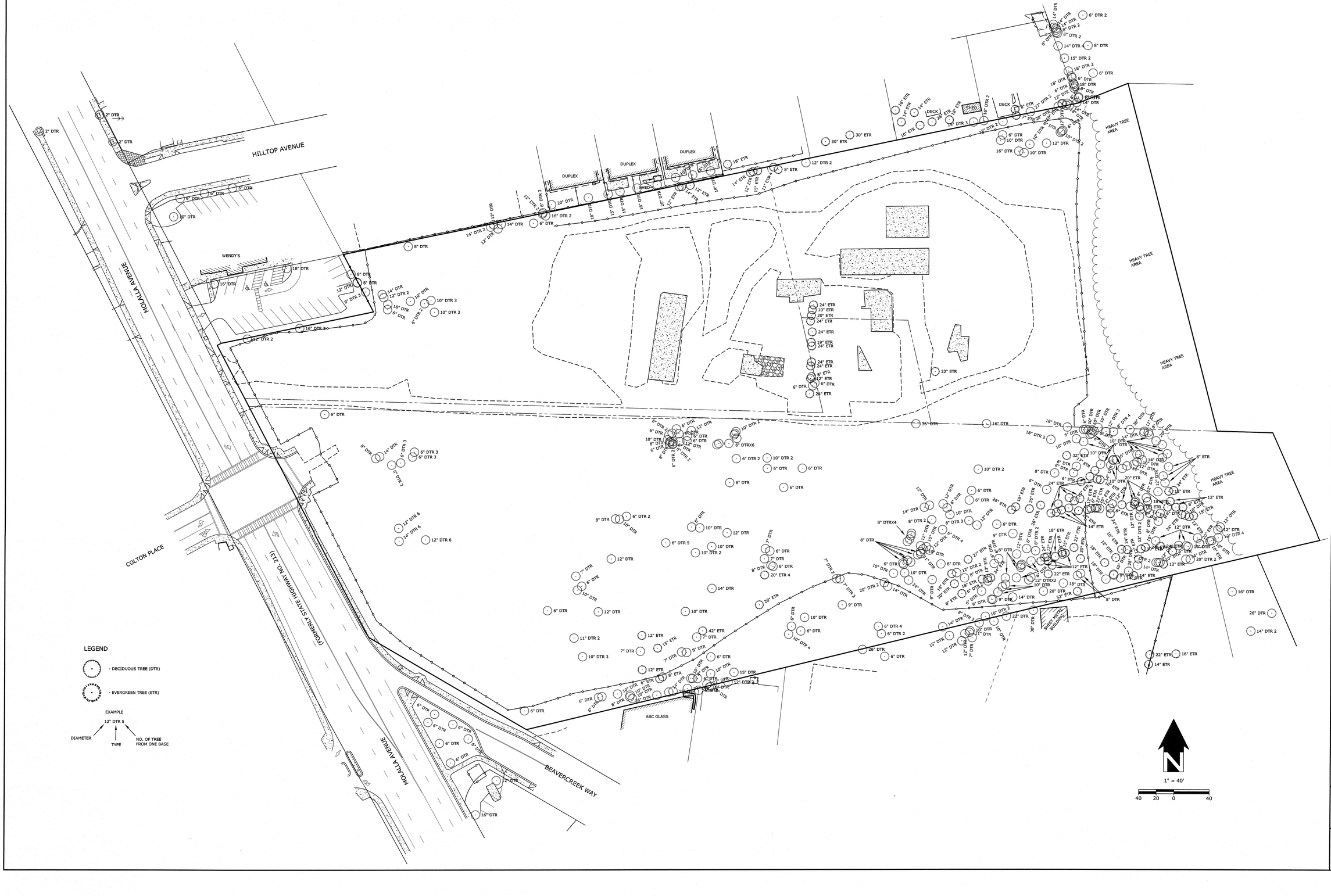
PROJECT NO.: 3051-00 | DATE: 07-09-12
DRAWN BY: JBP | CHECKED BY: RGG

STORM AND SANITARY SEWER

SHEET 4
OF 5

ALTA/ACSM SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2
EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON
REFERENCE: STEWART TITLE PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 1
ORDER NO. 1016646 DATED APRIL 27, 2012



REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
DECEMBER 13, 2007
RYAN H. GODSEY
65604
RENEWS: 6/30/13

OREGON CITY
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ALTA SURVEY

REVISIONS

2689-ALTA.DWG

TREE SURVEY

PROJECT NO. 3051-00: 2689
DRAWN BY: JBJ
DATE: 07-09-12
CHECKED BY: RHG

SHEET 5
OF 5

TOPOGRAPHIC SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2
EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON

TOPOGRAPHIC SURVEY

LEGEND

- SIGN
- ELECTRIC METER
- SIDEWALK/DRIVEWAY RAMP
- SIGNAL LOOP
- UTILITY POLE
- SIGNAL MAST
- COBRA LUMINAIRE
- UTILITY POLE W/ LUMINAIRE
- LUMINAIRE W/ HEAD DESIGNATION
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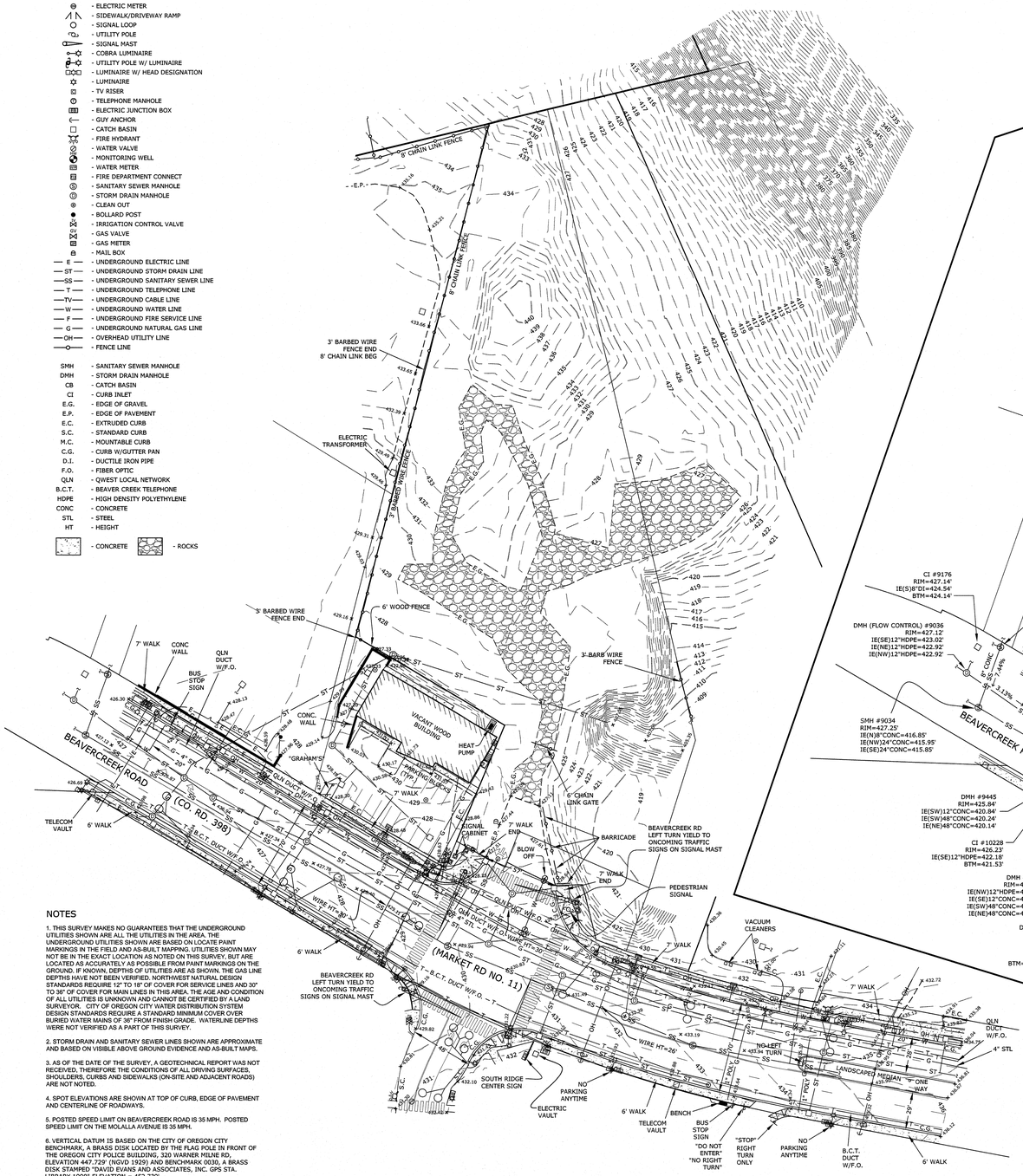
- ROCKS



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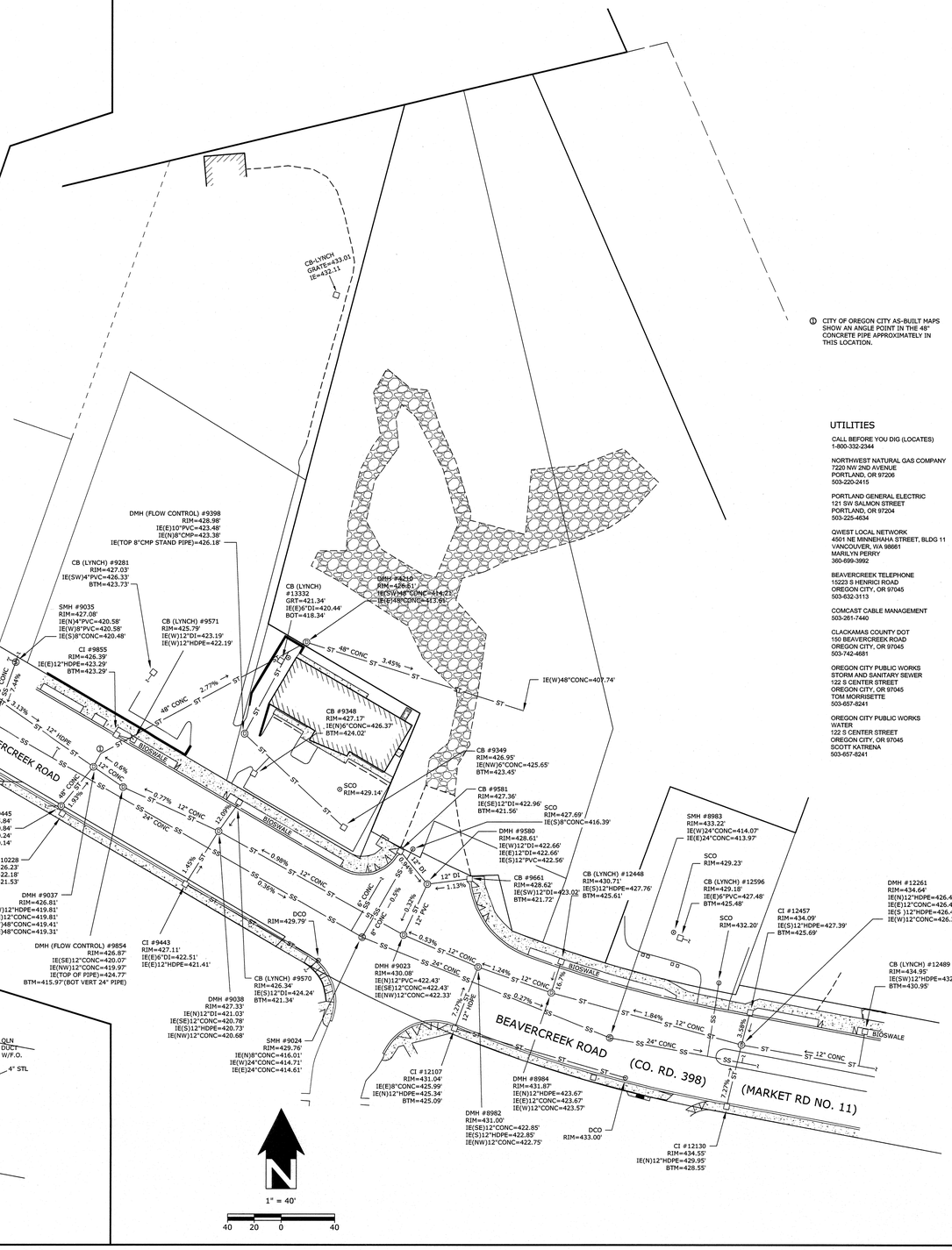
STORM AND SANITARY SEWER



① CITY OF OREGON CITY AS-BUILT MAPS SHOW AN ANGLE POINT IN THE 48" CONCRETE PIPE APPROXIMATELY IN THIS LOCATION.

UTILITIES

CALL BEFORE YOU DIG (LOCATES)
1-800-332-2344

NORTHWEST NATURAL GAS COMPANY
7220 NW 2ND AVENUE
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REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
DECEMBER 13, 2007
RYAN H. GODSEY
65604
RENEWS: 6/30/13

OREGON CITY
PROJECT NO. 3051-00

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PORTLAND, OR 97222

CES NW
13190 SW 68TH PKWY, STE 150
TIGARD, OREGON 97223
(503)968-6655 www.cesnw.com

REVISIONS	DATE:	CHECKED BY:
7-13-12 REVISED ADA RAMP PER COMMENTS	07-09-12	KNG

2689-ALTA.DWG

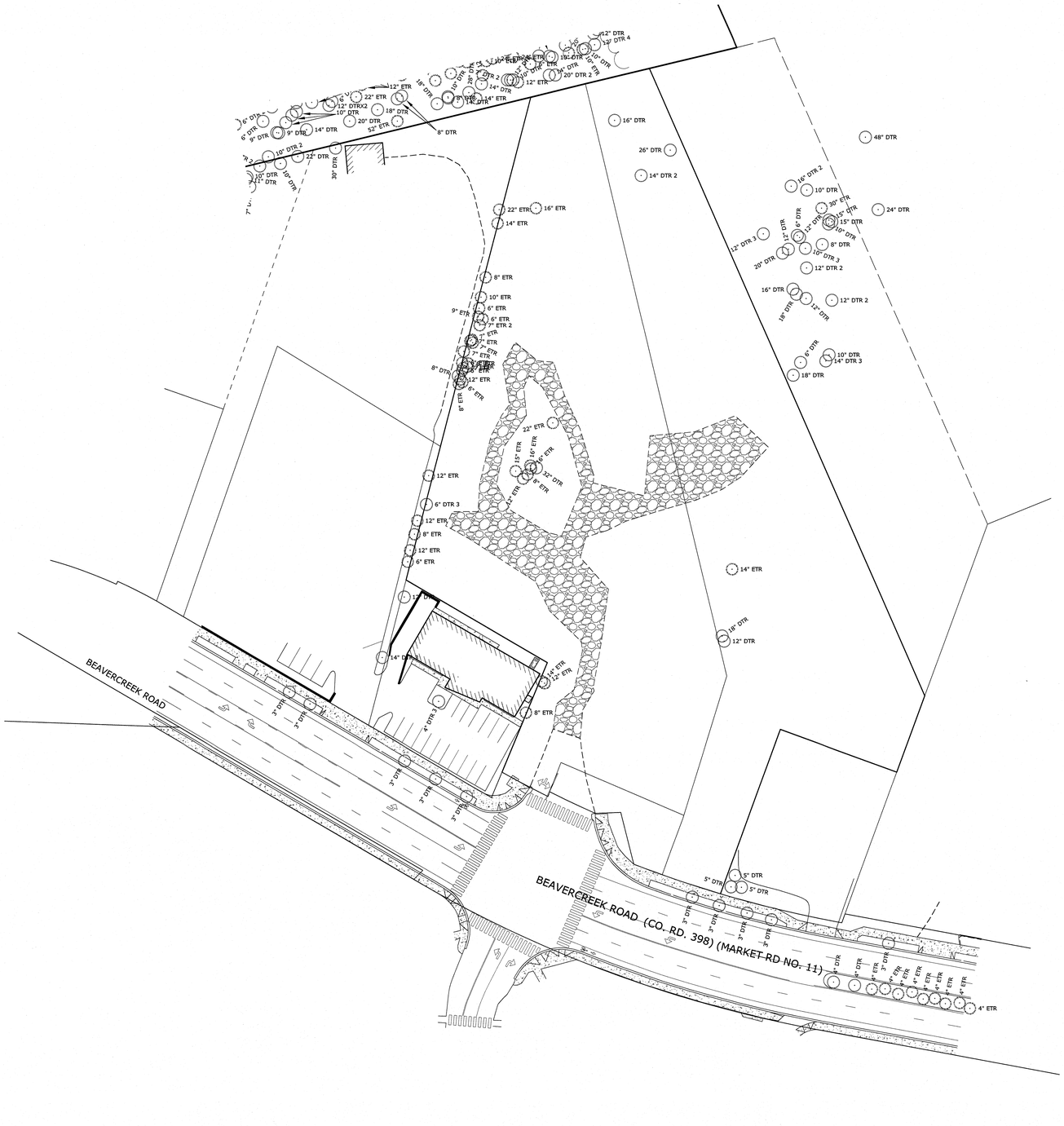
TOPOGRAPHIC SURVEY

PROJECT NO. 3051-00: 2689
DRAWN BY: JBO

SHEET 1
OF 3

TOPOGRAPHIC SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2
EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON



REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
DECEMBER 13, 2007
RYAN H. GODSEY
65604
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OREGON CITY
PROJECT NO. 3051-00

PACLAND
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CES|NW
13190 SW 68TH PKWY, STE 150
TIGARD, OREGON 97223
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TOPOGRAPHIC SURVEY

REVISIONS

2689-ALTA.DWG

PROJECT NO: 3051-00
DRAWN BY: 2689
CHECKED BY: JBJ
DATE: 07-09-12
KHG

TREE SURVEY

SHEET 2
OF 3

TOPOGRAPHIC SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON

SPECIAL EXCEPTIONS AS SHOWN ON PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 2, ORDER NUMBER 01049-4020, DATED JUNE 13, 2012

6. CITY LIENS, IF ANY, OF THE CITY OF OREGON CITY.

7. ACCORDING TO THE RECORD, THE SUBJECT PROPERTY APPEARS TO LIE WITHIN THE BOUNDARIES OF THE OREGON CITY URBAN RENEWAL/NEIGHBORHOOD DEVELOPMENT DISTRICT OF THE CITY OF OREGON CITY.

8. EASEMENT AND THE TERMS AND CONDITIONS THEREOF:
   GRANTEE: METRO, A MUNICIPAL CORPORATION
   PURPOSE: ACCESS EASEMENT
   AFFECTS: TAX LOT 500 AND THE NORTHERLY PORTION OF TAX LOT 401
   RECORDED: MAY 21, 1998
   FEE NO.: 98044597
(15' WIDE ACCESS EASEMENT - LOCATION NOT CLEARLY DEFINED)

9. EASEMENT AND THE TERMS AND CONDITIONS THEREOF:
   GRANTEE: STEVEN N. MOLNER
   PURPOSE: PRIVATE UTILITY EASEMENT
   AFFECTS: PORTION OF TAX LOT 401
   RECORDED: SEPTEMBER 10, 1999
   FEE NO.: 99089214
(PLOTTED)

10. ORDINANCE NO. 00-1013 AND THE TERMS AND CONDITIONS THEREOF:
    RECORDED: MAY 18, 2000
    RECORDING NO.: 2000032147
(NOT SURVEY RELATED)

11. ANY UNRECORDED LEASEHOLDS, RIGHT OF VENDORS AND HOLDERS OF SECURITY INTEREST ON PERSONAL PROPERTY INSTALLED UPON SAID PROPERTY, AND RIGHT OF TENANTS TO REMOVE TRADE FIXTURES AT THE EXPIRATION OF THE TERM.

12. THE ATTACHED COMMERCIAL TITLE AFFIDAVIT MUST BE COMPLETED IN FULL, NOTARIZED, AND SUBMITTED TO THE COMPANY FOR REVIEW PRIOR TO CLOSING.

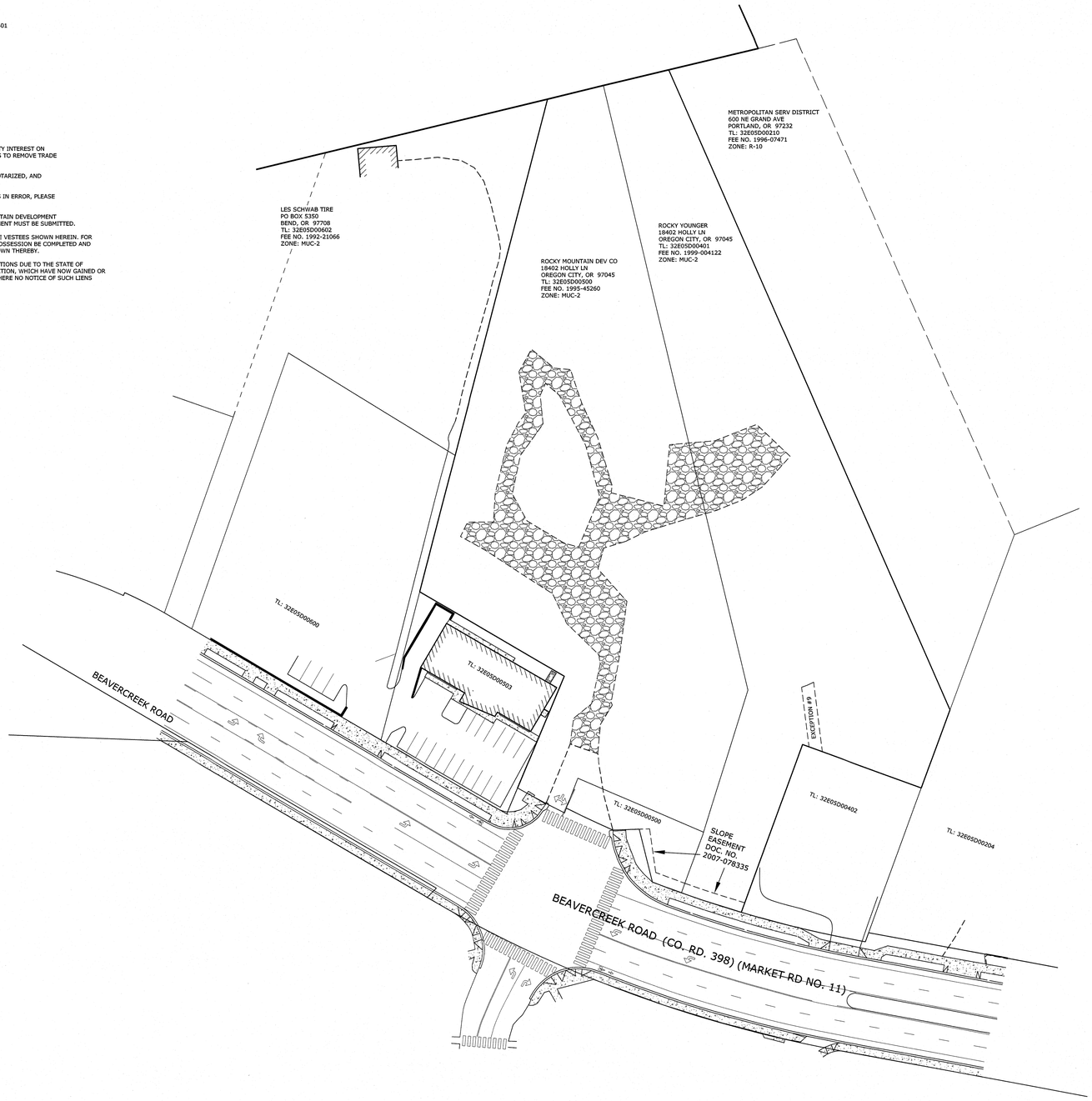
13. WE FIND NO TRUST DEEDS OF RECORD FOR THIS PROPERTY. IF THE COMPANY IS IN ERROR, PLEASE NOTIFY YOUR TITLE OFFICER IMMEDIATELY.

14. EVIDENCE OF THE IDENTITY AND AUTHORITY OF THE OFFICERS OF ROCKY MOUNTAIN DEVELOPMENT COMPANY, AS OREGON CORPORATION TO EXECUTE THE FORTHCOMING INSTRUMENT MUST BE SUBMITTED.

15. PARTIES IN POSSESSION, OR CLAIMING TO BE IN POSSESSION, OTHER THAN THE VESTEES SHOWN HEREIN. FOR PURPOSE OF ALTA EXTENDED COVERAGE, WE WILL REQUIRE AN AFFIDAVIT OF POSSESSION BE COMPLETED AND RETURNED TO US. EXCEPTION MAY BE TAKEN TO SUCH MATTERS AS MAY BE SHOWN THEREBY.

16. STATUTORY LIENS FOR LABOR OR MATERIALS, INCLUDING LIENS FOR CONTRIBUTIONS DUE TO THE STATE OF OREGON FOR UNEMPLOYMENT COMPENSATION AND FOR WORKMEN'S COMPENSATION, WHICH HAVE NOW GAINED OR HEREAFTER MAY GAIN PRIORITY OVER THE LIEN OF THE INSURED MORTGAGE WHERE NO NOTICE OF SUCH LIENS APPEAR OF RECORD.

TL = TAX LOT NUMBER, CLACKAMAS COUNTY



N

1" = 40'

40 20 0 40

REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
DECEMBER 13, 2007
RYAN H. GODSEY
65604
RENEWS: 6/30/13

OREGON CITY
PROJECT NO. 3051-00

PACLAND
6400 SE LAKE ROAD, SUITE 300
PORTLAND, OR 97222

CES|NW
13190 SW 68TH PKWY, STE 150
TIGARD, OREGON 97223
(503)968-6655 www.cesnw.com

TOPOGRAPHIC SURVEY

REVISIONS

2689-ALTA.DWG

PROJECT NO. 3051-00: 2689
DRAWN BY: JBJ
DATE: 07-09-12
CHECKED BY: RHG

EASEMENTS

SHEET 3
OF 3

APPENDIX F
Storm Drainage Analysis

March 2, 2026

Oregon City Commercial Masterplan

1367 Molalla Avenue

Storm Drainage Analysis

Preliminary
Not For
Construction

Prepared By:

LANGAN

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Suite 200
Clackamas, OR 97015

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MARCH 2026

Tessa Mens, P.E.
Scott Franklin, P.E.

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    b. Design Criteria
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    a. Existing Conditions
    b. Proposed Development
    c. Soils
    d. Drainage Basin Areas
    e. Modeling
4. Conclusion 11

Appendices

Appendix A **Geotechnical Report**

Appendix B **Drainage Basin Map**

Appendix C **HydroCAD Report**

Appendix D **WES BMP Sizing Tool Report**

Executive Summary

Project Description
The proposed project is located at 1367 Molalla Avenue, in the City of Oregon City, Clackamas County, Oregon. The site is located on Tax lots 32E05DB03300, 32E05DB03400, 32E05DB03200, 32E05DB03201, 32E05D00500, 32E05D00501, and 32E05D00602. The site is under the jurisdiction of Oregon City Public Works and the Clackamas County Water Environment Services (WES).

The existing property is approximately 12.86 acres (13.67 acres including the public access road) of scrub vegetation with isolated groups of trees and remnants of previously developed wrecking yard, gas station, and tavern.

The west portion of the existing site drains primarily on to the adjacent properties to the south. The east portion of the existing site drains primarily on to the adjacent properties to the east and northeast.

The proposed project includes a retail store (Parcel A), and a multi-family use (Parcel B), together with a public road through the site to provide access and utility service to each parcel (Parcel C), and a Quick Service Restaurant (QSR) (Parcel D). Parcels A, B, and D will receive interim rough grading, with finished conditions pending Detailed Development Plan approval for each of the parcels. The public access road includes a Right-of-Way (ROW) dedication at various widths and a 5-foot Public Utility Easement (PUE) along portions of the frontage of the parcels.

Design Criteria
The purpose of this report is to describe the project's stormwater management strategy and to show that the design meets the agency guidelines.

The standard stormwater requirements provided by Oregon City Public Works require detention, treatment, and infiltration. However, due to the presence of silty clay and a steep slope on the east side of the site, infiltration is not feasible on site.

This project utilizes the WES BMP Sizing Tool for designing the on-site stormwater facilities. The BMP Sizing Tool provides stormwater management design that will control flow durations ranging from 42% of the 2-year to the 10-year storm runoff as determined by the continuous model simulation integrated into the tool. Using this design methodology will provide the required treatment and flow control for the site, without the need for infiltration.

Proposed Drainage System
This project proposes to introduce a network of underground pipes, catch basins, curbs and gutters, to collect surface water runoff associated with the on-site and off-site public improvements. The proposed stormwater facilities will consist of lined rain gardens and lined detention ponds for water quality treatment and flow control. Stormwater detention will be required for both on-site private improvements and off-site public improvements. Space for detention of off-site public improvements is limited, and the detention facility cannot be installed within the right-of-way near the ultimate point of connection to the existing public storm system within the Natural Resource Overlay District (NROD) area in TL 500. Accordingly, the on-site stormwater facility will be sized to over-detain the on-site stormwater to compensate for public stormwater runoff as confirmed during the project's pre-application conference. The stormwater facilities will over detain and over treat these drainage basins to

account for the off-site public access road stormwater that will not be routed to the stormwater facilities.

Stormwater from Parcels A, B and C (Parcel C is the proposed public right-of-way within the main development area of TL3200, 3201, 3300, & 3400) will be routed to storm facilities in the southeast portion of the site, just north of the proposed public road, within the ROW. Stormwater for Parcel D will be routed to storm facilities within Parcel D. Parcel D stormwater will bypass the main storm facility after having received its own water quality and detention treatment. After being treated and detained, stormwater will be discharged to an existing storm pipe that discharges ultimately to Newell Creek. Outflows from the stormwater facilities will be regulated by flow control structures designed to release a peak flow rate not to exceed pre-developed runoff flow rates described above.

Conclusion

The proposed stormwater management systems for this project have been designed in accordance with regulatory criteria described above and consistent with sound engineering practice. This design has incorporated stormwater detention and stormwater quality BMP's. Therefore, no significant adverse impacts to the downstream stormwater system are expected because of the proposed development.

Project Location



Location:	***1367 Molalla Avenue***
Section/Township/Range:	***Sec 16 T3S, R2E, W.M.***
Parcel/Tax Lots:	***32E05DB03300, 32E05DB03400, 32E05DB03200, 32E05DB03201, 32E05D00500, 32E05D00501, and 32E05D00602***
Property Size:	***12.86 Acres (13.67 acres including the public access road)***
City, County, State:	***Oregon City, Clackamas County, Oregon***
Governing Agency:	***City of Oregon City***
Design Criteria:	***Oregon City Public Works Stormwater and Grading Design Standards***
Zone:	***MUC-2; Mixed-Use Corridor***

Site Drainage Analysis

Existing Conditions

The project site is located at 1367 Molalla Avenue, in the City of Oregon City, Clackamas County, Oregon. Tax lots 3300, 3201, & 3200 were previously developed as a wrecking yard between approximately 1953 and 2001/2002, with wrecking yard vehicle and structure removal occurring into 2005. Remnant surface features such as broken asphalt and foundations/concrete pads from prior wrecking yard operations are still visible in aerial photos of these parcels after 2005. A gasoline station and tavern formerly operated in the southwest portion of Tax Lot 3400. Each of these prior uses have been demolished and have been described in various Phase I & II Environmental Site Assessments. The southeast portion of TL 3400 and areas down-slope of the top of bluff on TL 3200 are covered in trees, while much of the remainder of the on-site properties exist in scrub vegetation or isolated groups of trees.

The public 18-inch storm line runs to the West of the subject property on the west side of Molalla Boulevard, and to the South of the subject property towards the North side of Beavercreek Road. There is an existing 48-inch stormwater outfall that discharges to Newell Creek. Our proposed stormwater runoff will utilize the existing outfall to Newell Creek.

Proposed Development

The proposed development includes one Quick Service Restaurant (QSR), a retail store, and a multi-family use, together with a public road through the site to provide access and utility service to each parcel. Stormwater from Parcels A, B and C will be routed to a lined rain garden which will then discharge to a lined detention pond for treatment of the 1-inch 24-hour water quality design storm and detention for the 10-year 24-hour storm event. The storm facilities for Parcels A, B and C will be a public storm facility within the public access road ROW. Stormwater from Parcel D will be routed to an on-site, private stormwater facility within Parcel D. The Parcel D storm facility will also consist of a lined rain garden discharging to a lined detention pond for treatment of the 1-inch 24-hour water quality design storm and detention for 42% of the 2-year to the 10-year 24-hour storm event. Following on-site treatment, runoff from Parcel D will bypass the public stormwater management system. The treated and detained stormwater from all the storm facilities will be routed through the off-site public access road to the existing discharge outfall to Newell Creek.

The public stormwater facility will over detain and over treat the on-site drainage basins to account for the off-site public access road stormwater that will not be routed to the stormwater facilities.

Soils

According to the NRCS Web Soil Survey, this site is composed mostly of Jory silty clay loam. Based on a geotechnical engineering report provided by Terracon Consultants, dated September 12th, 2022, the existing soil at the site consists of a surface layer of red clay surface soil. According to the Terracon report, groundwater was encountered from 4 to 20 feet below the surface. The Terracon report states that the groundwater observed in their borings appear to represent perched groundwater and does not

appear to be continuous in nature and groundwater fluctuations occur. See Appendix A of this report for additional information regarding soils and groundwater.

Drainage Basin Areas

The proposed Parcels A, B, and D, together with the public road are assumed in the full-build condition for the purposes of this analysis so that the various stormwater management facilities can be sized correctly. Parcels A, B, and D will undergo future Detailed Development Plan review in the future and will address any design changes from the assumptions in this report. While Parcel D will provide its own on-site storm facility with its DDP application, we've evaluated approximate sizing for this facility to determine impacts to the storm system downstream of Parcel D.

This project will consist of 5 separate drainage basins, as shown in the Drainage Basin Map in Appendix B. The project will create 377,077 sf of private impervious area and 89,144 sf of pervious area and will treat and detain 377,077 sf of impervious and 55,689 sf of pervious area. The project will create or improve 30,169 sf of public impervious and 7,003 sf of public pervious area.

On-site Private Basin 1:

This basin consists of Parcel A, the proposed retail stores. The basin is approximately 1.66 acres of impervious roof, pavement, and sidewalk (PRI-1) and 0.15 acres of pervious landscape area (PRP-1). The basin will be conveyed to the public rain garden and detention pond facilities for treatment and detention, where it will be mixed with stormwater from On-site Basin 2 and On-site Basin 3. The treated and detained stormwater will then be conveyed to the point of connection with the existing 48-inch public storm pipe prior to its existing discharge into a tributary of Newell Creek. The approximately 5,770 sf of existing pervious area on the west side of the parcel that currently drains off-site onto Molalla Ave will be reduced to 1,103 sf of pervious area draining off-site. This area will be graded and stabilized, but will not be treated or detained, as it is infeasible to collect, is not pollution generating, and will continue to naturally drain off site. Please see the Drainage Basin Map in Appendix B.

On-site Private Basin 2:

This basin consists of Parcel B, the proposed multi-family use. The basin is approximately 4.14 acres of impervious roof, pavement, and sidewalk (PRI-2) and 0.48 acres of pervious landscape area (PRP-2). The basin will be conveyed to the public rain garden and detention pond facilities for treatment and detention, where it will be mixed with stormwater from On-site Basin 1 and On-site Basin 3. The treated and detained stormwater will then be conveyed to the point of connection with the existing 48-inch public storm pipe prior to its existing discharge into a tributary of Newell Creek. The approximately 228,279 sf of existing pervious area on the east side of the parcel that currently drains east will be reduced to 16,275 sf of pervious area draining east. This area will be graded and stabilized, but will not be treated or detained, as it is infeasible to collect, is not pollution generating, and will continue to naturally drain off site. The east portion of Parcel B is a Geologic Hazard Area (steep slopes). The limits of disturbance do not get closer than 35 feet from the top of the steep slope near the edge of the Geologic Hazard Area. This portion of the site will remain as is, other than a natural surface pedestrian pathway, and existing drainage patterns here will continue.

On-site Private Basin 3:

This basin consists of Parcel D, the proposed QSR. The basin is approximately 1.21 acres of impervious roof, pavement, storm facilities, and sidewalk (PRI-3) and 0.32 acres of pervious landscape area (PRP-3).

The basin will be conveyed to a private rain garden and detention pond, located within Parcel D, for treatment and detention. The treated and detained stormwater will then bypass the public stormwater facility treating Basins 1, 2, & 3 and connect to the proposed storm system downstream from the public stormwater facility where it will then be conveyed to the point of connection with the existing 48-inch public storm pipe prior to its existing discharge into a tributary of Newell Creek. The approximately 182,811 sf of existing pervious area on the southwest side of the site that currently drains south will be reduced to 15,729 sf of pervious area draining off-site. This area will not be treated or detained, as it is infeasible to collect, is not pollution generating, and will continue to naturally drain off site.

The private stormwater management facility in Basin 4 will be designed concurrently with the detailed development of Parcel D. The analysis in this section is provided to show that the proposed Detailed Development Plan storm system can accommodate the future development of Parcel D. Were the Parcel D storm system to become overwhelmed by a large storm event, we recommend an overflow drainage structure be designed to capture the 100-year 24-hour storm event prior to it overtopping the planned facility and send that flow into the by-pass storm piping provided in the proposed public street. The storm pipes serving Parcel D will be sized to convey the 100-year 24-hour storm event for Basin 4/Parcel D as well.

Off-site Public Basin 1:
The proposed public access road runs through the site from Molalla Avenue to the southeast corner of the site. From the southeast corner of the site, the public access road snakes down to Beavercreek Road. This second portion of the public access road is off-site. The basin is approximately 0.71 acres of impervious pavement and sidewalk (PUI-1) and 0.4 acres of pervious landscape area (PUP-1). Space for detention of off-site public improvements is limited, and the detention facility cannot be installed within the right-of-way near the ultimate point of connection to the existing public storm system within the Natural Resource Overlay District (NROD) area in TL 500. Accordingly, the on-site public stormwater facilities will over detain and over treat the on-site basins to account for the off-site public access road stormwater that will not be routed to the stormwater facilities.

Stormwater in this basin will be captured in catch basins and conveyed to the existing outfall location adjacent to the off-site public access road, that discharges to Newell Creek.

Were this system to become overwhelmed by a large storm event that it was unable to convey or to become clogged, the catch basins would begin to overflow and flow down the off-site public access road to the south, avoiding the steep slope just east of the site and public access road, and overflow near the existing discharge point. To guard against such an overflow, inlets and inlet leads in this low point will be oversized to minimize the chances of overflow.

On-site Public Basin 2:
This basin consists of Parcel C, the on-site public access road. The basin is approximately 1.61 acres of impervious pavement, storm facilities, and sidewalk (PUI-2) and 0.28 acres of pervious landscape area (PUP-2). The basin will be conveyed to the public rain garden and detention pond facilities for treatment and detention, where it will be mixed with stormwater from On-site Basin 1 and On-site Basin 2. The treated and detained stormwater will then be conveyed to point of connection with the existing 48-inch public storm pipe prior to its existing discharge into a tributary of Newell Creek.

The public stormwater facility lies inside a small basin that, if it were to fill up, would overtop into the adjacent street at elevation 433 feet. A HydroCAD model was run (see Appendix C) to model this basin's capacity during a 100-year 24-hour storm event. During this storm event, the water surface elevation within this basin peaks at 428.93 feet. Therefore, the stormwater facility basin will contain the 100-year 24-hour storm event and any overflow into the street or steep slopes to the east is not expected to occur.

For analysis and sizing of BMPs, the project development area is broken into ten Drainage Management Areas (DMAs), as defined in the WES BMP Sizing Tool. The area and condition of the ten DMAs are shown in Table 1 below. See Appendix B for the Basin Map.

Table 1 –Drainage Management Areas

On-Site Basin Areas Draining to Public Storm Facilities			
Basin	**Area (sf)**	**Pre-developed Condition**	**Post-developed Condition**
PRI-1	72,516	Pervious - Forested	Impervious - Roof/Pavement
PRP-1	6,366	Pervious - Forested	Pervious - Landscape
PRI-2	180,369	Pervious - Forested	Impervious - Roof/Pavement
PRP-2	20,996	Pervious - Forested	Pervious - Landscape
PUI-2	70,148	Pervious - Forested	Impervious - Pavement
PUP-2	16,380*	Pervious - Forested	Pervious - Landscape
On-Site Basin Area Draining to Private Storm Facilities			
PRI-3	52,512	Pervious - Forested	Impervious – Roof/Pavement
PRP-3	13,774*	Pervious - Forested	Pervious - Landscape
Total On-site DMA*	***433,061***		
Off-Site Basin Area			
PUI-1	31,087	Pervious - Forested	Impervious - Pavement
PUP-1	6,085	Pervious - Forested	Pervious - Landscape
Total Off-site DMA	***37,172***		
Total DMA's*	***470,233***		

**DMA's do not include the stormwater facility area (BMP's)*

Modeling

The WES BMP Sizing Tool was utilized to assist with BMP sizing and calculations for the water quality, 2-year and 10-year storm events. Stormwater treatment facility's flow control structures were designed using the WES BMP Sizing Tool, for those events as well. Refer to BMP Sizing Report attached in Appendix D.

Flow control structure diagrams are shown in the figures below:

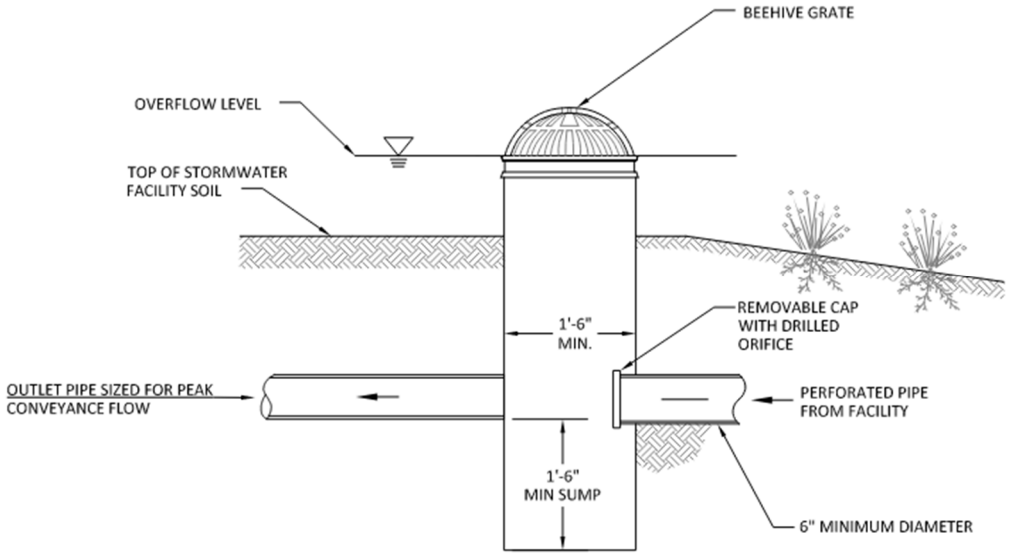
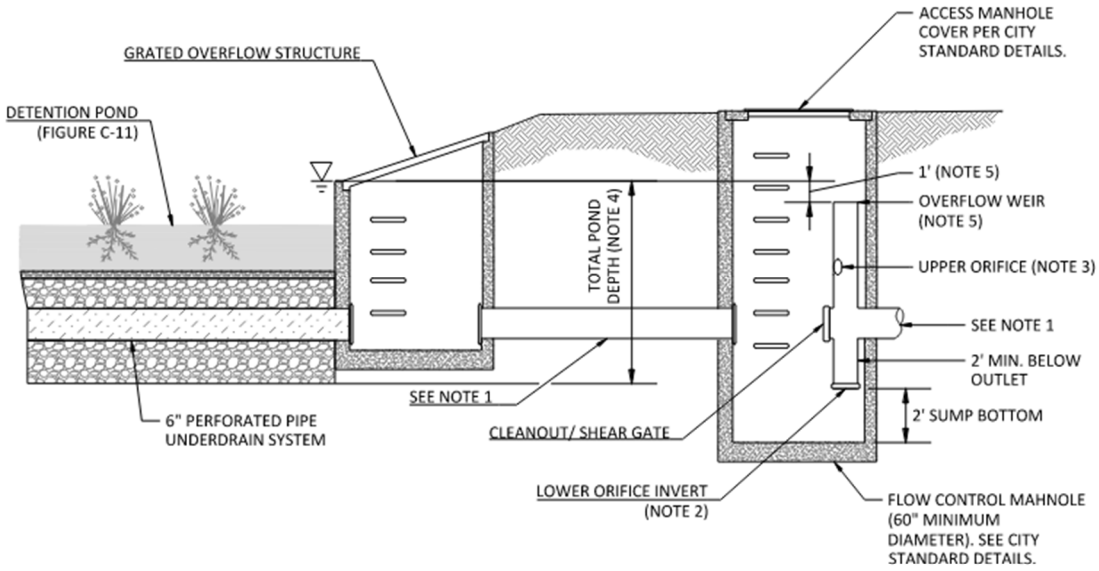


Figure 1 - Rain Garden Flow Control Structure



NOTES:

1. PIPE SIZED FOR PEAK DESIGN STORM AS DETERMINED BY ENGINEER .
2. LOWER ORIFICE: THE INVERT ELEVATION OF THE LOWER ORIFICE MUST BE AT, OR BELOW, THE POND BOTTOM (BOTTOM OF THE 3 FEET OF DRAIN ROCK & GROWING MEDIA).
3. UPPER ORIFICE: THE UPPER ORIFICE SHOULD BE AT AN ELEVATION 2/3 OF THE TOTAL POND DEPTH ABOVE THE POND BOTTOM.
4. TOTAL POND DEPTH, PER FACILITY SIZING MODEL, INCLUDES GROWING MEDIA, SEPARATION LAYER, AND DRAIN ROCK AS SHOWN ON FIGURE C-11.).
5. OVERFLOW WEIR: 1' BELOW MAXIMUM WATER ELEVATION OR TOP OF TOTAL POND DEPTH.

Figure 2 - Detention Pond Flow Control Structure

The required storm facility sizes and proposed facility sizes, according to the BMP Sizing Tool, are shown in Table 2.

Table 2 –Storm Facility Sizing

Rain Garden Storm Facilities		
Storm Facility	**Required Minimum Surface Area (sf)**	**Proposed Surface Area (sf)**
Public Rain Garden (lined)	5,685.5	6,000.0
Private Rain Garden (lined)	891.0	1,700.0
Detention Pond Storm Facilities		
Storm Facility	**Adequate Size?***	**Proposed Facility Volume (cf)**
Public Detention Pond (Lined)	Yes	2,911.8
Private Detention Pond (Lined)	Yes	1,027.7

**According to the BMP Sizing Tool (See Appendix D)*

Conclusion

The proposed stormwater management system for this project has been designed in accordance with regulatory criteria described above and is consistent with sound engineering practice. This design has incorporated stormwater quality treatment and detention BMPs to the maximum extent practicable. Therefore, no significant adverse impacts to surrounding surface water are expected as a result of the proposed improvements.

APPENDIX A

GEOTECHNICAL REPORT

Geotechnical Engineering Report

Oregon City Development
Oregon City, Clackamas County, Oregon
September 12, 2022
Terracon Project No. 82215043

Prepared for:
The Wolff Company LLC
Scottsdale, AZ

Prepared by:
Terracon Consultants, Inc.
Portland, Oregon

September 12, 2022

The Wolff Company LLC
6710 E. Camelback Road, Suite 100
Scottsdale, AZ 85251

Attn: Chris Rossman
P: (503) 544.9595
E: jsakamoto@awolff.com
mdarr@awolff.com

Re: Geotechnical Engineering Report
Oregon City Development
1367 Molalla Avenue
Oregon City, Clackamas County, Oregon
Terracon Project No. 82215043

Dear Mr. Rossman:

We have completed a Geotechnical Engineering evaluation for the above referenced project. Our services were performed in accordance with our Master Services Agreement dated November 20, 2017, and the Task Order dated June 22, 2021, and our Change Orders dated December 9, 2021, and June 10, 2022.

This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning slope stability, earthwork and the design and construction of foundations, floor slabs, and pavements for the proposed project.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.

Ryan T. Houser, RG, CEG
Project Geologist

Kristopher T. Hauck, P.E.
Senior Principal | Office Manager

REPORT TOPICS

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Note: This report was originally delivered in a web-based format. For more interactive features, please view your project online at client.terracon.com.

FIGURES

ATTACHMENTS

2012 ENGINEERING GEOLOGY REPORT
EXPLORATION AND TESTING PROCEDURES
PHOTOGRAPHY LOG
EXPLORATION RESULTS
SUPPORTING INFORMATION

Note: Refer to each individual Attachment for a listing of contents.

Geotechnical Engineering Report

Oregon City Development
1367 Molalla Avenue
Oregon City, Clackamas County, Oregon

Terracon Project No. 82215043
September 12, 2022

INTRODUCTION

This report presents the results of our subsurface exploration and geotechnical engineering services performed for the proposed apartment complex, retail pads, and related pavements and utilities to be located at 1367 Molalla Avenue in Oregon City, Clackamas County, Oregon. The purpose of these services is to provide information and geotechnical engineering recommendations relative to:

- Subsurface soil conditions
- Groundwater conditions
- Site preparation and earthwork
- Demolition considerations
- Excavation considerations
- Slope stability considerations
- Foundation design and construction
- Floor slab design and construction
- Seismic site class per IBC
- Lateral earth pressures
- Pavement design and construction
- Slope hazard mitigation

The geotechnical engineering Scope of Services for this project included the advancement of one drilled boring and installation of a piezometer to monitor groundwater levels. Previous investigations at the site included advancement of 29 drilled borings and excavation of 68 test pits to depths ranging from approximately 3 to 50 feet below existing site grades. Logs of current and previous explorations are included in the **Exploration Results** section.

Maps showing the site and exploration locations are shown on **Figure 1 - Site Location** and **Figures 2 through 4 - Exploration Plans** in the **Figures** section. The results of the laboratory testing performed on soil samples obtained from the site during the field exploration are included on the boring logs and/or as separate graphs in the **Exploration Results** section.

SITE CONDITIONS

The following description of site conditions is derived from our site visit in association with the field exploration and our review of publicly available topographic maps.

Item	Description
Parcel Information	The project is located at 1367 Molalla Avenue in Oregon City, Clackamas County, Oregon. The site consists of 4 tax lots totaling approximately 12.86 acres. The approximate center of the site is located at the following coordinates: ■ Latitude: 45.3356° N ■ Longitude: 122.5881° W
Existing Improvements	Former buildings were removed, although several retaining walls, foundations, and floor slabs remained as of our last site visit in 2022.
Current Ground Cover	The majority of the site was covered with grass, blackberry bushes, and scattered trees. The eastern edge of the site was densely vegetated with trees and blackberry bushes.
Existing Topography	The majority of the site consisted of three graded benches that stepped down to the east. Each bench was nearly level to gently sloping and were separated by graded slopes up to about 10 feet high with gradients up to about 3 horizontal to 1 vertical (3H:1V). The eastern edge of the site drops steeply down at inclinations in the range of 1½H:1V to ½H:1V to the east toward Newell Creek. The overall slope system height is on the order of 200 feet in vertical drop. We understand that this steep slope area contains active and ancient landslide complexes and has been studied extensively by Portland State University geologists and other researchers.

We also collected photographs at the time of our field exploration program. Representative photos are provided in our **Photography Log**.

PROJECT DESCRIPTION

Our initial understanding of the project was provided in our proposal and was discussed during project planning. Several iterations of collaboration has transpired since the project was initiated, and our final understanding of the project conditions is as follows:

Item	Description
Information Provided	The following documents were provided to us: ■ "Site Plan," Sheet 1.11, prepared by Studio 15 Architecture, Inc., dated June 4, 2021. ■ "Preliminary Existing Conditions Survey," prepared by S&F Land Services, dated June 2021. ■ Oregon City Multi-Family Concept Grading Pavement Plans, Sheets C1.0, C2.0, C2.1, C3.0, C3.1, C4.00," prepared by Kimley-Horn, dated May 27, 2022. We were also provided the geotechnical report for the original planned structure.
Project Description	The proposed development is shown on the attached **Exploration Plans** (**Figures 2 through 4**), and includes construction of: ■ 15 multi-story (2 to 3) apartment buildings with a total of 236 dwelling units. Some of the buildings will incorporate ground level parking structures with apartments above. ■ Covered parking areas (carports). ■ 2 "pad-ready" development pads along the Molalla Avenue frontage for single story retail development. ■ A clubhouse building ■ Swimming pool Associated paved parking and drive lane areas
Building Construction	The proposed apartment and clubhouse buildings will be wood-framed with a slab-on-grade ground floor.
Finished Floor Elevation	The proposed apartment complex will be developed close to existing site grades. Final finish floor elevations are undetermined at this time.
Maximum Loads (Assumed)	■ Columns: 40 kips ■ Walls: 4 kips per linear foot (klf) ■ Slabs: 150 pounds per square foot (psf)
Below-Grade Structures	Development will include construction of a subsurface utility vault that will incorporate restrained retaining walls.
Free-Standing Retaining Walls	Development may include construction of free-standing retaining walls to accommodate grade changes along the eastern edge of the site and for the southeast road extension. We understand retaining walls up to 11 feet in height may be constructed.

Item	Description
Pavements	Paved driveway and parking will be constructed on the perimeter of the site. The Site Plan indicates parking will include 423 parking spaces. Both rigid (concrete) and flexible (asphalt) pavement sections will be incorporated into the final design. Anticipated traffic is as follows: ■ Autos/light trucks: 1,393 vehicles per day ■ Light delivery and trash collection vehicles: 20 vehicles per week ■ Tractor-trailer trucks: <5 vehicles per week The pavement design period is 20 years.
Estimated Start of Construction	Summer 2023

EXISTING GEOTECHNICAL REPORTS

Our Scope of Services is based on our understanding of the project as described by The Wolff Company and the expected subsurface conditions as described below. Terracon previously completed the following reports for the project site:

- "Preliminary Results of Slope Stability Evaluation, Proposed Retail Project, Molalla Avenue and Beavercreek Road, Oregon City, Oregon," prepared by Zipper Zeman Associates (ZZA, now Terracon since 2005), dated July 3, 2002.
- "Subsurface Exploration and Geotechnical Engineering Evaluation, Proposed Retail Project, Molalla Avenue and Beavercreek Road, Oregon City, Oregon," prepared by ZZA, dated February 13, 2004.
- "Preliminary Engineering Geology and Soil Engineering Report, Proposed Retail Development, Molalla Avenue and Beavercreek Road Oregon City, Oregon," prepared by Terracon, dated October 8, 2012.

GEOTECHNICAL CHARACTERIZATION

Geology

The site is located in the northern Willamette Valley geologic province, which consists of a structural trough between the Coastal Range and the Cascade Range. This basin is underlain by thick deposits of sand and gravel washed into it during the Pliocene epoch when the climate in the area was very dry. These granular deposits are locally covered by the Boring lavas (Qtb) in northwest Clackamas County.

Based on the *Oregon Geologic Data Standard v. 2.1* and Oregon Department of Geology and Mineral Industries *Geologic Map of the Oregon City 7.5' Quadrangle, Clackamas County, Oregon, 2009* this site is located within a geologic unit mapped as Tbc-Basalt of Canemah defined as flow or flows of grey medium-grained, olivine basalt. The Oregon Department of Geology and Mineral Industries (DOGAMI), Bulletin 99, *Geologic Map of the Canby and Oregon City Quadrangles, Oregon 1979*, maps the site as consisting of Boring lavas (Qtb), which it describes as Pliocene-Pleistocene lavas, light-gray, open-textured olivine basalt; flow structures common; includes some pyroclastic material of local extent; widely spaced joint pattern. Lavas and breccias have weathered to a residual red clay surface soil. Vertical exposures are susceptible to mass movement and deep bedrock sliding because of failure of underlying material (see the description below with clay materials within the Troutdale unit).

The Boring Lava deposits overly the Troutdale (Tpt), which are described as Pliocene sandstone and conglomerate; indurated beds and lenses of well-sorted sand and cobbly gravel with up to 30 percent quartzite clasts. Some sand originally composed of volcanic glass have altered to an impermeable high shrink-swell clay. The clay can be unstable and cause overlying competent units to fail by landslide. The publications indicate that on slopes where this clay layer daylights, one generally encounters a spring. Also, if layers dip out of the slope, it can become a failure plane for a slump or slump-earthflow when the pore water pressure has built up to a critical value on top of the clay layer.

Based on the *Map of Landslide Geomorphology of Oregon City, Oregon, and Vicinity Interpreted from Lidar Imagery and Aerial Photographs, O-06-27, 2006* and the *Landslide Inventory Map of the Northwest Quarter of the Oregon City Quadrangle, Clackamas County, Oregon, IMS-26, 2009,* a mapped landslide was identified adjacent to the site to the east. The landslide is identified as a prehistoric or ancient landslide (movement greater than 150 years ago). This is defined by landslide features that are slightly eroded and there is no evidence of historic (recent in last 150 years) movement. In some cases, the observed landslide features have been greatly eroded and/or covered with deposits that result in smoothed and subdued morphology.

The borings completed for this report and the previously referenced 2004 ZZA report are generally consistent with the above geologic mapping for the Boring Lavas/Basalt of Canemah, although the basalt has become deeply weathered in certain areas. The Troutdale unit was not encountered to the maximum depth of the borings at approximately 90½ feet below the ground surface. Although direct evidence of landslide features were not readily observed during our exploration programs for the 2004 report, we did observe the general headscarp area of the ancient landslide area during our 2012 and 2021 slope reconnaissances with the aid of the recent Lidar-based landslide maps.

Seismic Hazards

Seismic hazards resulting from earthquake motions can include slope stability, liquefaction, and surface rupture due to faulting or lateral spreading. Liquefaction is the phenomenon wherein soil strength is dramatically reduced when subjected to vibration or shaking.

We reviewed the Statewide Geohazards Viewer (HazVu) published by the Oregon Department of Geology and Mineral Studies (DOGAMI) and available online[1]. The viewer categorizes the expected earthquake shaking from light, moderate, strong, very strong, severe and violent; and the landslide susceptibility from low, moderate, high, and very high.

- Earthquake Liquefaction Hazard: Non-Liquefiable
- Expected Earthquake Shaking: Very Strong
- Landslide Susceptibility (due to earthquake): Low (Landsliding Unlikely) on the majority of the site, with Moderate (Landsliding Possible) to Very High (Existing Slide) on the eastern margin of the site. See **Engineering Geology Update** section for additional discussion.

Faults

The United States Geological Survey (USGS) Quaternary Fault and Fold Database of the United States published a report containing descriptions of nearby faults. Faults in the project vicinity include the Bolton fault (No.874), the Oatfield fault (No.875), and the Portland Hills fault (No.877). Published information pertaining to each fault or fault zone is provided in the following tables:

Bolton fault (Class B) No. 874

Information	Description
Length	9 km
Strike (degrees)	N53°W
Sense of Movement	Reverse
Dip Direction	SW
Slip-rate Category	Less than 0.2 mm/yr
Most recent prehistoric deformation	Undifferentiated Quaternary (<1.6 Ma)
Distance from Fault	1 km NE

[1] Statewide Geohazards Viewer (HazVu) published by the Oregon Department of Geology and Mineral Industries (DOGAMI) https://gis.dogami.oregon.gov/hazvu/

Oatfield fault (Class A) No. 875

Information	Description
Length	29 km
Strike (degrees)	N41W
Sense of Movement	Reverse, Right lateral
Dip Direction	NE
Slip-rate Category	Less than 0.2 mm/yr
Most recent prehistoric deformation	Undifferentiated Quaternary (<1.6 Ma)
Distance from Fault	2 km NNE

Portland Hills fault (Class A) No. 877

Information	Description
Length	49 km
Strike (degrees)	N37°W
Sense of Movement	Reverse, Right lateral
Dip Direction	SW
Slip-rate Category	Less than 0.2 mm/yr
Most recent prehistoric deformation	Undifferentiated Quaternary (<1.6 Ma)
Distance from Fault	5 km NE

Based on our review of the available fault information, the depth to bedrock, and the site's proximity to the nearest known faults, it is our opinion that the risk of surface rupture due to ground faulting is low.

Groundwater Conditions

We observed our explorations while drilling and after completion for the presence and level of groundwater. The water levels observed in the explorations are provided on the boring logs in **Exploration Results**, and are summarized below.

Boring Number	Approximate Ground Surface Elevation (feet) [1]	Observation Date	Approximate Depth to Groundwater/ Seepage while Drilling/Excavating (feet) [1]
02-B-3	447	October 29, 2001	19
02-B-22	451	March 7, 2002	20
02-MW-1	445	October 31, 2001	14
02-MW-1	445	November 2, 2001	8
02-MW-3	456	October 31, 2001	16
02-MW-3	456	November 2, 2001	17.5
02-MW-4	447	October 31, 2001	15
02-MW-4	447	November 2, 2001	11.2
02-MW-5	445	October 31, 2001	15
02-MW-5	445	November 2, 2001	11.5
02-TP-8	445	November 1, 2001	11
02-TP-43	426	March 4, 2002	9
02-TP-1A	435	March 1, 2002	9
02-TP-8A	442	March 1, 2002	6½
02-TP-12A	452	March 2, 2002	4
02-TP-20A	452	March 2, 2002	9½
21-B-1[2]	429	December 2021 – July 1, 2022	(not encountered)

1. Based on elevations obtained from the site topographic plan. Elevations may differ from those presented on the attached logs, which were based on a previous topographic map of the site.
2. A vibrating wire piezometer was installed at a depth of 30¾ feet below the ground surface (bgs), at the top of the basaltic bedrock.

Groundwater observations presented above appear to represent perched groundwater and does not appear to be continuous in nature. Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff and other factors not evident at the time the borings were performed. Therefore, groundwater levels during construction or at other times in the life of the structure may be higher or lower than the levels indicated on the boring logs. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

A vibrating wire piezometer was installed in Boring 21-B-1 near the top of the descending slope at the east end of the site. The instrument was placed immediately above the basaltic andesite within the boring at a depth of approximately 30 feet bgs. As of the date of this report, groundwater

was not recorded by this instrument. Groundwater levels will continue to be measured within this boring throughout 2022.

GeoModel

We have developed a general characterization of the subsurface conditions based upon our review of the subsurface exploration, laboratory data, geologic setting and our understanding of the project. This characterization, termed GeoModel, forms the basis of our geotechnical calculations and evaluation of site preparation and foundation options. Conditions encountered at each exploration point are indicated on the individual logs. The individual logs can be found in the **Exploration Results** section and the GeoModel can be found on **Sections A-A', B-B', and C-C'** (Figures 10 through 12) in the **Figures** section of this report. As part of our analyses, we identified the following model layers within the subsurface profile.

Model Layer	Layer Name	General Description
1	**Existing Fill**	Topsoil, Asphalt, Silty Sand Fill, Clayey Silt Fill, Poorly Graded Gravel Fill, Gravelly Silt Fill placed during previous grading at the site
2	**Residual Soil (Native)**	Silt with trace Clay, Clayey Sand with Gravel, contains a variable amount of basaltic andesite boulders and cobbles
3	**Boring Lava**	Basaltic Andesite, fresh to slightly weathered, slightly fractured to very fractured

ENGINEERING GEOLOGY UPDATE

Terracon previously prepared an engineering geology report for the site, the results of which were presented in our referenced October 8, 2012, report. A copy of the 2012 report is attached at the end of this report. As part of our current scope of work, Terracon performed an engineering geology reconnaissance of the site slopes to document current site conditions. In addition, we reviewed aerial photographs, geologic maps, and geologic hazard maps produced since completion of our 2012 report, as detailed in the following sections.

RESEARCH

Geologic and Geologic Hazards Maps Review

Terracon reviewed the following geologic and geologic hazard maps that include the project site that have become available since our 2012 reports were issued:

- 2012 Oregon Department of Geology and Mineral Industries (DOGAMI) Open-File Report O-12-02, Lidar-based surficial geologic map and database of the greater Portland, Oregon, area, Clackamas, Columbia, Marion, Multnomah, Washington, and Yamhill Counties, Oregon,

and Clark County, Washington, by Lina Ma, Ian P. Madin, Serin Duplantis, and Kendra J. Williams

- 2013 DOGAMI Open-File Report O-13-08, Landslide hazard and risk study of northwestern Clackamas County, Oregon, by William J. Burns, Katherine A. Mickelson, Cullen B. Jones, Sean G. Pickner, Kaleena L. B. Hughes, and Rachel Sleeter.
- 2020 U.S. Geological Survey Scientific Investigations Map SIM-3443, Geologic map of the greater Portland metropolitan area and surrounding region, Oregon and Washington, by Wells, R.E., Haugerud, R.A., Niem, A.R., Niem, W.A., Ma, Lina, Evarts, R.C., O'Connor, J.E., Madin, I.P., Sherrod, D.R., Beeson, M.H., Tolan, T.L., Wheeler, K.L., Hanson, W.B., and Sawlan, M.G.

Based on our review, the geologic mapping presented on these maps is consistent with the mapped publications discussed in our referenced engineering geology report. The Landslide Hazard mapping (2013) indicates the eastern portion of the site, including the area of the headscarp and recommended setback, has a "high" potential for deep-seated landslides. The mapping indicates the eastern approximate quarter of the area of proposed development has a "moderate" potential for deep-seated landslides. The shallow landslide potential is "high" along the landslide scarp, and "moderate" directly above the landslide scarp. The slope between the site and the residential properties to the north also shows a "moderate" potential for shallow landslides. The landslide hazard susceptibility depicted on these maps is consistent with those discussed in the referenced reports prepared for the site. Portions of the landslide susceptibility maps showing the approximate site boundaries are attached as **Figure 6 - Deep Landslide Susceptibility Map** and **Figure 7 - Shallow Landslide Susceptibility Map** in the **Figures** section of this report.

Aerial Photograph Review

We reviewed aerial photographs taken from 2012 to 2020 showing the site to determine if significant changes to vegetation or slope configuration are apparent, which may indicate a slope failure. Our aerial photograph review did not identify any areas showing significant changes to vegetation or slope configuration on the scarp; however, two areas below the landslide headscarp showed vegetation patterns that appeared to be inconsistent with the surrounding areas. These areas were specifically visited during our site reconnaissance, which is described in the following section.

ENGINEERING GEOLOGIC RECONNAISSANCE

Terracon Consultants, Inc., Project Geologist Ryan T. Houser, CEG, performed a surface reconnaissance of the subject property and adjacent slopes on July 1, 2021.

The property was bordered to the west by Molalla Avenue, to the north by single-family and multi-family residences fronting on Hilltop Avenue, to the south by businesses fronting on Beavercreek

Road, and to the east by a forested natural area (Newell Creek Canyon Natural Area). The majority of the site consisted of three graded benches that stepped down to the east. Each bench was nearly level to gently sloping and were separated by graded slopes up to about 10 feet high with gradients up to about 3 horizontal to 1 vertical (3H:1V). Topography of the site is consistent with that shown on the existing conditions survey map provided by the client, as shown on **Figure 8 - Topographic Map** in the **Figures** section of this report. Photographs taken at the time of our reconnaissance are presented in the **Photography Log**.

The former building pad portions of the site above the headscarp were vacant and free of structures. This portion of the site appeared to be in a condition virtually identical to that described in the referenced reports. No signs of slope instability were noted on this portion of the site.

The headscarp appeared to be in a condition identical to that described in the referenced reports, with no indicators of additional failures noted during our reconnaissance. The slope was generally vegetated with fir and oak trees. The majority of the trees on the slope exhibited straight trunks. We noticed several recent treefalls on the slope, which appeared to be the result of wind and/or ice and not slope failures since the disturbed soils were limited to the root wads of the fallen trees.

The areas of variable vegetation noted during our review of aerial photographs were located near the toe of the headscarp within the natural area, as shown on **Figure 9 - Reconnaissance Plan** in the **Figures** section of this report. Both areas contained vegetation different than the surrounding trees. The soils in these areas had a higher moisture content than the slope or surrounding areas at the base of the headscarp. A spring was located at the base of the slope east of the northeastern property corner at the northern “wet soils” area shown on **Figure 9 - Reconnaissance Plan** in the **Figures** section of this report. Based on topography, these areas represent “sag ponds” that often form at the base of headscarps after a landslide. In this case, the sag ponds did not contain standing water but did maintain a higher soil moisture content than the surrounding soils that was not conducive to tree growth. The areas surrounding the sag ponds were vegetated with mature trees, with no indications of recent reactivations of the landslide.

SEISMIC CONSIDERATIONS

Seismic Design

The seismic design requirements for structures are based on the Seismic Design Category. Site Classification is required to determine the Seismic Design Category for a structure. The Site Classification is based on the upper 100 feet of the site profile defined by a weighted average value of either shear wave velocity, standard penetration resistance, or undrained shear strength in accordance with Section 20.4 of ASCE 7-16.

Description	Value
2019 Oregon Structural Specialty Code (OSSC) [1]	D[2]
Site Latitude	45.3360°N
Site Longitude	122.5880°W
S_S MCE_R Ground Motion for a Short Period [3]	0.812g
S_1 MCE_R Ground Motion for a 1-Second Period [3]	0.366g
PGA_M Site Modified Peak Ground Acceleration	0.451

1. Seismic site classification in general accordance with the *2019 Oregon Structural Specialty Code (OSSC)*, which refers to ASCE 7-16.
2. ASCE 7-16 requires a site soil profile extending to a depth of 100 feet be used for seismic site classification. Borings at this site were extended to a maximum depth of 90½ feet. The site properties below the boring depth to 100 feet were estimated based on our experience and knowledge of geologic conditions of the general area.
3. These values were obtained using online seismic design maps and tools available on the Applied Technology Council (ATC) website referenced in Section 1613.2.1 of the 2019 OSSC.

Liquefaction

Liquefaction is the phenomenon where saturated soils develop high pore-water pressures during seismic shaking and lose their strength characteristics. This phenomenon generally occurs in areas of high seismicity, where groundwater is shallow and loose granular soils or relatively low- to non-plastic fine-grained soils are present.

Based on their plasticity characteristics, the shallow high-plasticity soils are considered non-liquefiable. Based on their very stiff/dense nature, the underlying residual soil is considered non-liquefiable within the depths explored. In addition, relatively shallow, non-liquefiable basaltic andesite bedrock underlies the site. These findings are consistent with liquefaction hazard mapping for the site described above, which indicates soils at the site are non-liquefiable.

SLOPE STABILITY

Published geologic maps referenced in the attached October 8, 2012, engineering geology report and in the **Engineering Geology Update** section referenced above indicate that shallow surficial landsliding and debris flows are the primary types of slope failure in Newell Creek Canyon. In addition, recent hazard mapping indicates a moderate to high risk of deep-seated failures on the eastern portion of the site. It is our opinion that the previously discussed deep-seated failure of the mapped landslide was due to significant undercutting of lower-strength materials that underly the basalt by the ancestral Newell Creek. The resultant landslide debris covered the lower strength materials, forcing Newell Creek further to the east. In our opinion, the landslide debris and current location of Newell Creek provide a level of protection against erosion of the lower

strength materials, and a reduced risk of deep seated failures for the life of the current development.

Mechanics of Stability

Slope stability analyses take into consideration material strength, presence and orientation of weak layers, water (piezometric) pressures, surcharge loads, and the slope geometry. Mathematical computations are performed using computer-assisted simulations to calculate a Factor of Safety (FS). Minor changes to slope geometry, surface water flow and/or groundwater levels could result in slope instability. Reasonable FS values are dependent upon the confidence in the parameters utilized in the analyses performed, among other factors related to the project itself.

Geometric Analysis Results

Slope stability analyses were performed for the cross-section geometries based on the provided topographic map and publicly available topographic information. Parameters for the analyses were derived from our exploration program, experience, and laboratory tests. Stability analyses were conducted using the computer program Slope/W Version 7.16 developed by Geo-Slope International.

Unstable or Potentially Unstable Slopes

Based on the results of our field investigation, laboratory testing program, and geotechnical analysis, development of the site is considered feasible from a geotechnical viewpoint provided the conclusions and considerations provided herein are incorporated into the design and construction of the project. A horizontal acceleration of 0.225 (1/2 of the PGA_M) was entered for the seismic stability calculations.

The stability of the slopes at the cross-section locations shown on **Figure 3 –Exploration Plan East** were analyzed based on the provided topography, proposed grading, soil properties derived from our geotechnical exploration, laboratory test results and our experience with similar soil conditions. Soil and bedrock properties used in the analyses are shown below:

Material	Moist Unit Weight (pcf)	Drained Cohesion (psf)	Drained Friction Angle (degrees)
Existing Fill	120	0	27
Proposed Fill	125	0	32
Probable Slide Material	120	100	5
Residual Soil	125	250	30
Fresh Bedrock	150	500	45

Based on the analyses, the calculated FS for the critical surface identified in each section is shown below. It's important to note that these results incorporate the planned grading at this time. However, these analyses do not include any risk mitigation elements recommended later in this section.

Cross-Section	Minimum Calculated Factor-of-Safety for Slopes With Proposed Grading (no mitigation)	
	Static	Seismic
A-A'	1.65	1.06
B-B'	1.36	0.81
C-C'	1.91	1.17

The typically accepted minimum FS for static long-term slope stability supporting improvements is 1.5, and 1.15 for seismic slope stability. As shown in the table above, the proposed fill placement at the top of the slope will result in a factor of safety below the accepted minimums.

Slope Hazard Mitigation Recommendations

We evaluated multiple slope stability mitigation options including the use us deep foundations to support the proposed parking areas, the use of lightweight fill materials, and incorporating geogrid into the new structural fill areas. Based on our analyses, we recommend the proposed retaining wall incorporate a row of soldier piles to reinforce the top of the slope. The soldier piles should consist of a row of drilled shaft cast-in-place concrete piers. In addition, we recommend buildings setback a minimum of 35 feet from the top of the headscarp at the east end of the site. This line is shown on the attached **Figure 9 - Reconnaissance Map** and **Figure 3 - Exploration Plan East**. These piles should be embedded a minimum of 5 feet into the bedrock materials. Additional discussion of these recommendations is provided in **Geotechnical Overview** section. Details of the pile recommendations are provided in the **Soldier Pile Walls** section.

Incorporating these recommendations into the slope stability analyses results in the following calculated FS for the critical surfaces:

Cross-Section	Minimum Calculated Factor-of-Safety for Slopes Mitigated with Soldier Piles	
	Static	Seismic
A-A'	2.48	1.61
B-B'	2.87	1.56
C-C'	2.80	1.75

While these factors of safety appear significantly higher than the goal of design of 1.5 for static and 1.15 for seismic, these are the minimums provided the piles are embedded into the bedrock. Our analyses for piles not embedded into the bedrock did not achieve adequate factors of safety. As indicated in the preceding table, installation of soldier piles will provide sufficient increase in

the factors of safety. The slope stability results for each cross section representing the proposed grading incorporating soldier piles are included as **Figures 13 through 18** in the **Figures** section of this report.

GEOTECHNICAL OVERVIEW

Based on the results of our slope stability and engineering analyses, it is our opinion that the proposed development is feasible from the geotechnical engineering standpoint. The primary geotechnical considerations for development of the site are:

- **Existing Landslide Hazard:** As indicated above, we recommend the retaining wall at the east end of the site incorporate a row of soldier piles to aid in slope stability. The soldier piles should consist of drilled shaft cast-in-place concrete piers that are designed to provide lateral support for new fill and existing native soils (above the bedrock) west of the proposed retaining wall. Soldier pile recommendations are provided in the **Soldier Pile Walls** section. In addition, we recommend a 35-foot building setback from the top of the descending slope at the east end of the site (See **Figure 3 - Exploration Plan East**). The recommended setback is for habitable structures, so minor encroachments of parking and grading can be considered an acceptable use provided the following considerations are incorporated into final grading plans in order to minimize impact to slope stability:
  - Drainage should be controlled so that no water is discharged onto or over the descending slope.
  - Additional area loading of the top of the slope should be avoided (i.e. no additional fill that would increase weight at the top of the slope beyond that included in our slope stability model as shown on the proposed grading plan and cross sections).

- **Existing Fill Pad:** Up to about 7 feet of undocumented fill soils underlie the proposed parking and drive lane area at the east end of the site. “Undocumented” fill is fill that lacks documentation regarding its subgrade conditions or evaluation of compaction while it was placed. Due to the potential of long-term settlement of such fill, we recommend the fill be removed and replaced with properly placed and compacted structural fill as described in the **Earthwork** section. The approximate area of the fill (based on topography) is shown on **Figure 8 - Topographic Map**.

- **Previous Tank Excavations:** Several underground storage tanks related to a former gas station were removed from within the southwest corner of the site in the parking area southwest of southern building pad fronting on Molalla Avenue. The approximate location of the former gas station is shown on the **Figure 8 - Topographic Map**. We are not aware of density test or observation reports regarding the placement of backfill within the excavations remaining after removal of the tanks. Therefore, we recommend the fill be treated as “undocumented,” and that it be removed and replaced with properly placed and compacted

structural fill. The suitability of existing fill for reuse as structural fill can be evaluated during construction. As an alternative, additional test pits could be advanced into the existing fill to determine if it can be reused as structural fill.

- **Moisture Sensitivity:** The near surface, silt soils could become unstable with typical earthwork and construction traffic, especially after precipitation events. The effective drainage should be completed early in the construction sequence and maintained after construction to avoid potential issues. If possible, the grading should be performed during the warmer and drier times of the year. If grading is performed during the winter months, an increased risk for possible undercutting and replacement of unstable subgrade will persist. Additional site preparation recommendations, including subgrade improvement and fill placement, are provided in the **Earthwork** section.

The **General Comments** section provides an understanding of the report limitations.

EARTHWORK

Earthwork is anticipated to include demolition, clearing and grubbing, excavations, and fill placement. The following sections provide recommendations for use in the preparation of specifications for the work. Recommendations include critical quality criteria, as necessary, to render the site in the state considered in our geotechnical engineering evaluation for foundations, floor slabs, and pavements.

Site Preparation

Prior to placing new fill, existing vegetation and root mat should be removed. Complete stripping of the topsoil should be performed in the proposed building and parking/driveway areas. Existing pavements, foundations, subsurface structures, and utilities remaining from previous development should be removed in their entirety. Existing fill soils should be removed and replaced with controlled structural fill.

The subgrade should be proof rolled with an adequately loaded vehicle such as a fully-loaded tandem-axle dump truck. The proof rolling should be performed under the direction of the Geotechnical Engineer. Areas excessively deflecting under the proof roll should be delineated and subsequently addressed by the Geotechnical Engineer. Such areas should either be removed or modified by stabilizing with cement. Excessively wet or dry material should either be removed or moisture conditioned and recompacted.

Terracon completed an Environmental Site Assessment (ESA) report for the project under separate cover. The ESA indicates contaminated soils within portions of the former wrecking yard at the east end of the site near the top of the descending slope. Any contaminated soils removed

near the top of the descending slope during remediation practices should be replaced with properly controlled, low-permeability structural fill soils. A former fueling station was also identified on the western portion of the site. We understand that the fuel tank was previously removed and the resulting excavation was loosely backfilled with excavated soils. The contractor should be aware that earthwork activities associated with the proposed development may encounter contaminated native and/or undocumented fill soils within these areas. The ESA reports completed for the site should be thoroughly reviewed prior to the start of earthwork activities.

Existing Fill

As noted in **Geotechnical Characterization**, many of the explorations encountered existing fill to depths of up to about 7 feet. The consistency/density of the fill is highly variable. Therefore, we recommend the fill be completely removed and replaced with properly placed and compacted structural fill in proposed building and pavement areas. Removal of undocumented fill soils should extend a minimum of 10 feet beyond building and pavement areas. Once materials have been removed, the entire area should be proof rolled with heavy, rubber tire construction equipment, to aid in delineating areas of soft or otherwise unsuitable soil. Areas of soft or otherwise unsuitable material should be undercut and replaced with either new structural fill or suitable, existing on site materials. Once unsuitable materials have been remediated, and the subgrade has passed the proof roll test, the existing and undocumented fill that was removed can be evaluated for reuse as structural fill.

Subgrade Stabilization

For this site, improvement of working surfaces subgrade with Portland cement could be considered. Cement amendment of soils should be performed by a pre-qualified contractor having experience with successfully stabilizing subgrades in the project area on similar sized projects with similar soil conditions.

For planning purposes, we estimate that pavement subgrades would need to be amended with an approximate 7 to 8 percent cement by dry weight in order to provide a stabilized subgrade for both wet weather and pavement support. We recommend a cement-amendment design be prepared during the full design phase to refine this estimate for construction specifications.

Fill Material Types

Fill required to achieve design grades should be classified as select fill, structural fill and general fill. Select fill is material used below turbine foundations, whereas structural fill is material used above or within 10 feet of foundation structures and within roadways or constructed slopes. General fill is material used to achieve grade outside of these structural areas. Fill materials used should meet the following material property requirements:

Soil Type[1]	Specification	Acceptable Parameters (for Structural Fill)
Common Fill	2021 ODOT Standard Specifications for Construction (ODOT SSC) Section 00330.13 Selected General Backfill[2]	All locations across the site, except beneath footing pads Dry weather only
Granular Common Fill	ODOT SSC Section 0030.13 Selected General Backfill[3]	All locations across the site. Dry weather only
Select Fill	ODOT SSC Section 00330.14 Selected Granular Backfill[4]	All locations across the site. Wet and Dry weather acceptable.
Crushed Aggregate Base (CAB)	ODOT SSC Section 02630.10 Dense Graded Aggregate (2”-0 to 1”-0) with the modification that less than 8% pass the No. 200 sieve as determined by ASTM D 422.	Finished base course materials for roadways and footing subgrades.
Lean Concrete (Mud-Mat)	ODOT SSC 00442 with the exception that minimum 28-day strength shall be 500 psi. Higher strength minimums may be specified by the Structural Engineer as needed.	All locations underneath mat foundations and spread foundations.

1. Controlled, compacted fill should consist of approved materials that are free (free = less than 3% by weight) of organic matter and debris (i.e. wood sticks greater than ½ inch in diameter). Frozen material should not be used, and fill should not be placed on a frozen subgrade. A sample of each material type should be submitted to the geotechnical engineer for evaluation.
2. Material should have a liquid limit less than 40 and plasticity index of less than 10.
3. Material should have less than 50% passing the No. 200 sieve and be non-plastic in nature.
4. Material should have a maximum aggregate size of 2 inches and no more than 8% passing the No. 200 sieve by weight determined by ASTM D 422.
5. Decomposed bedrock and basalt bedrock can be used as fill/backfill provided it is properly processed to a “soil-like consistency” to meet the USCS Classifications presented above with no pieces larger than 2 inches.
6. The contractor shall select the appropriate material for use based on the current and forecasted weather conditions at the time of construction.

Fill Compaction Requirements

Recommended compaction and moisture content criteria for structural fill materials are as follows:

Material Type and Location	Minimum Compaction Requirement (%)	Range of Moisture Contents for Compaction	
		Minimum	Maximum
Common Fill	**Per the Modified Proctor Test (ASTM D 1557)**		
All locations where used	95	-2%	+2%
Select Fill & CAB	**Per the Modified Proctor Test (ASTM D 1557)**		

Material Type and Location	Minimum Compaction Requirement (%)	Range of Moisture Contents for Compaction	
		Minimum	Maximum
All locations where used (e.g. beneath foundations, slabs, pavements)	95	-4%	+2%

Utility Trench Backfill

For low permeability subgrades, utility trenches are a common source of water infiltration and migration. Utility trenches penetrating beneath the buildings should be effectively sealed to restrict water intrusion and flow through the trenches, which could migrate below the buildings. The trench should provide an effective trench plug that extends at least 5 feet from the face of building exteriors. The plug material should consist of cementitious flowable fill or low permeability clay. The trench plug material should be placed to surround the utility line. If used, the clay trench plug material should be placed and compacted to comply with the water content and compaction recommendations for structural fill stated previously in this report.

Grading and Drainage

All grades must provide effective drainage away from the buildings during and after construction and should be maintained throughout the life of the structure. Water retained next to the buildings can result in soil movements greater than those discussed in this report. Greater movements can result in unacceptable differential floor slab and/or foundation movements, cracked slabs and walls, and roof leaks. The roofs should have gutters/drains with downspouts that discharge onto splash blocks at a distance of at least 10 feet from the buildings.

Exposed ground should be sloped and maintained at a minimum 5% away from the buildings for at least 10 feet beyond the perimeter of the buildings. Locally, flatter grades may be necessary to transition ADA access requirements for flatwork. After building construction and landscaping have been completed, final grades should be verified to document effective drainage has been achieved. Grades around the structure should also be periodically inspected and adjusted, as necessary, as part of the structure's maintenance program. Where paving or flatwork abuts the structure, a maintenance program should be established to effectively seal and maintain joints and prevent surface water infiltration.

Earthwork Construction Considerations

Shallow excavations for the proposed structures are anticipated to be accomplished with conventional construction equipment. Upon completion of filling and grading, care should be taken to maintain the subgrade water content prior to construction of floor slabs. Construction traffic over the completed subgrades should be avoided. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. Water collecting over or

adjacent to construction areas should be removed. If the subgrade freezes, desiccates, saturates, or is disturbed, the affected material should be removed, or the materials should be scarified, moisture conditioned, and recompacted prior to floor slab construction.

As a minimum, excavations should be performed in accordance with OSHA 29 CFR, Part 1926, Subpart P, “Excavations” and its appendices, and in accordance with any applicable local, and/or state regulations.

Construction site safety is the sole responsibility of the contractor who controls the means, methods, and sequencing of construction operations. Under no circumstances shall the information provided herein be interpreted to mean Terracon is assuming responsibility for construction site safety, or the contractor's activities; such responsibility shall neither be implied nor inferred.

Construction Observation and Testing

The earthwork efforts should be monitored under the direction of the Geotechnical Engineer. Monitoring should include documentation of adequate removal of vegetation and topsoil, proof rolling, and mitigation of areas delineated by the proof roll to require mitigation.

Each lift of compacted fill should be tested, evaluated, and reworked, as necessary, until approved by the Geotechnical Engineer prior to placement of additional lifts. Each lift of fill should be tested for density and water content at a frequency of at least one test for every 2,500 square feet of compacted fill in the building areas and 5,000 square feet in pavement areas. One density and water content test should be performed for every 50 linear feet of compacted utility trench backfill. In areas of foundation excavations, the bearing subgrade should be evaluated under the direction of the Geotechnical Engineer. If unanticipated conditions are encountered, the Geotechnical Engineer should prescribe mitigation options.

In addition to the documentation of the essential parameters necessary for construction, the continuation of the Geotechnical Engineer into the construction phase of the project provides the continuity to maintain the Geotechnical Engineer’s evaluation of subsurface conditions, including assessing variations and associated design changes.

SHALLOW FOUNDATIONS

If the site has been prepared in accordance with the requirements noted in the **Earthwork** section, the following design parameters are applicable for shallow foundations.

Design Parameters – Compressive Loads

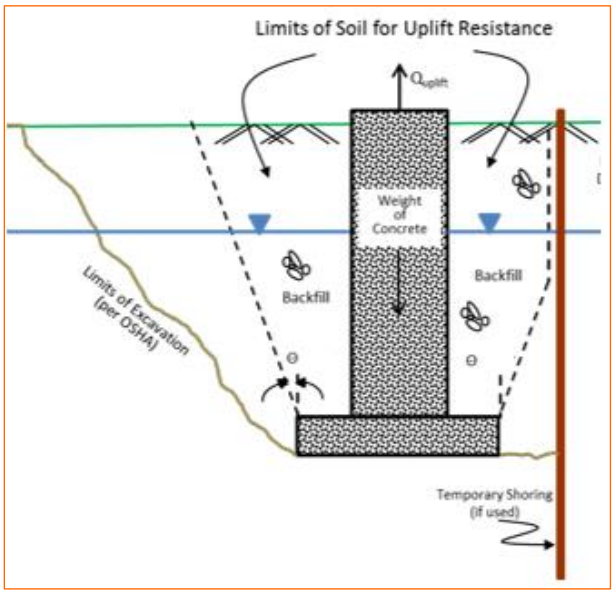
Item	Description
Maximum Net Allowable Bearing Pressure[1,2]	2,000 psf
Required Bearing Stratum[3]	Structural fill or undisturbed native residual soil
Minimum Foundation Dimensions	Columns: 24 inches Continuous: 18 inches
Ultimate Passive Resistance[4] **(equivalent fluid pressures)**	150 pcf (cohesive backfill) 360 pcf (granular backfill)
Ultimate Coefficient of Sliding Friction[5]	0.30 (native silt soils) 0.50 (granular structural fill material)
Minimum Embedment below Finished Grade[6]	Exterior footings in unheated areas: 12 inches Exterior footings in heated areas: 12 inches Interior footings in heated areas: 12 inches
Estimated Total Settlement from Structural Loads[2]	Less than about 1 inch
Estimated Differential Settlement[2,7]	About ⅔ of total settlement

1. The maximum net allowable bearing pressure is the pressure in excess of the minimum surrounding overburden pressure at the footing base elevation. An appropriate factor of safety has been applied. Values assume that exterior grades are no steeper than 20% within 10 feet of structure.
2. Values provided are for maximum loads noted in **Project Description**.
3. Unsuitable or soft soils should be overexcavated and replaced per the recommendations presented in the **Earthwork**.
4. Use of passive earth pressures require the sides of the excavation for the spread footing foundation to be nearly vertical and the concrete placed neat against these vertical faces or that the footing forms be removed and compacted structural fill be placed against the vertical footing face.
5. Can be used to compute sliding resistance where foundations are placed on suitable soil/materials. Should be neglected for foundations subject to net uplift conditions.
6. Embedment necessary to minimize the effects of frost and/or seasonal water content variations. For sloping ground, maintain depth below the lowest adjacent exterior grade within 5 horizontal feet of the structure.
7. Differential settlements are as measured over a span of 50 feet.

Design Parameters - Uplift Loads

Uplift resistance of spread footings can be developed from the effective weight of the footing and the overlying soils. As illustrated on the subsequent figure, the effective weight of the soil prism defined by diagonal planes extending up from the top of the perimeter of the foundation to the ground surface at an angle, θ, of 20 degrees from the vertical can be included in uplift resistance. The maximum allowable uplift capacity should be taken as a sum of the effective weight of soil plus the dead weight of the foundation, divided by an appropriate factor of safety. A maximum

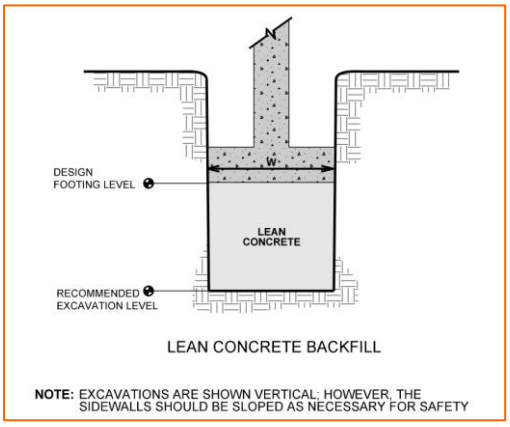
total unit weight of 100 pcf should be used for the backfill. This unit weight should be reduced to 40 pcf for portions of the backfill or natural soils below the groundwater elevation.



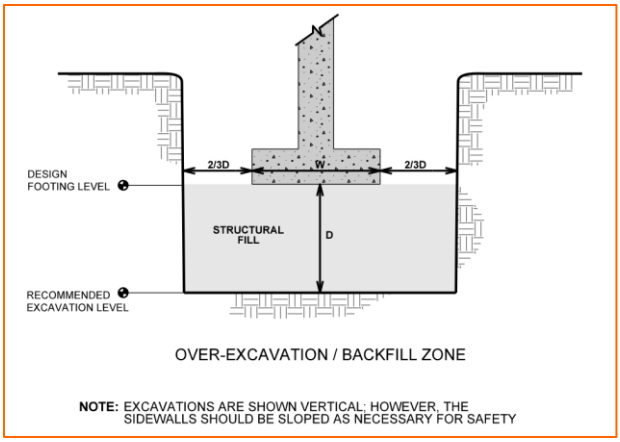
Foundation Construction Considerations

As noted in **Earthwork**, the footing excavations should be evaluated under the direction of the Geotechnical Engineer. The base of all foundation excavations should be free of water and loose soil, prior to placing concrete. Concrete should be placed soon after excavating to reduce bearing soil disturbance. Care should be taken to prevent wetting or drying of the bearing materials during construction. Excessively wet or dry material or any loose/disturbed material in the bottom of the footing excavations should be removed/reconditioned before foundation concrete is placed.

If unsuitable bearing soils are encountered at the base of the planned footing excavation, the excavation should be extended deeper to suitable soils, and the footings could bear directly on these soils at the lower level or on lean concrete backfill placed in the excavations. This is illustrated on the sketch below.



Overexcavation for structural fill placement below footings should be conducted as shown below. The overexcavation should be backfilled up to the footing base elevation, with structural fill placed, as recommended in the **Earthwork** section.



FLOOR SLABS

Depending upon the finished floor elevation, unsuitable, undocumented fills may be encountered at the floor slab subgrade levels. These soils should be replaced with structural fill so the floor slab is supported on suitable natural soils or newly placed structural fill.

Design parameters for floor slabs assume the requirements for **Earthwork** have been followed. Specific attention should be given to positive drainage away from the structure and positive drainage of the aggregate base beneath the floor slab.

Floor Slab Design Parameters

Item	Description
Floor Slab Support [1]	Minimum 6 inches of free-draining (less than 6% passing the U.S. No. 200 sieve) crushed aggregate compacted to at least 95% of ASTM D 698 [2, 3]
Estimated Modulus of Subgrade Reaction [2]	100 pounds per square inch per inch (psi/in) for point loads

1. Floor slabs should be structurally independent of building footings or walls to reduce the possibility of floor slab cracking caused by differential movements between the slab and foundation.
2. Modulus of subgrade reaction is an estimated value based upon our experience with the subgrade condition, the requirements noted in **Earthwork**, and the floor slab support as noted in this table. It is provided for point loads. For large area loads the modulus of subgrade reaction would be lower.
3. Free-draining granular material should have less than 5% fines (material passing the No. 200 sieve). Other design considerations such as cold temperatures and condensation development could warrant more extensive design provisions.

The use of a vapor retarder should be considered beneath concrete slabs on grade covered with wood, tile, carpet, or other moisture sensitive or impervious coverings, or when the slab will support equipment sensitive to moisture. When conditions warrant the use of a vapor retarder, the slab designer should refer to ACI 302 and/or ACI 360 for procedures and cautions regarding the use and placement of a vapor retarder.

Saw-cut control joints should be placed in the slab to help control the location and extent of cracking. For additional recommendations refer to the ACI Design Manual. Joints or cracks should be sealed with a water-proof, non-extruding compressible compound specifically recommended for heavy duty concrete pavement and wet environments.

Where floor slabs are tied to perimeter walls or turn-down slabs to meet structural or other construction objectives, our experience indicates differential movement between the walls and slabs will likely be observed in adjacent slab expansion joints or floor slab cracks beyond the length of the structural dowels. The Structural Engineer should account for potential differential settlement through use of sufficient control joints, appropriate reinforcing or other means.

Mitigation measures, as noted in **Existing Fill** within the **Earthwork** section, are critical to the performance of floor slabs. In addition to the mitigation measures, the floor slab can be stiffened by adding steel reinforcement, grade beams and/or post-tensioned elements.

Floor Slab Construction Considerations

Finished subgrade, within and for at least 10 feet beyond the floor slab, should be protected from traffic, rutting, or other disturbance and maintained in a relatively moist condition until floor slabs are constructed. If the subgrade should become damaged or desiccated prior to construction of floor

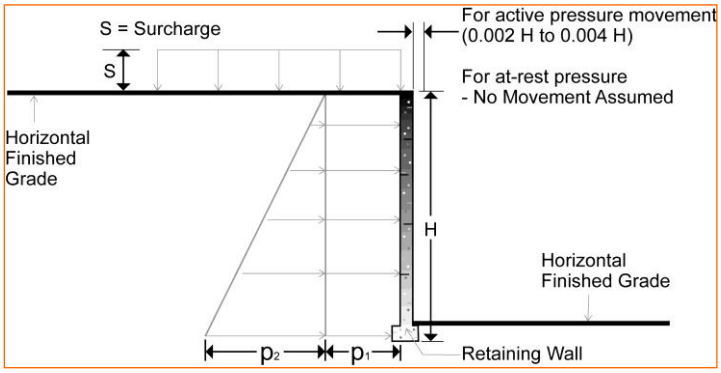
slabs, the affected material should be removed and structural fill should be added to replace the resulting excavation. Final conditioning of the finished subgrade should be performed immediately prior to placement of the floor slab support course.

The Geotechnical Engineer should approve the condition of the floor slab subgrades immediately prior to placement of the floor slab support course, reinforcing steel, and concrete. Attention should be paid to high traffic areas that were rutted and disturbed earlier, and to areas where backfilled trenches are located.

LATERAL EARTH PRESSURES

Design Parameters

Structures with unbalanced backfill levels on opposite sides should be designed for earth pressures at least equal to values indicated in the following table. Earth pressures will be influenced by structural design of the walls, conditions of wall restraint, methods of construction and/or compaction and the strength of the materials being restrained. Two wall restraint conditions are shown in the diagram below. Active earth pressure is commonly used for design of free-standing cantilever retaining walls and assumes wall movement. The “at-rest” condition assumes no wall movement and is commonly used for basement walls, loading dock walls, or other walls restrained at the top. The recommended design lateral earth pressures do not include a factor of safety and do not provide for possible hydrostatic pressure on the walls (unless stated).



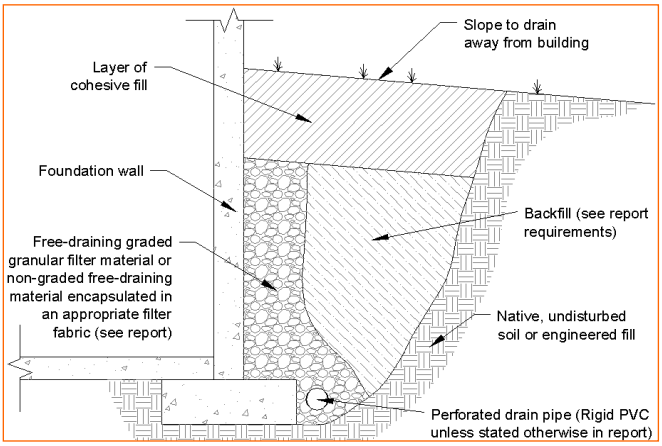
Lateral Earth Pressure Design Parameters				
Earth Pressure Condition [1]	Coefficient for Select Fill Backfill [2]	Surcharge Pressure [3, 4, 5] p_1 (psf)	Effective Fluid Pressures (psf) [2, 4, 5]	
			Unsaturated [6]	Submerged [6]
Active (Ka)	0.31	(0.27)S	(35)H	0.27
At-Rest (Ko)	0.47	(0.43)S	(55)H	0.43
Passive (Kp)	3.25	---	(480)H	3.69

1. For active earth pressure, wall must rotate about base, with top lateral movements 0.002 H to 0.004 H, where H is wall height. For passive earth pressure, wall must move horizontally to mobilize resistance.
2. Uniform, horizontal backfill, compacted to at least 95% of the ASTM D 1557 maximum dry density, rendering a maximum unit weight of 120 pcf.
3. Uniform surcharge, where S is surcharge pressure.
4. Loading from heavy compaction equipment is not included.
5. No safety factor is included in these values.
6. To achieve “Unsaturated” conditions, follow guidelines in Subsurface Drainage for Below-Grade Walls section below. “Submerged” conditions are recommended when drainage behind walls is not incorporated into the design.

Backfill placed against structures should consist of granular soils or low plasticity cohesive soils. For the granular values to be valid, the granular backfill must extend out and up from the base of the wall at an angle of at least 45 and 60 degrees from vertical for the active and passive cases, respectively.

Subsurface Drainage for Below-Grade Walls

A perforated rigid plastic drain line installed behind the base of walls and extends below adjacent grade is recommended to prevent hydrostatic loading on the walls. The invert of a drain line around a below-grade building area or exterior retaining wall should be placed near foundation bearing level. The drain line should be sloped to provide positive gravity drainage to daylight or to a sump pit and pump. The drain line should be surrounded by clean, free-draining granular material having less than 5% passing the No. 200 sieve, such as No. 57 aggregate. The free-draining aggregate should be encapsulated in a filter fabric. The granular fill should extend to within 2 feet of final grade, where it should be capped with compacted cohesive fill to reduce infiltration of surface water into the drain system.



As an alternative to free-draining granular fill, a pre-fabricated drainage structure may be used. A pre-fabricated drainage structure is a plastic drainage core or mesh which is covered with filter fabric to prevent soil intrusion, and is fastened to the wall prior to placing backfill.

SOLDIER PILE WALLS

Based on the slope stability analyses and the proposed development plan, we recommend that the retaining wall along the east end of the proposed fill pad be supported on deep foundations consisting of a row of cast in place concrete piles. Based on our analyses, the piles should be spaced no more than 8 feet apart. The piles should be embedded a minimum of 5 feet into the basalt bedrock encountered at the site, and should be designed to retain the proposed structural fill (under the parking and drive lanes), and underlying native residual soils to the surface of the bedrock. Based on our explorations, the surface of the bedrock ranges from about 20 to 33 feet below site grades along the wall alignment. This depth will likely have more variation during construction to the variable thickness of the fill present at the site.

Lateral Earth Pressures

Based on slope stability analyses attached to this report, we recommend the piles be designed to retain the soils from the proposed finished grade to the surface of the basalt bedrock. The parameters defined in the table below should be utilized in the design of the drilled shafts to determine required embedment depth and spacing, taking into consideration a minimum spacing between piles of 8 feet along the top of the slope and a minimum embedment of 5 feet into the bedrock. Additional embedment into the bedrock may be necessary to provide adequate resistance to overturning.

The design of lateral earth stabilization piers is conventionally accomplished using empirical relationships and apparent earth pressure distributions. These earth pressure distributions or envelopes do not represent the precise distribution of earth pressures but rather constitute

hypothetical pressures from loads can be calculated which would not likely be exceeded in the event of a landslide.

Design of these systems could be based on either “active” or “at-rest” lateral earth pressures, depending on the degree of deformation that can be tolerated. Piers which are free to deform on the order of 0.001 to 0.002 times the height of the exposed potential height is considered to be capable of mobilizing active earth pressures. This lateral deformation is likely to be accomplished by vertical settlement of up to roughly 0.002 times the height of the piers, which may extend back from the side of the slide face a distance equal to roughly the height of the exposed height. A greater amount of lateral deformation could allow greater vertical settlements. Since there are structural elements within the zone considered to be at risk during a potential slide, we believe it is appropriate to design utilizing at-rest earth pressures.

An assumed “at-rest” earth pressure condition theoretically assumes no movement of the soil behind the stabilization piers; however, some settlement should realistically be anticipated due to construction practices and/or the fact that it is not possible to construct a perfectly stiff system and the space between the piers are reliant on soil arching for support should be piers be exposed.

Material	Equivalent Fluid Weight		Strength Parameters (Drained)	
	At Rest (pcf)	Allowable Passive (pcf)	Drained Cohesion (psf)	Drained Friction Angle (degrees)
Existing Fill	120	320	0	27
Proposed Fill	125	407	0	32
Residual Soil	125	375	250	30
Fresh Bedrock	150	874	500	45

In the table above, the at-rest pressures act on the pile spacing above the bedrock and on the pier diameter below that depth. The passive pressures act on twice the pier diameter. We recommend a minimum pier embedment of at least 5 feet into competent basalt bedrock.

Construction Considerations

If soldier piles are installed prior to removal of the existing debris-laden undocumented fill, caving conditions should be expected in the fill materials. Therefore, drilled shaft excavations may require the use of temporary casing and drilling fluid to maintain integrity of the excavation walls and bottom. Groundwater was not encountered within the anticipated depth of drilling, but isolated perched zones may be encountered within the residual soil or at the top of the underlying bedrock, particularly following periods of heavy rainfall. Thick drilling fluid and/or casing may be required to offset the groundwater and caving conditions. Following completion of the excavation and prior

to installing reinforcement or concrete the bottom of the shaft must be cleaned of any soft or loose material.

Caving of the sidewalls and/or heaving of the shaft bottoms may occur during wet weather conditions. We recommend that the contractor be prepared to use casing and/or slurry installation methods in the event that wall sloughing, caving, or heave occurs. The contractor should also be equipped to clean out the bottom of the shafts if loose soil is observed or suspected.

If less than 3 inches of water is present in the bottom of the excavation, groundwater seepage into the excavation is at a rate of no more than 12 inches per hour and the shaft diameter is greater than or equal to 3 feet; concrete may be placed by free-fall. Under free-fall placement, deposit concrete through the center of the reinforcement cage by a method which prevents segregation of aggregates and splashing of concrete on the reinforcement cage. Place concrete so that the free-fall is vertical down the center of the shaft without hitting the sides, the steel reinforcing bars or steel cage bracing.

If the drilled shaft does not meet the above requirements, we recommend placing concrete from the bottom of the holes with a tremie pipe to form a continuous column and prevent aggregate separation. Concrete should be placed with a higher than average slump into the excavation through a tremie pipe extending to the bottom of the excavation. An uninterrupted supply and placement of concrete should be performed to produce a monolithic pier. Use clean, watertight tremie pipes large enough in diameter to allow the free flow of concrete. The tremie pipes should be placed within one to two feet above the bottom of the excavation prior to the commencement of concrete placement. Maintain a minimum 5 feet embedment of the tremie pipe in the concrete during concrete placement.

The bottom of the shaft must be observed or tested to verify that all loose material has been removed and dense granular soil is exposed. The contractor should review the conditions encountered and reported on the boring logs and in this report and provide appropriate equipment to excavate the shafts to the design depths at this site.

Reinforcing steel and concrete should be placed inside the temporary casing. The casing should be pulled as the concrete is placed to provide final contact between the soil and the concrete. A minimum head of 5 feet of concrete should be maintained above the lower edge of the casing as it is pulled to prevent intrusion of soil during extraction.

PAVEMENTS

General Pavement Comments

Pavement designs are provided for the traffic conditions and pavement life conditions as noted in **Project Description** and in the following sections of this report. A critical aspect of pavement performance is site preparation. Pavement designs noted in this section must be applied to the site which has been prepared as recommended in the **Earthwork** section.

Pavement Design Parameters

Design of Asphaltic Concrete (AC) pavements are based on the procedures outlined in the American Association of State Highway and Transportation Officials (AASHTO), 1993. Design of Portland Cement Concrete (PCC) pavements are based upon American Concrete Institute (ACI) 330; Guide for Design and Construction of Concrete Parking Lots.

A subgrade CBR of 9 (from attached laboratory testing) was used for the AC pavement designs, and a modulus of subgrade reaction (k) of 100 pci was used for the PCC pavement designs where subgrade stabilization consisting of CAB or cement treated soil is employed. The values were empirically derived based upon our experience with the fine-grained subgrade soils and our understanding of the quality of the subgrade as prescribed by the **Site Preparation** conditions as outlined in **Earthwork**. A modulus of rupture of 580 psi was used for pavement concrete.

Pavement Section Thicknesses with Subgrade Stabilization

As a minimum, we suggest the following pavement section be considered:

Asphaltic Concrete Design		
Layer	Thickness (inches)	
	Light Duty [1]	Heavy Duty [1]
AC [2]	3	4
Aggregate Base [3]	7	8

1. See **Project Description** for more specifics regarding Light Duty and Medium Duty traffic.
2. All materials should meet the Oregon Department of Transportation (ODOT) Standard Specifications for Construction (2018).
   - Asphaltic Surface - ODOT Type A Asphaltic Cement Concrete: Section 00744
   - Asphaltic Base - ODOT Type B Asphaltic Cement Concrete, Class I: Section 00745
3. A minimum 1.5-inch surface course should be used on ACC pavements.

Portland Cement Concrete Design		
Layer	Thickness (inches)	
	Light Duty [1]	Heavy Duty [3]
PCC [2]	5	6
Aggregate Base [3]	7	8

1. See **Project Description** for more specifics regarding traffic classifications.
2. All materials should meet the current State Department of Transportation ODOT) Standard Specifications for Highway and Construction (2018).
   - Concrete Pavement - ODOT Portland Cement Concrete Type C: Section 00756
3. In areas of anticipated heavy traffic, fire trucks, delivery trucks, or concentrated loads (e.g. dumpster pads), and areas with repeated turning or maneuvering of heavy vehicles.

We understand that typical fire departments require that the proposed pavement sections at the site will support a fire emergency truck once the apartment complex is constructed. Typically, we estimate total fire-truck load of 80,000 pounds for a three axle (single tire) truck. Based on these assumptions and the proposed loading conditions, we computed the ultimate bearing capacity of the pavement sections relative to a 20 percent increase of the factored load of the fire truck. From a bearing failure standpoint, the Truck Loading Section pavements are estimated to be adequate for support of the fire truck vehicle (with a factor of safety of 2.5). Pavement areas may experience some localized cracking from these large fire truck vehicle loads but are not expected to experience bearing failure of the pavement section. Based on this analysis, it is our opinion that pavement will provide adequate support for the temporary use of an emergency fire truck at the site.

Pavement Drainage

Pavements should be sloped to provide rapid drainage of surface water. Water allowed to pond on or adjacent to the pavements could saturate the subgrade and contribute to premature pavement deterioration. In addition, the pavement subgrade should be graded to provide positive drainage within the granular base section. The subgrade and the pavement surface should have a minimum ¼ inch per foot slope to promote drainage. Appropriate sub-drainage or connection to a suitable daylight outlet should be provided to remove water from the base layer.

Pavement Maintenance

The pavement sections represent minimum recommended thicknesses and, as such, periodic maintenance should be anticipated. Therefore, preventive maintenance should be planned and provided for through an on-going pavement management program. Maintenance activities are intended to slow the rate of pavement deterioration and to preserve the pavement investment. Maintenance consists of both localized maintenance (e.g., crack and joint sealing and patching) and global maintenance (e.g., surface sealing). Preventive maintenance is usually the priority when implementing a pavement maintenance program. Additional engineering observation is

recommended to determine the type and extent of a cost-effective program. Even with periodic maintenance, some movements and related cracking may still occur and repairs may be required. Pavement performance is affected by its surroundings. In addition to providing preventive maintenance, the civil engineer should consider the following recommendations in the design and layout of pavements:

- Final grade adjacent to paved areas should slope down from the edges at a minimum 2%.
- Subgrade and pavement surfaces should have a minimum 2% slope to promote proper surface drainage.
- Install below pavement drainage systems surrounding areas anticipated for frequent wetting.
- Install joint sealant and seal cracks immediately.
- Seal all landscaped areas in or adjacent to pavements to reduce moisture migration to subgrade soils.
- Place compacted, low permeability backfill against the exterior side of curb and gutter.
- Place curb, gutter and/or sidewalk directly on clay subgrade soils rather than on unbound granular base course materials.

GENERAL COMMENTS

Our analysis and opinions are based upon our understanding of the project, the geotechnical conditions in the area, and the data obtained from our site exploration. Natural variations will occur between exploration point locations or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. Terracon should be retained as the Geotechnical Engineer, where noted in this report, to provide observation and testing services during pertinent construction phases. If variations appear, we can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

Our Scope of Services does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

Our services and any correspondence or collaboration through this system are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices with no third-party beneficiaries intended. Any third-party access to services or correspondence is solely for information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client, and is not intended for

third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly impact excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing. Site safety, and cost estimating including, excavation support, and dewatering requirements/design are the responsibility of others. If changes in the nature, design, or location of the project are planned, our conclusions and recommendations shall not be considered valid unless we review the changes and either verify or modify our conclusions in writing.

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FIGURE 1 - SITE LOCATION

Oregon City Development ■ Oregon City, OR
September 12, 2022 ■ Terracon Project No. 82215043

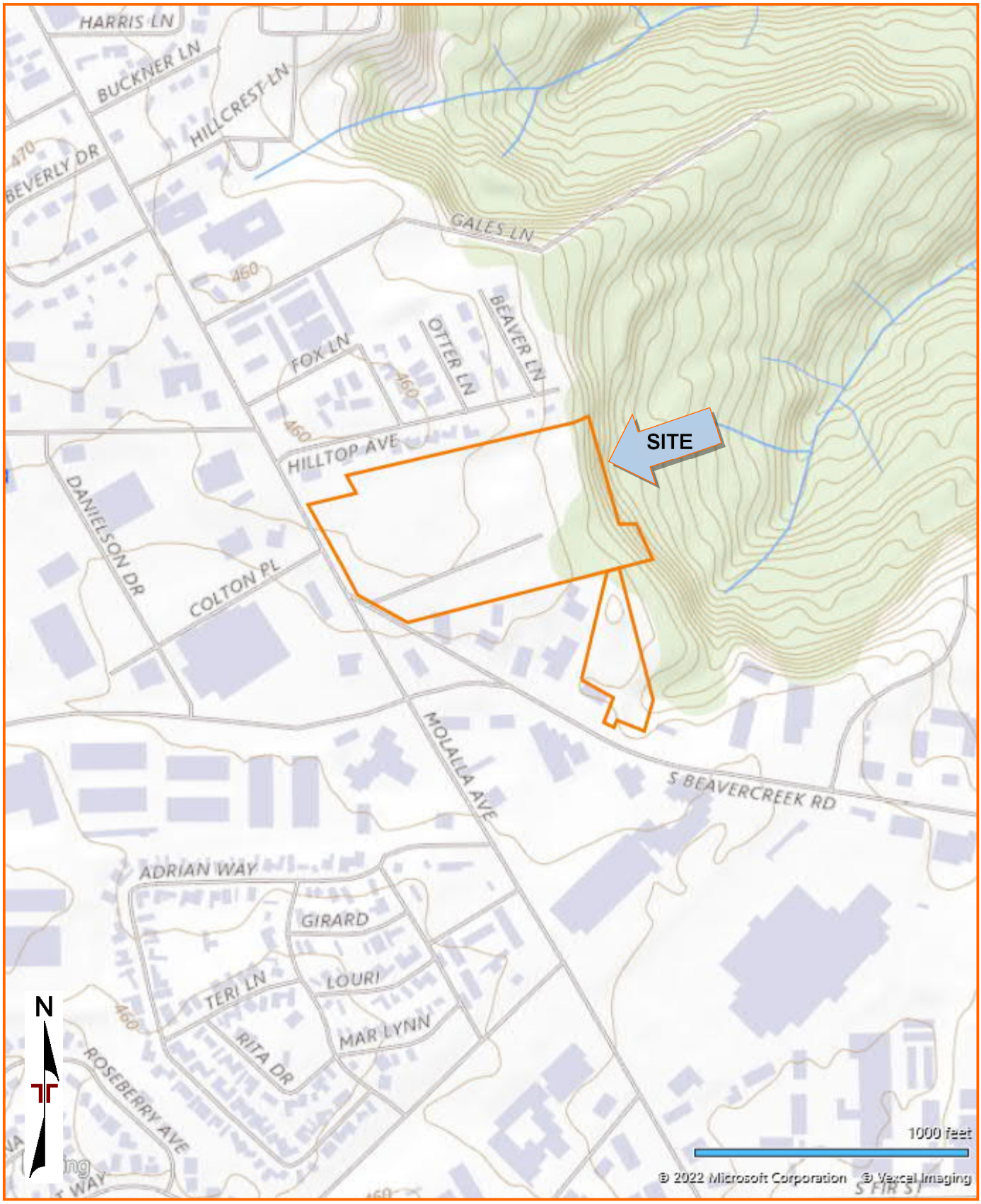

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

TOPOGRAPHIC MAP IMAGE COURTESY OF THE U.S. GEOLOGICAL SURVEY QUADRANGLES INCLUDE: OREGON CITY, OR (1/1/1985).

FIGURE 2 - EXPLORATION PLAN WEST

Oregon City Development ■ Oregon City, OR

September 12, 2022 ■ Terracon Project No. 82215043

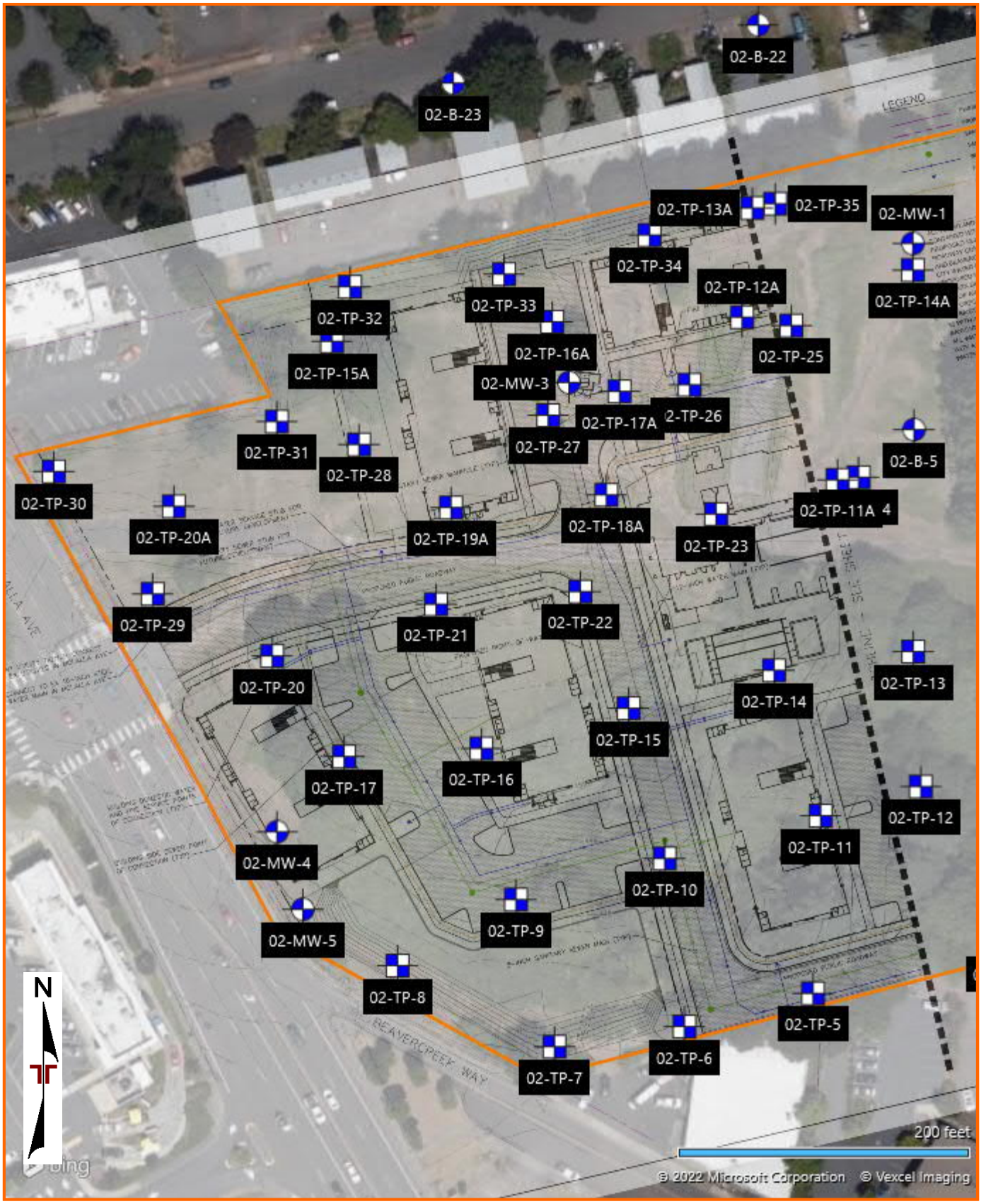

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

FIGURE 3 - EXPLORATION PLAN EAST

Oregon City Development ■ Oregon City, OR

September 12, 2022 ■ Terracon Project No. 82215043

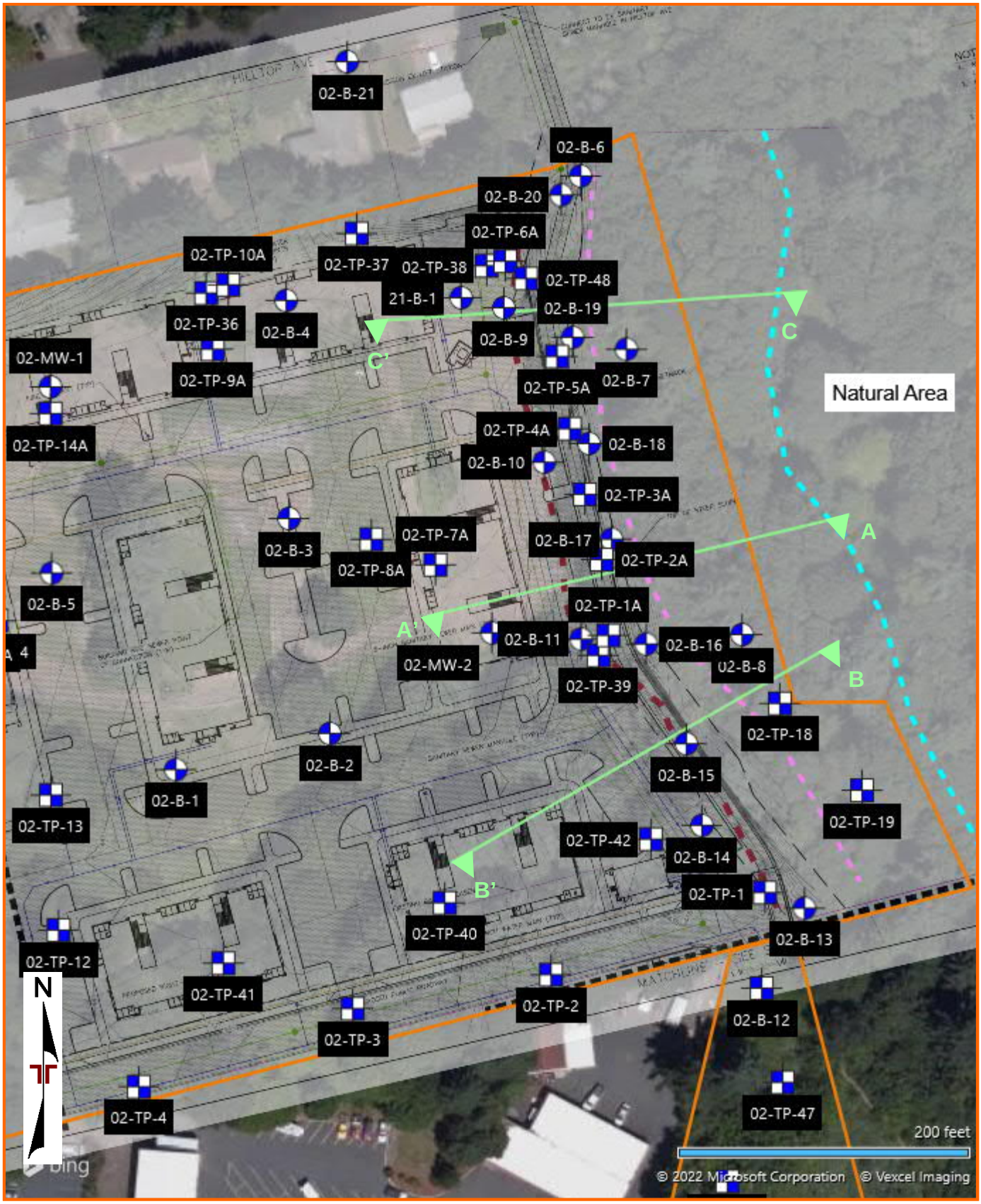

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

FIGURE 4 – EXPLORATION PLAN SOUTH

Oregon City Development ■ Oregon City, OR
September 12, 2022 ■ Terracon Project No. 82215043

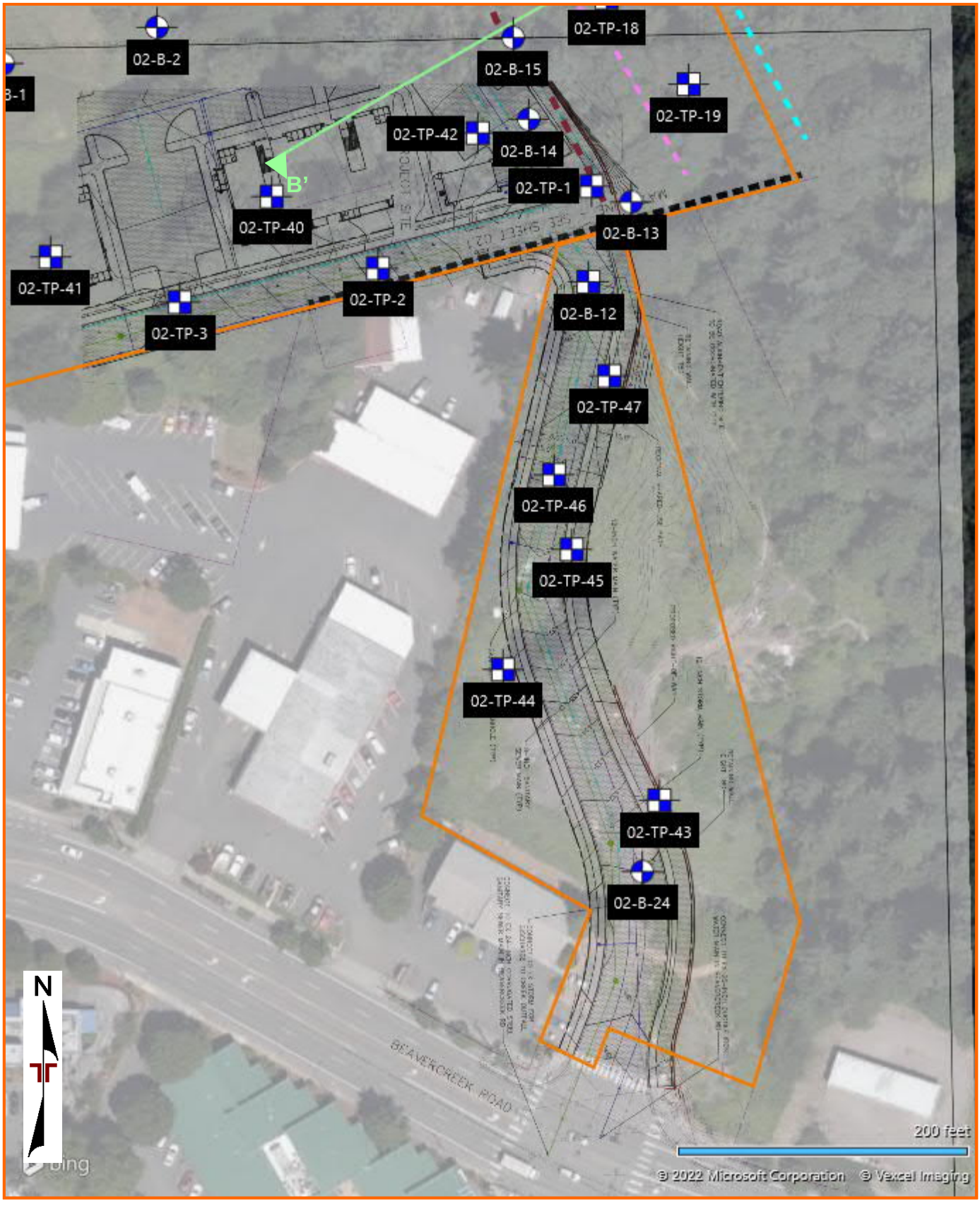

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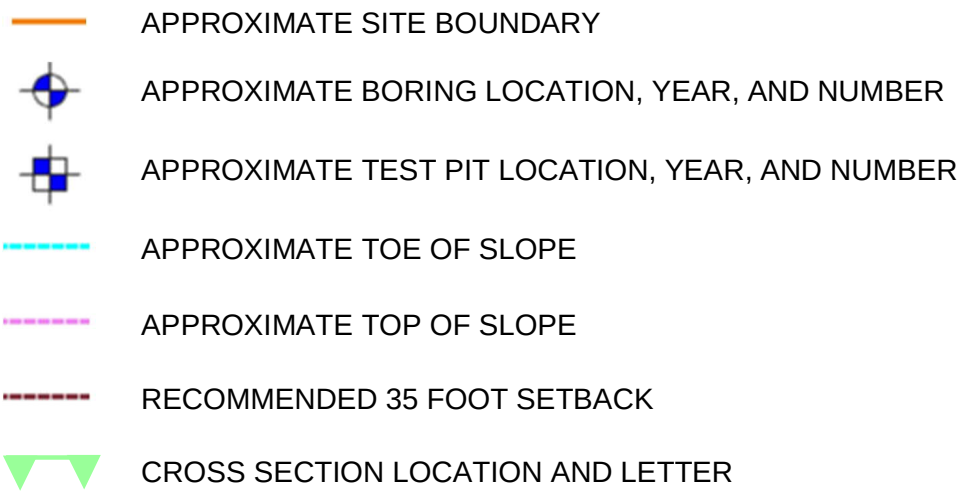
FIGURE 5 - EXPLORATION PLAN LEGEND
Oregon City Development ■ Oregon City, OR
September 12, 2022 ■ Terracon Project No. 82215043

LEGEND



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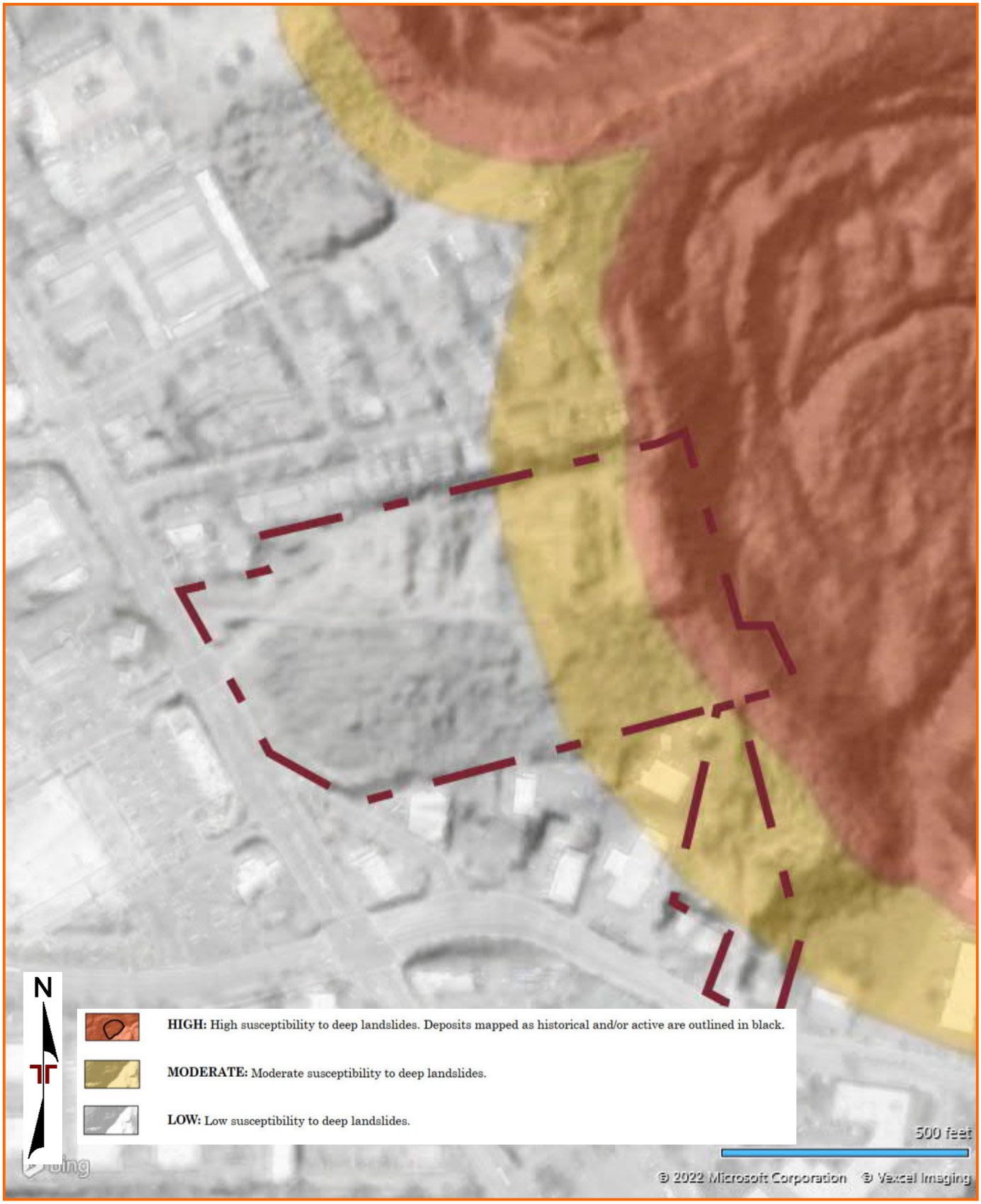


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Excerpted from 2013 DOGAMI Open-File Report O-13-08, Landslide hazard and risk study of northwestern Clackamas County, Oregon



Figur
DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Excerpted from 2013 DOGAMI Open-File Report O-13-08, Landslide hazard and risk study of northwestern Clackamas County, Oregon

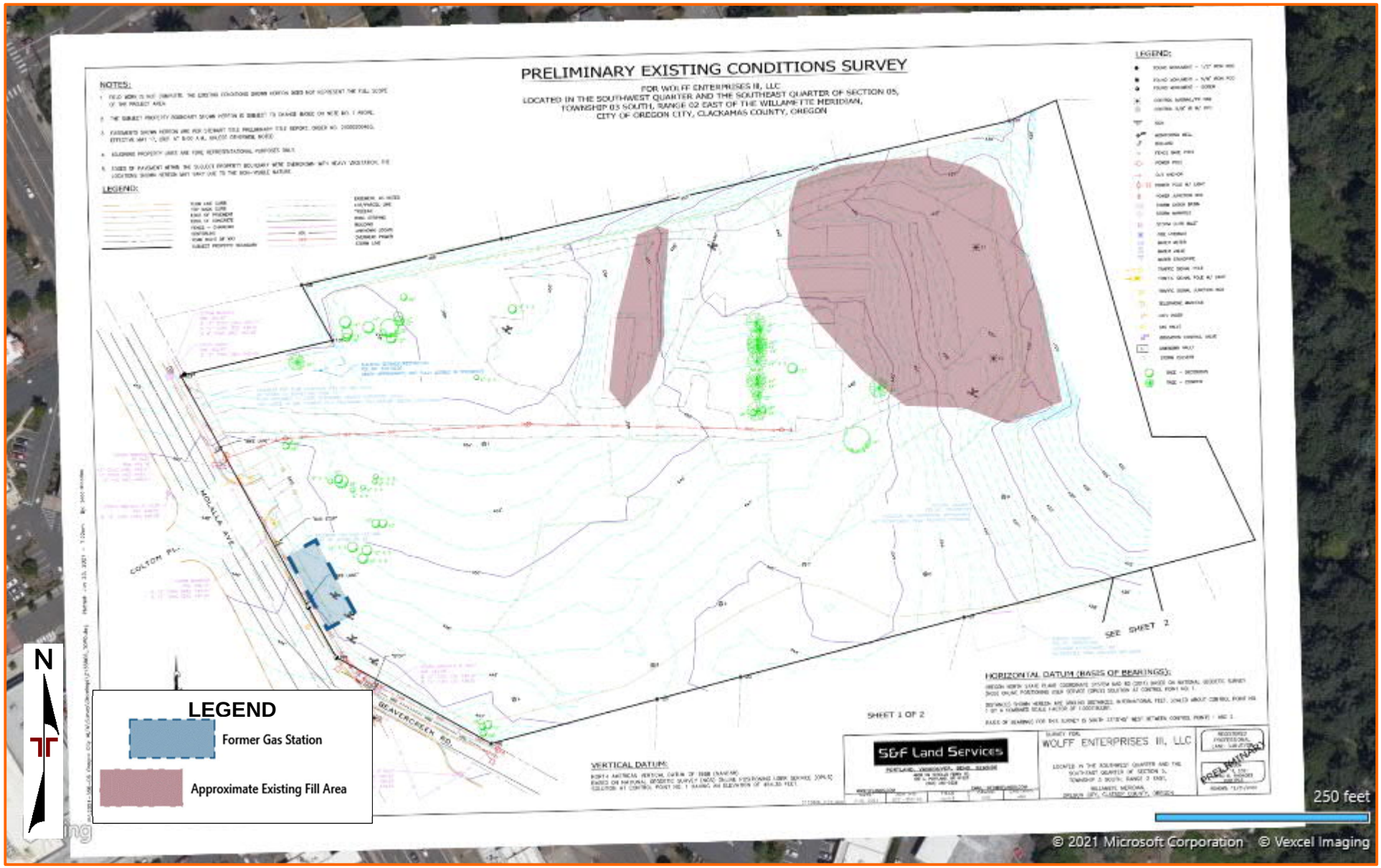
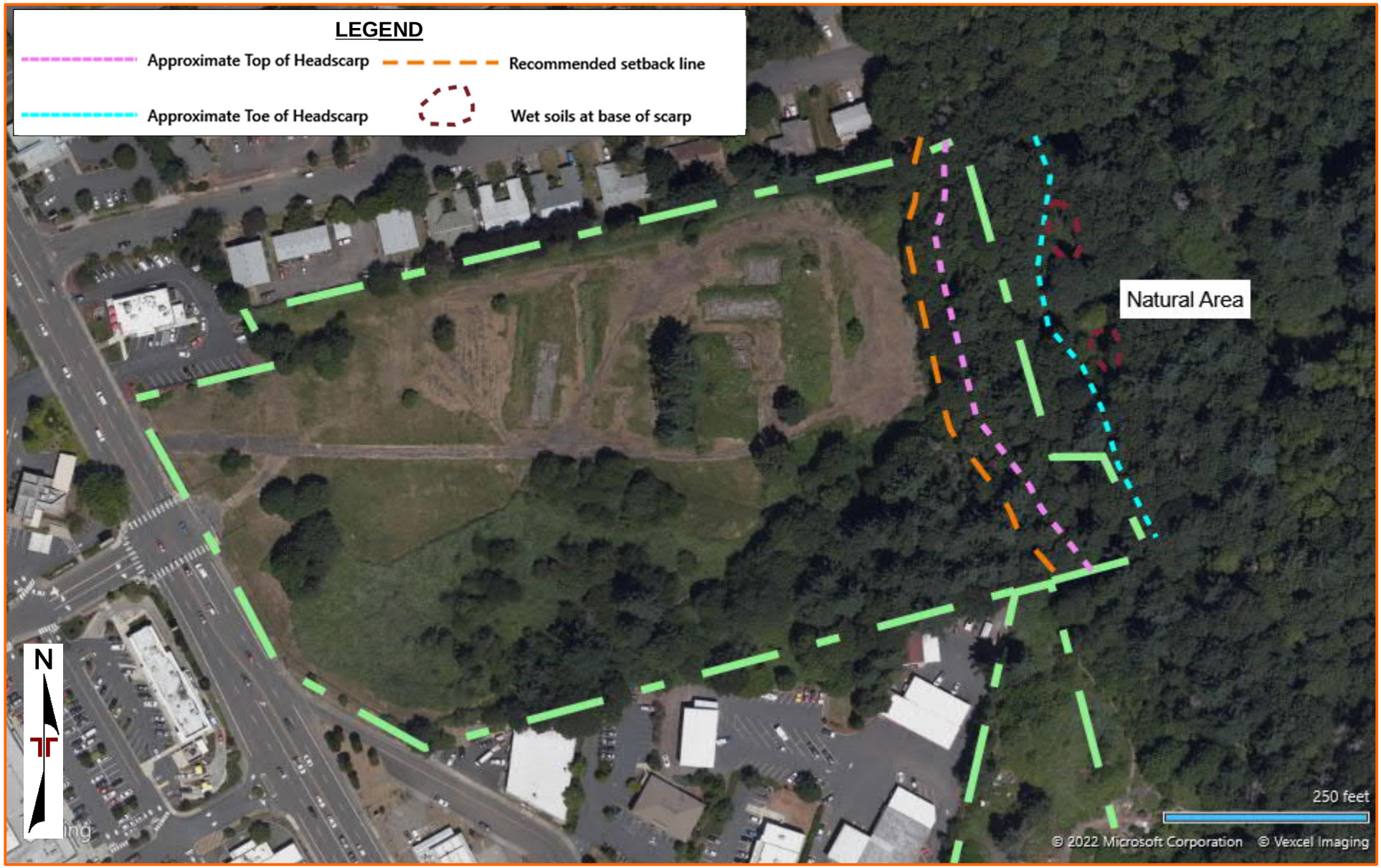


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP BASED ON PRELIMINARY EXISTING CONDITIONS SURVEY BY S&F LAND SERVICES, DATED JUNE 2021, AND MODIFIED BY TERRACON

FIGURE 9 - RECONNAISSANCE PLAN
Oregon City Development ■ Oregon City, OR
September 12, 2022 ■ Terracon Project No. 82215043



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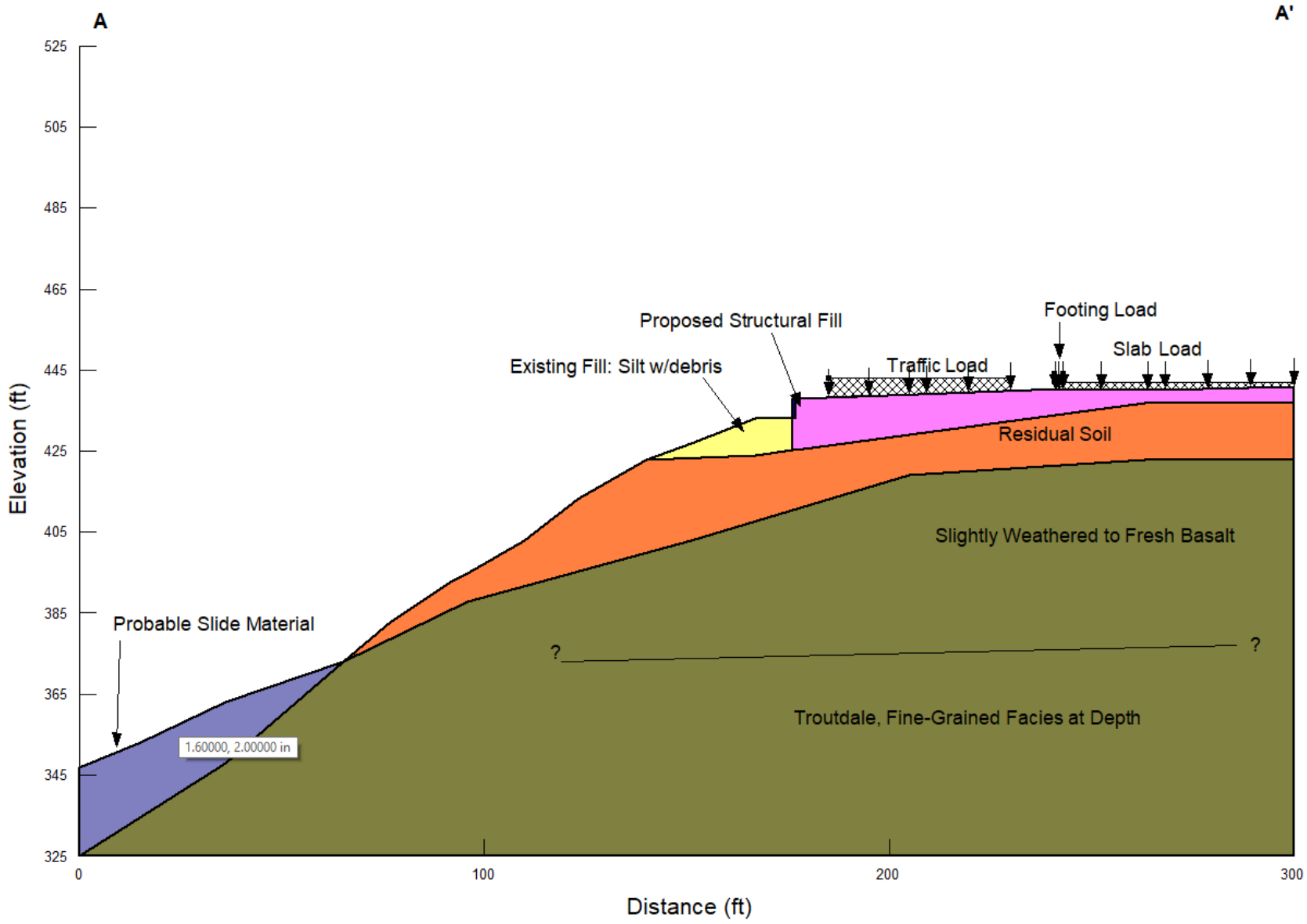
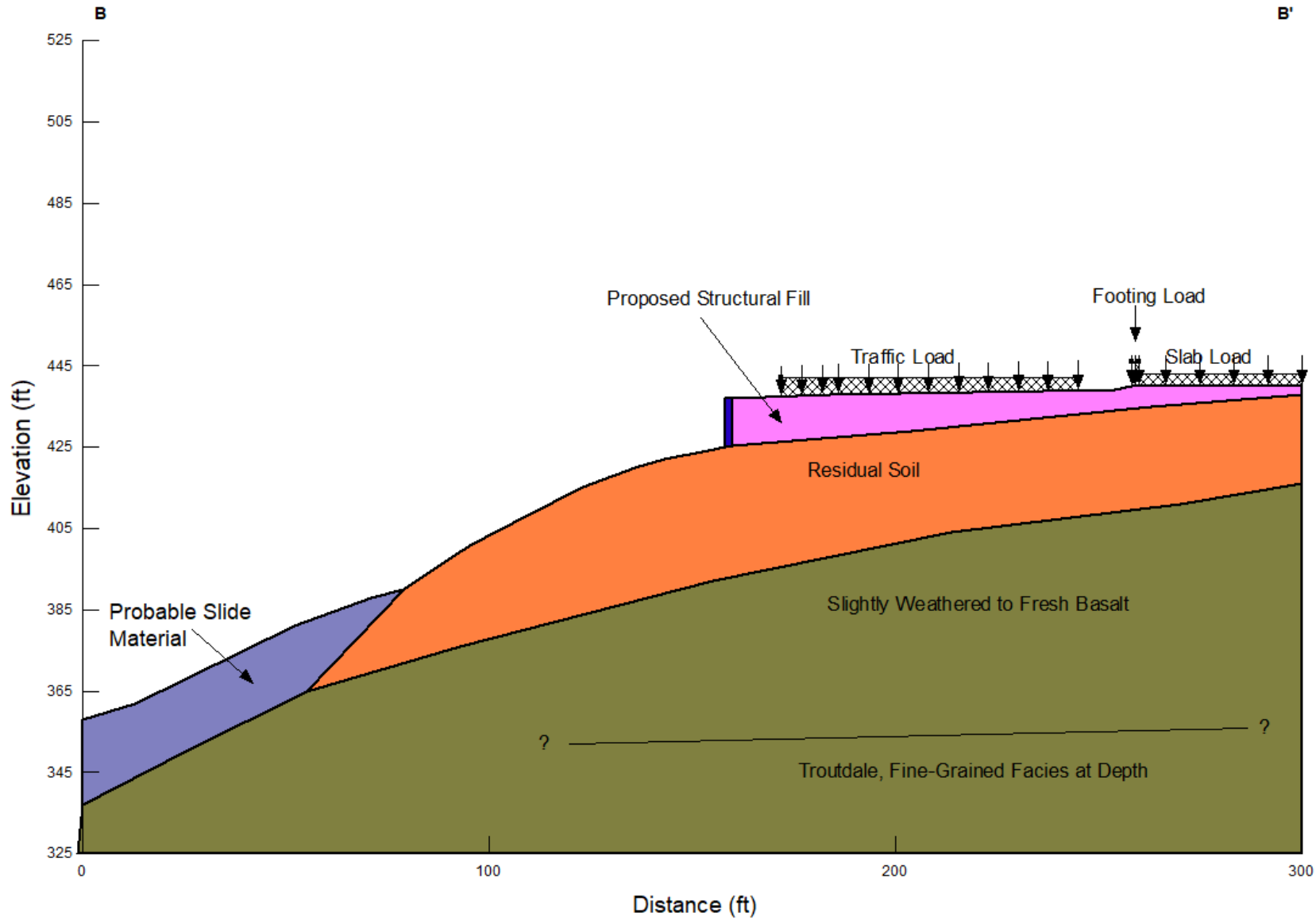


Project Manager: RTH	Project No. 82215043	Terracon Consulting Engineers & Scientists	GEOLOGIC CROSS SECTION A-A'
Drawn by: RTH	Scale: N.T.S.	700 NE 55th Avenue Portland, OR 97203	OREGON CITY DEVELOPMENT Molalla Avenue and Beavercreek Road Oregon City, Oregon
Checked by: KTH	File Name: CrossSectA	PH. (503) 659-3281 FAX. (503) 659-1287	Figure 10
Approved by: KTH	Date: September 2022		



Project Manager: RTH	Project No. 82215043	Terracon Consulting Engineers & Scientists	GEOLOGIC CROSS SECTION B-B'
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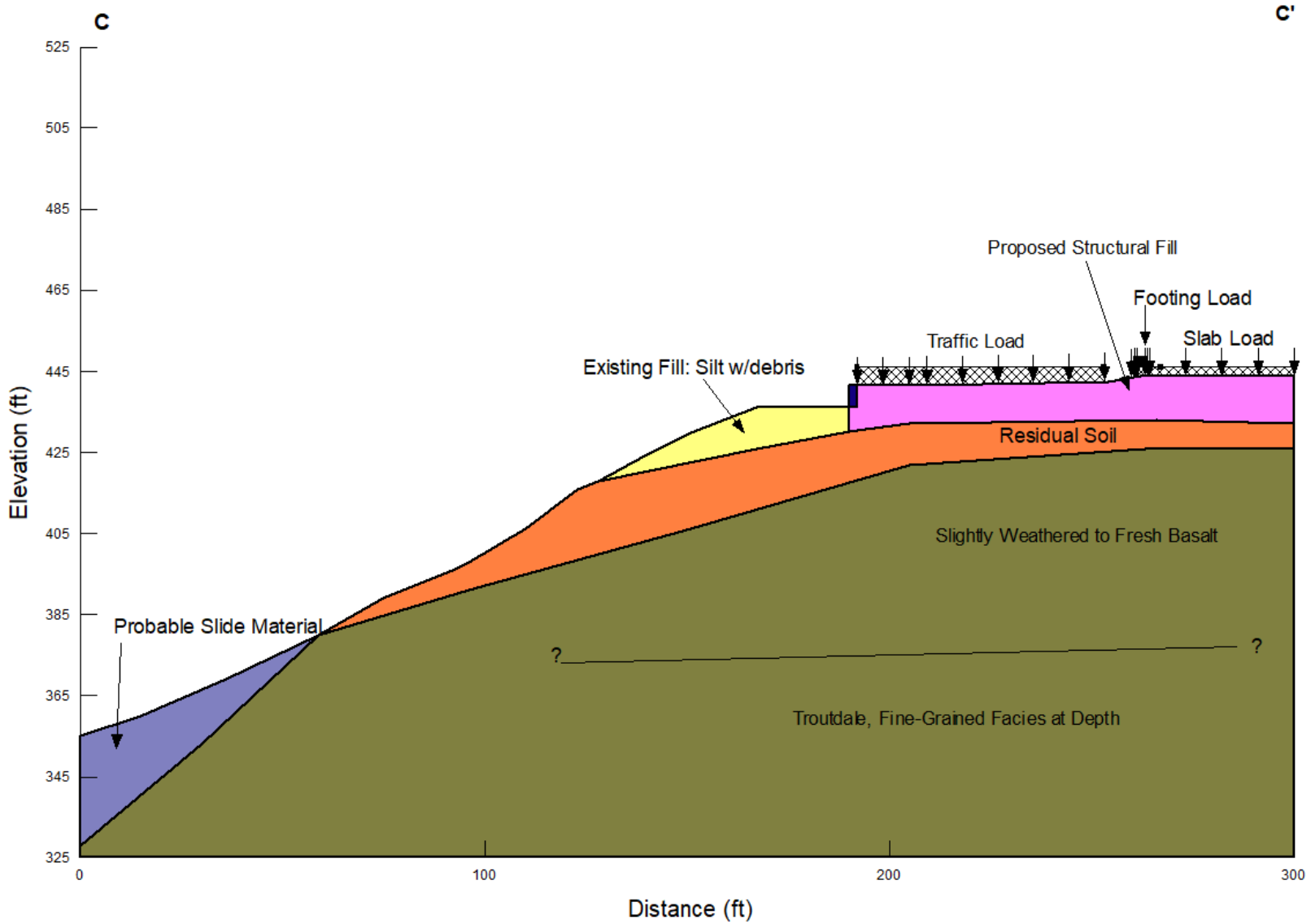
Checked by: KTH	File Name: CrossSectB	PH. (503) 659-3281 FAX. (503) 659-1287	Figure 11
Approved by: KTH	Date: September 2022		



Project Manager: RTH	Project No. 82215043	Terracon Consulting Engineers & Scientists	GEOLOGIC CROSS SECTION C-C'
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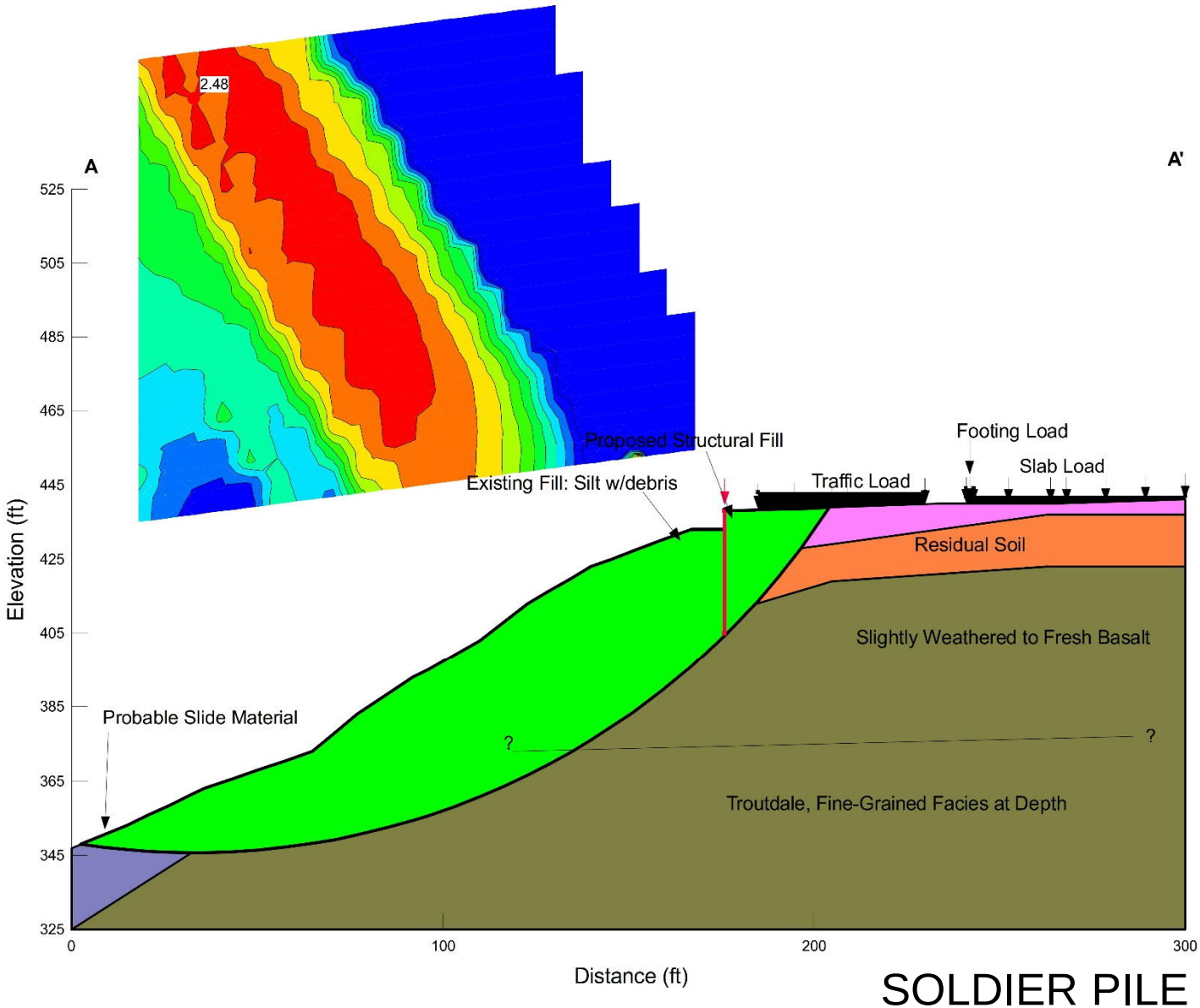
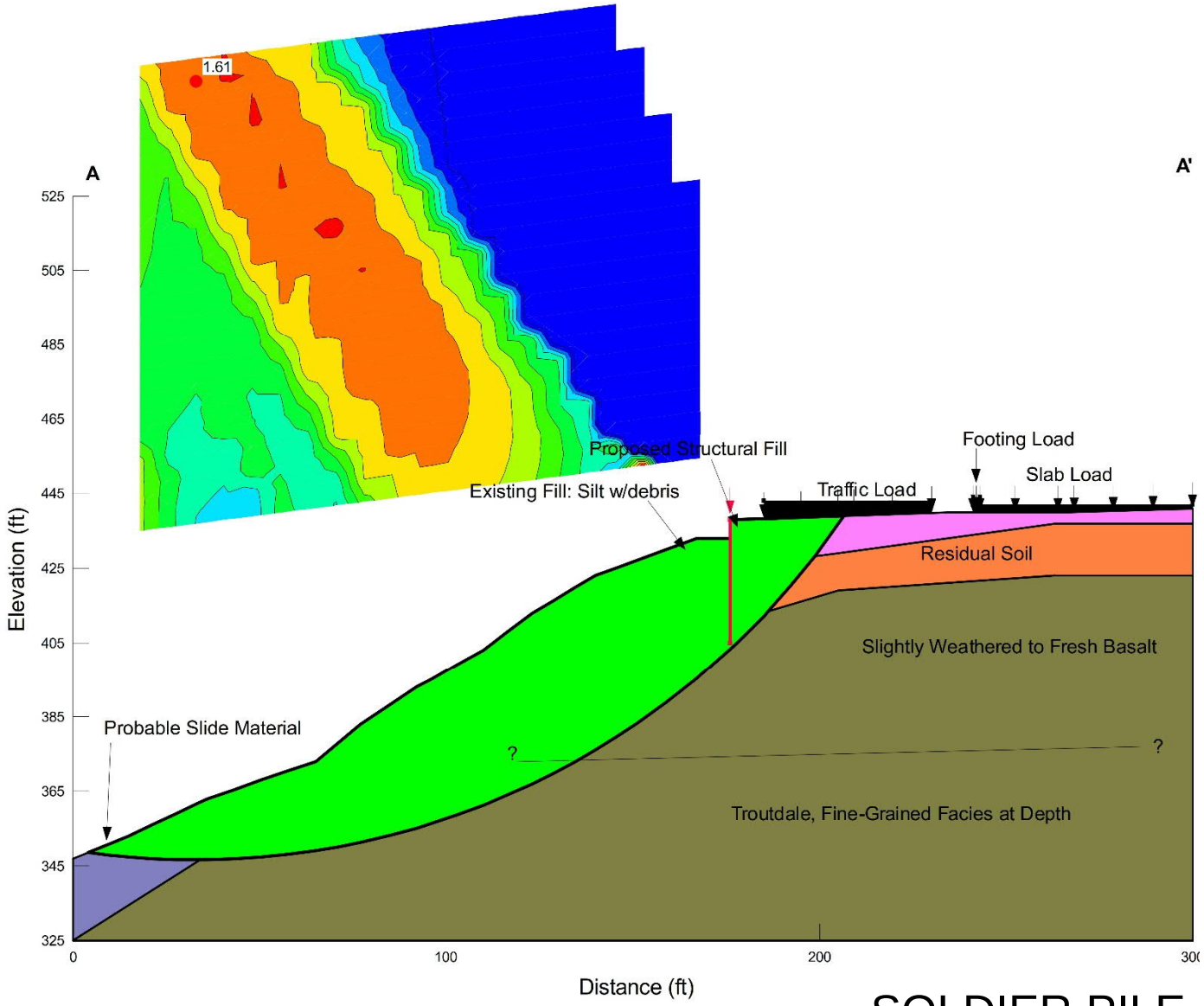
Checked by: KTH	File Name: CrossSectC	PH. (503) 659-3281 FAX. (503) 659-1287	Figure 12
Approved by: KTH	Date: September 2022		



SOLDIER PILE

Project Manager: RTH	Project No. 82215043	Terracon Consulting Engineers & Scientists	STATIC SLOPE STABILITY CROSS SECTION A-A'
Drawn by: RTH	Scale: N.T.S.	700 NE 55th Avenue Portland, OR 97203	OREGON CITY DEVELOPMENT Molalla Avenue and Beavercreek Road Oregon City, Oregon
Checked by: KTH	File Name: CrossSectA	PH. (503) 659-3281 FAX. (503) 659-1287	Figure 13
Approved by: KTH	Date: September 2022		



SOLDIER PILE

Project Manager: RTH	Project No. 82215043	Terracon Consulting Engineers & Scientists	SEISMIC SLOPE STABILITY CROSS SECTION A-A'
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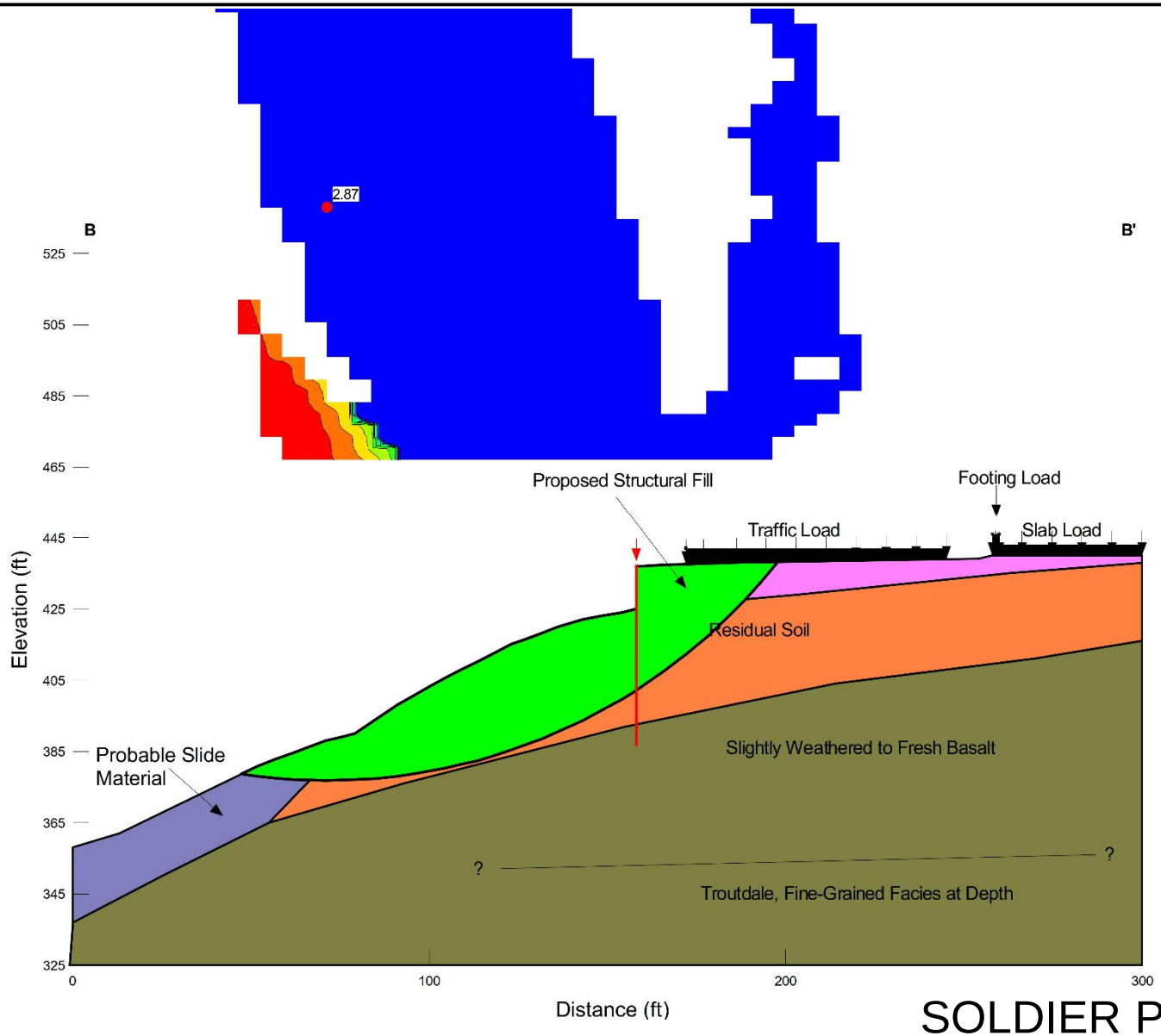
Checked by: KTH	File Name: CrossSectA	PH. (503) 659-3281 FAX. (503) 659-1287	Figure 14
Approved by: KTH	Date: September 2022		



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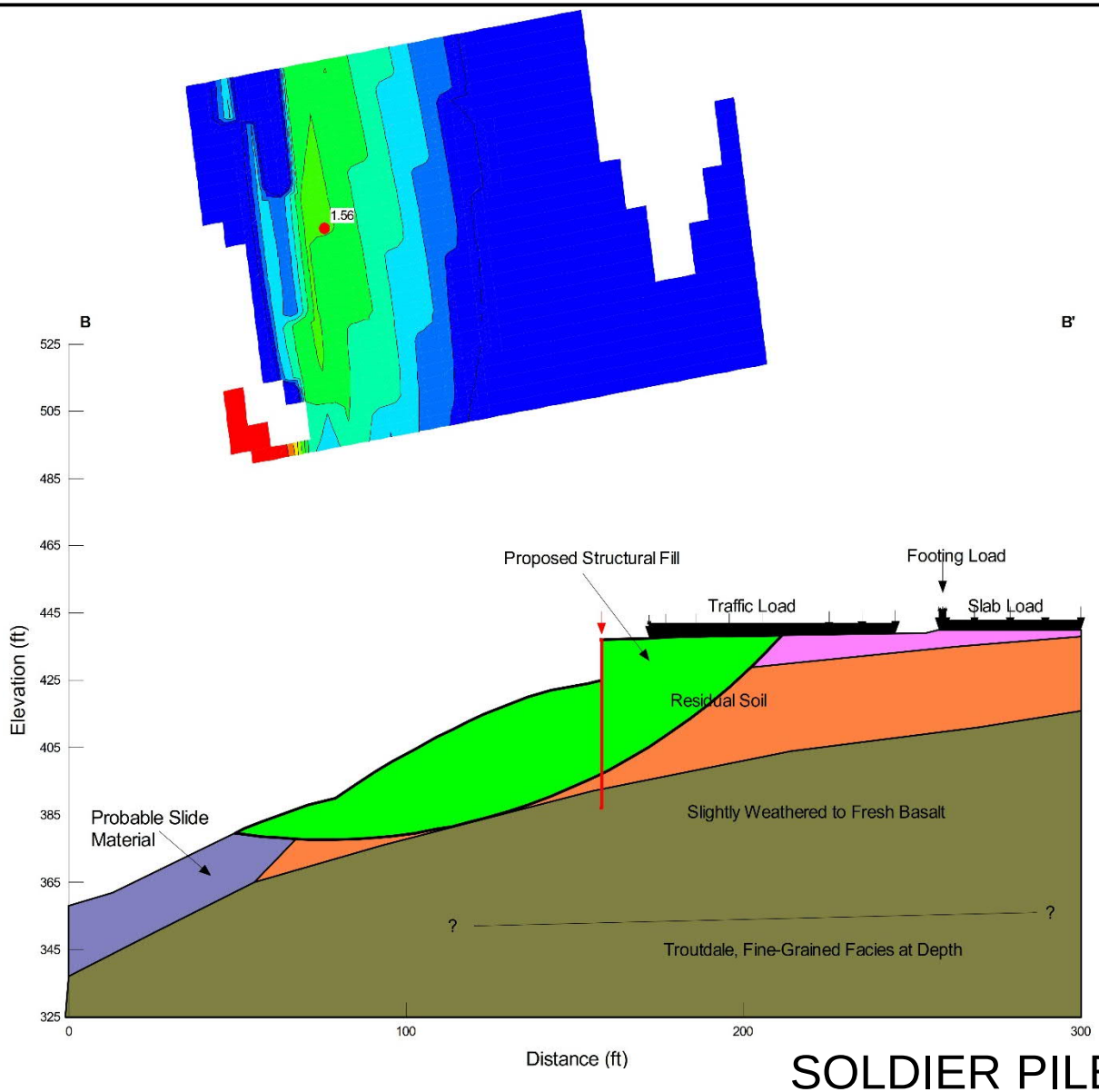
Project Manager: RTH	Project No. 82215043	Terracon Consulting Engineers & Scientists	STATIC SLOPE STABILITY CROSS SECTION B-B'
Drawn by: RTH	Scale: N.T.S.	700 NE 55th Avenue Portland, OR 97203	OREGON CITY DEVELOPMENT Molalla Avenue and Beavercreek Road Oregon City, Oregon
Checked by: KTH	File Name: CrossSectB	PH. (503) 659-3281 FAX. (503) 659-1287	Figure 15
Approved by: KTH	Date: September 2022		



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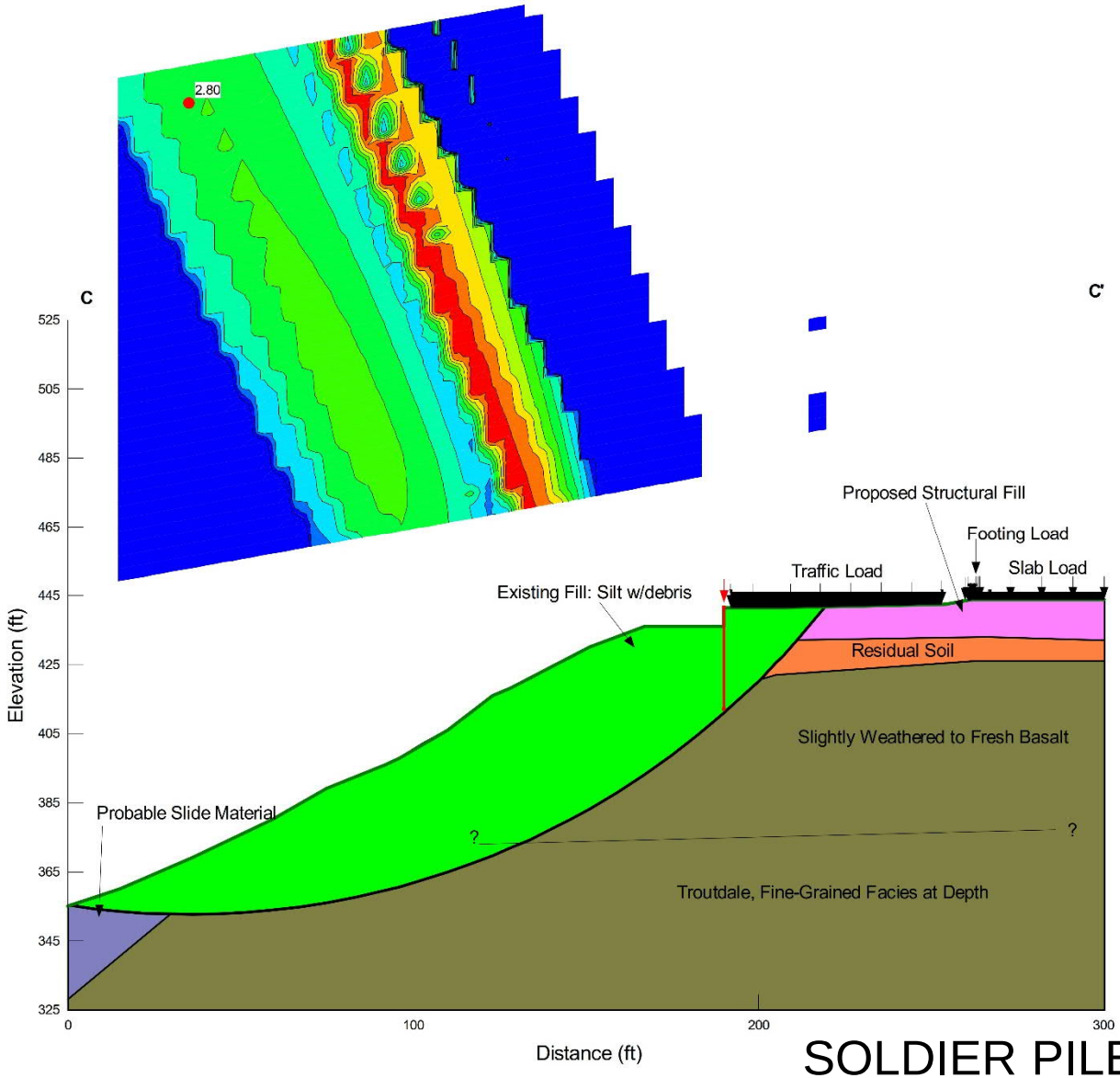
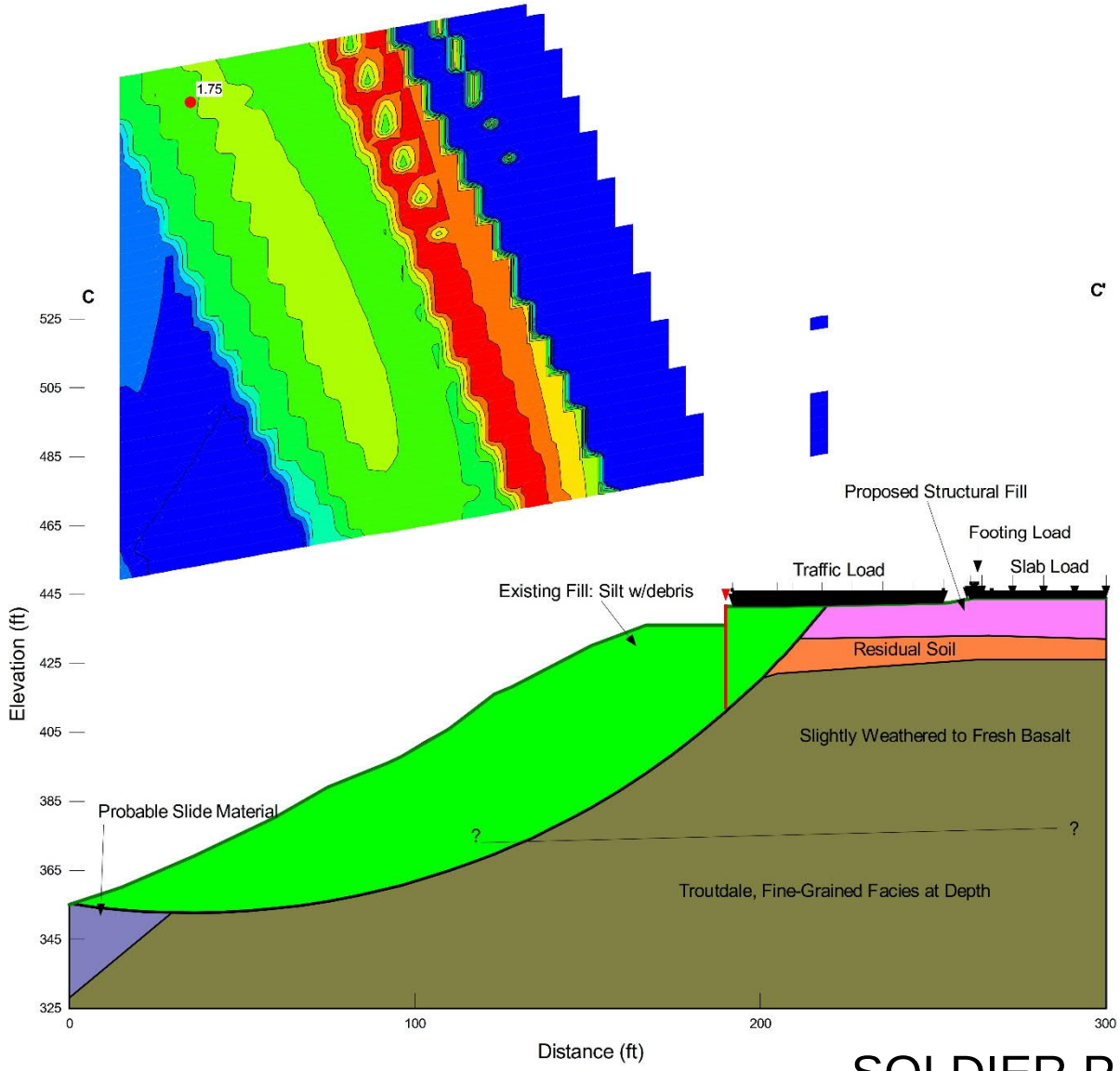
Project Manager: RTH Drawn by: RTH Checked by: KTH Approved by: KTH	Project No. 82215043 Scale: N.T.S. File Name: CrossSectB Date: September 2022	Terracon Consulting Engineers & Scientists 700 NE 55th Avenue Portland, OR 97203 PH. (503) 659-3281 FAX. (503) 659-1287	SEISMIC SLOPE STABILITY CROSS SECTION B-B' OREGON CITY DEVELOPMENT Molalla Avenue and Beavercreek Road Oregon City, Oregon	Figure 16



SOLDIER PILE

Project Manager: RTH	Project No. 82215043	Terracon Consulting Engineers & Scientists	STATIC SLOPE STABILITY CROSS SECTION C-C'
Drawn by: RTH	Scale: N.T.S.	700 NE 55th Avenue Portland, OR 97203	OREGON CITY DEVELOPMENT Molalla Avenue and Beavercreek Road Oregon City, Oregon
Checked by: KTH	File Name: CrossSectC	PH. (503) 659-3281 FAX. (503) 659-1287	Figure 17
Approved by: KTH	Date: September 2022		



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Project Manager: RTH	Project No. 82215043	Terracon Consulting Engineers & Scientists	SEISMIC SLOPE STABILITY CROSS SECTION C-C'
Drawn by: RTH	Scale: N.T.S.	700 NE 55th Avenue Portland, OR 97203	OREGON CITY DEVELOPMENT Molalla Avenue and Beavercreek Road Oregon City, Oregon
Checked by: KTH	File Name: CrossSectC	PH. (503) 659-3281 FAX. (503) 659-1287	Figure 18
Approved by: KTH	Date: September 2022		

ATTACHMENTS

ENGINEERING GEOLOGY REPORT

Contents:

October 8, 2012, Preliminary Engineering Geology and Soil Engineering Report

Preliminary Engineering Geology and Soil Engineering Report

Proposed Retail Development
Molalla Avenue and Beavercreek Road
Oregon City, Oregon

October 8, 2012
Project No. 82125030

Prepared for:
PACLAND

Prepared by:
Terracon Consultants, Inc.
Portland, Oregon

Offices Nationwide Established in 1965
Employee-Owned terracon.com

Terracon

Geotechnical ■ Environmental ■ Construction Materials ■ Facilities

October 8, 2012

PACLAND
6400 SE Lake Road, Suite 300
Portland, Oregon 97222

Attn: Mr. Jeff Vanderdasson, P.E.

Re: Preliminary Engineering Geology and Soil Engineering Report
Proposed Retail Development
Molalla Avenue and Beavercreek Road
Oregon City, Oregon
Terracon Project No. 82125030

Dear Mr. Vanderdasson:

Terracon Consultants, Inc. (Terracon) is pleased to present our *Preliminary Engineering Geology and Soil Engineering Report* for the Proposed Retail Development project in Oregon City, Oregon. Our services were completed in general accordance with our *Proposal for Geotechnical Engineering Services – Revised* (P82110035R1), dated July 20, 2012. Email authorization to proceed with our services was provided by PACLAND on July 20, 2012. This report presents our preliminary conclusions regarding the stability of the slopes and soils from the proposed development.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report, or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.

GEOTECHNICAL REGISTERED PROFESSIONAL ENGINEER 82194 OREGON Nov. 10, 2009 ERIC J. LIM
RENEWS: 12/31/2012

Eric J. Lim, P.E., G.E.
Geotechnical Department Manager

David A. Baska, Ph.D., C.E.G.
Senior Consultant

Kristopher T. Hauck, P.E.
Office Manager

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APPENDIX A – EXHIBITS

Exhibit A-1	Site Plan
Exhibit A-2	Landslide Map Excerpt
Exhibit A-3	Preliminary Geologic Cross Section
Exhibit A-4	Preliminary Static Slope Stability
Exhibit A-5	Preliminary Seismic Slope Stability

EXECUTIVE SUMMARY

The site's geology and associated geologic hazards were researched with regard to the proposed site development. The preliminary engineering geology and geotechnical considerations associated with the proposed project are summarized below.

- **Existing, Adjacent Landslide Hazards:** The steep slope area to the east is a well-documented landslide hazard area. However, the area immediately adjacent to the site is mapped as an ancient landslide. Recent surface reconnaissance of the steep slope area does not indicate recent movement of the weathered landslide features.

- **Proposed Development Feasibility:** The proposed development is feasible from a geotechnical standpoint provided structures, significant fills, and other loads are located outside a suitable setback. Previous engineering studies established a setback of 35 feet from the top of slope and may be used for planning purposes of the new development.

- **Retaining Walls:** A retaining wall is proposed along the east side of the truck route at the currently proposed 35-foot top of slope setback. Additional engineering design will be necessary for the retaining wall, although our preliminary slope stability models indicate the walls are setback sufficiently from the top of the slope and should not adversely impact the stability of the slope.

- **Site Drainage and Erosion Control:** Surface water should be collected and routed away from the steep slope area. Infiltration facilities should not be implemented due to the potential for the infiltrated water to daylight on the adjacent steep slope areas and decrease slope stability. The area within the setback at the top of the slope may be cleared of invasive vegetation, such as blackberries, and suitably vegetated to reduce erosion towards the steep slope area.

This summary should be used in conjunction with the entire report for design purposes. It should be recognized that details were not included or fully developed in this section, and the report must be read in its entirety for a comprehensive understanding of the items contained herein. The **GENERAL COMMENTS** section should be read for an understanding of the report limitation.

PRELIMINARY ENGINEERING GEOLOGY AND SOIL ENGINEERING REPORT PROPOSED RETAIL DEVELOPMENT MOLALLA AVENUE AND BEAVERCREEK ROAD OREGON CITY, OREGON

Project No. 82125030
October 8, 2012

1.0 INTRODUCTION

In accordance with your request and written authorization, Terracon has completed a Preliminary Engineering Geology and Soil Engineering Evaluation for the proposed retail development in Oregon City, Oregon. Terracon, formerly Zipper Zeman Associates (ZZA), previously completed the following reports:

- Preliminary Results of Slope Stability Evaluation, Proposed Retail Project, Molalla Avenue and Beavercreek Road, Oregon City, Oregon, by ZZA, dated July 3, 2002.
- Subsurface Exploration and Geotechnical Engineering Evaluation, Proposed Retail Project, Molalla Avenue and Beavercreek Road, Oregon City, Oregon, by ZZA, dated February 13, 2004.

2.0 PURPOSE AND SCOPE

The purpose of this report is to satisfy the requirement for both a Preliminary Engineering Geology Report and a Preliminary Soil Engineering Report as required by the Oregon City Geologic Hazards Checklist. An updated geotechnical engineering report will be provided at a later date with engineering recommendations to be used for final design of the development.

Our scope of services included a slope reconnaissance, review of previous subsurface boring and test pit explorations, review of published geologic literature, preliminary geotechnical engineering analysis, and preparation of this report.

3.0 PROJECT INFORMATION

3.1 Site Location

ITEM	DESCRIPTION
Location	The site is located at the northeast corner of Molalla Avenue and Beavercreek Road in Oregon City, Oregon as shown in Exhibit A-1 – Site Plan.
Existing improvements	The site is currently vacant and fenced off. All former buildings have been razed, although several slab and foundations remain. Several retaining walls and/or slopes on the order of 4 feet or less in height are on the site.
Surroundings	The site is bounded by single and multi-family residences to the north, Molalla Avenue and commercial properties to the west, commercial properties to the south, and an undeveloped steep slope area dropping off to the east.
Current ground cover	The site is covered with grass, shrubs (blackberries, etc.), and scattered to dense stands of trees. The southeast portion of the site is wooded, and the entire south edge of the property is overgrown with dense blackberry shrubs.
Existing topography	The majority of the site is relatively flat with several low retaining walls creating broad terraces stepping down to the east. The eastern edge of the site drops steeply down at inclinations in the range of 1½H:1V to ½H:1V to the east toward Newell Creek. The overall slope system height is on the order of 200 feet in vertical drop. We understand that this steep slope area contains active and ancient landslide complexes and has been studied extensively by Portland State University geologists and other researchers.

3.2 Project Description

ITEM	DESCRIPTION
Structures	Main Retail Building The project will include a new one-story retail building and loading dock with a proposed total footprint of approximately 60,000 square feet (SF). The building footprint is planned in the northeast portion of the site as shown on the attached Site Plan. Outlots 1- 4 Four outlots are currently planned for the western third of the site for three retail buildings ranging from approximately 3,600 SF to 7,200 SF and a one- to two-story commercial/office building of approximately 23,000 SF. Outlot 2 will potentially include a remote drive-thru banking structure.
Building construction	Main Retail Building We have assumed that the store will be constructed with masonry block load-bearing and non-load-bearing walls; steel columns, girders, and joists for support of the roof structure; and on-grade cast-in-place floor slabs. Outlots 1-4 No information is available on the outlot buildings, but we assume they will be either wood-framed or masonry block construction with slab-on-grade floors.
Finished floor elevations	Main Retail Building: Currently planned at elevation 445 feet. Outlot 1: Currently planned at elevation 448 feet. Outlot 2: Currently planned at elevation 444 feet. Outlot 3: Currently planned at elevation 442 feet. Outlot 4: Currently planned at elevation 448 feet.
Maximum loads	Main Retail Building Columns: 85 kips gravity and 150 kips maximum live loading. Walls: 1.5 to 2 klf non-load bearing and 4 to 6 klf for load bearing. Slabs: 125 psf uniform loading and 5-kip concentrated loading max. Outlot Buildings The loads for these buildings are not known at this time, but are assumed to not exceed those listed above for the main retail building.

ITEM	DESCRIPTION
Maximum allowable settlement	Main Retail Building Total Static Settlement: 1 inch Masonry Walls: L/900 or ½ inch over 40 feet Outlots Total Static Settlement: 1 inch (assumed) Differential: L/900 or ½ inch over 40 feet (assumed)
Grading	Significant fills on the order of 10 to 12 feet in maximum thickness are expected on the east half of the site and in the building pad. Excavation cuts (or removal of stockpile areas) up to approximately 10 feet may be needed in the proposed truck route off the southeast corner of the site in the existing stockpile areas.
Cut and fill slopes	3H:1V slopes approximately 4 feet or less in height are expected.
Free-standing retaining walls	An approximately 626-foot long by 5- to 12-foot high retaining wall is planned along the east edge of the truck route outside the steep slope setback. Guards rails and/or fall protection fencing are anticipated atop the retaining walls. Determination of the wall type, e.g., segmental block, soldier pile, etc., has not yet been determined along the east side of the truck route but will be determined as part of the final design to include slope stability concerns.
Below Grade Areas	A loading dock area is planned on the northeast corner of the building with a finish grade of 4 feet below the finish floor elevation.
Stormwater Management	A buried detention structure is planned in the southeast corner of the site under the parking area. We understand that the depth of the structure is currently planned at approximately 7 feet below finish grade.
Off-site Improvements	A public road and truck route is proposed from the southeast corner of the site south to Beavercreek Road.
Buried Utilities	We understand that stormwater and water pipes will run along the truck route on the east side of the site. Depths are anticipated to be 10 feet or less. A sanitary sewer line is proposed to run east-west from Molalla between Outlot 2 and Outlot 3 to the main retail building. The sanitary sewer will also run north-south up the Outlot 2 parking lot north to Outlots 1 and 4. Depths have not been determined yet, but may exceed 10 feet in depth.

4.0 LITERATURE REVIEW

Per Oregon City Municipal Code 17.44.050, we reviewed the following documents for this report:

- The State of Oregon Department of Geology and Mineral Industries (DOGAMI) in Bulletin 99, Geology and Geological Hazards of North Clackamas County, Oregon (1979), or in any subsequent DOGAMI mapping for the Oregon City area;
- Portland State University study entitled “Environmental Assessment of Newell Creek Canyon, Oregon City, Oregon (1992);
- Portland State University study, "Landslides in the Portland, Oregon, Metropolitan Area Resulting from the Storm of February 1996: Inventory Map, Database and Evaluation" (Burns and others, 1998);
- DOGAMI Open File Report O-06-27, "Map of Landslide Geomorphology of Oregon City, Oregon, and Vicinity Interpreted from LIDAR Imagery and Aerial Photographs" (Madin and Burns, 2006);
- "Preliminary Geologic Map of the Oregon City Quadrangle, Clackamas County, Oregon" (Madin, in press).

We also reviewed the following, more recently published documents:

- Map showing faults, bedrock geology, and sediment thickness of west half of Oregon City 1:100,000 quad, Washington, Multnomah, Clackamas and Marion Counties, Oregon, 1998, IMS-4, Burns et al., (DOGAMI)
- *Oregon Geologic Data Standard v. 2.1,* 2009 (DOGAMI)
- *Geologic Map of the Oregon City 7.5’ Quadrangle, Clackamas County, Oregon*, 2009, GMS-119 (DOGAMI)
- *Map of Landslide Geomorphology of Oregon City, Oregon, and Vicinity Interpreted from Lidar Imagery and Aerial Photographs*, O-06-27, 2006 (DOGAMI)
- *Landslide Inventory Map of the Northwest Quarter of the Oregon City Quadrangle, Clackamas County, Oregon*, IMS-26, 2009 (DOGAMI)

5.0 PRELIMINARY ENGINEERING GEOLOGY

According to Oregon City’s Geologic Hazards Checklist, a preliminary engineering geology report must be prepared that relates the following items to the actual development proposal:

- (5.1) A description of geologic formations, bedrock and surficial materials including artificial fill; location of any faults, folds, etc.
- (5.2) Structural data including bedding, jointing, and shear zones

- (5.3) Off-site geologic conditions that may pose a hazard to the site or that may be affected by on-site development
- (5.4) Cross sections showing subsurface structure, logs of subsurface explorations and analysis if necessary to evaluate the site
- (5.5) Signature and certification number of the engineering geologist
- (5.6) The report shall also contain a statement as to whether any hazard areas should not be disturbed because of the potential for damage to the site or neighboring properties
- (5.7) The report shall include specific comments resulting from their review of the civil plans for the project including recommendations on maximum cuts, structural fills, rockery walls, drainage behind any type of walls, maximum slopes above walls, removal of toe of slopes, the use of rock hammers and blasting, and so forth.

The above items are discussed individually in the following sections.

5.1 Geologic Description

Geologically, the site is located in the northern Willamette Valley, which consists of a structural trough between the Coastal Range and the Cascade Range. This basin is underlain by thick deposits of sand and gravel washed into it during the Pliocene epoch when the climate in the area was very dry. These granular deposits are locally covered by the Boring lavas (Qtb) in northwest Clackamas County.

Based on the *Oregon Geologic Data Standard v. 2.1* and Oregon Department of Geology and Mineral Industries *Geologic Map of the Oregon City 7.5' Quadrangle, Clackamas County, Oregon, 2009* this site is located within a geologic unit mapped as Tbc-Basalt of Canemah defined as flow or flows of grey medium-grained, olivine basalt. The Oregon Department of Geology and Mineral Industries (DOGAMI), Bulletin 99, *Geologic Map of the Canby and Oregon City Quadrangles, Oregon 1979*, maps the site as consisting of Boring lavas (Qtb), which it describes as Pliocene-Pleistocene lavas, light-gray, open-textured olivine basalt; flow structures common; includes some pyroclastic material of local extent; widely spaced joint pattern. Lavas and breccias have weathered to a residual red clay surface soil. Vertical exposures are susceptible to mass movement and deep bedrock sliding because of failure of underlying material (see the description below with clay materials within the Troutdale unit).

The Boring Lava deposits overly the Troutdale (Tpt), which are described as Pliocene sandstone and conglomerate; indurated beds and lenses of well-sorted sand and cobbly gravel with up to 30 percent quartzite clasts. Some sand originally composed of volcanic glass have altered to an impermeable high shrink-swell clay. The clay can be unstable and cause overlying competent units to fail by landslide. The publications indicate that on slopes where this clay layer daylights, one generally encounters a spring. Also, if layers dip out of the slope, it can become a failure

plane for a slump or slump-earthflow when the pore water pressure has built up to a critical value on top of the clay layer.

Based on the *Map of Landslide Geomorphology of Oregon City, Oregon, and Vicinity Interpreted from Lidar Imagery and Aerial Photographs, O-06-27, 2006* and the *Landslide Inventory Map of the Northwest Quarter of the Oregon City Quadrangle, Clackamas County, Oregon, IMS-26, 2009,* a mapped landslide was identified adjacent to the site to the east. The landslide is identified as a prehistoric or ancient landslide (movement greater than 150 years ago). This is defined by landslide features that are slightly eroded and there is no evidence of historic (recent in last 150 years) movement. In some cases, the observed landslide features have been greatly eroded and/or covered with deposits that result in smoothed and subdued morphology.

The borings completed for the previously referenced 2004 ZZA report are generally consistent with the above geologic mapping for the Boring Lavas/Basalt of Canemah, although the basalt has become deeply weathered in certain areas. The Troutdale unit was not encountered to the maximum depth of the borings at approximately 50½ feet below the ground surface. Although direct evidence of landslide features were not readily observed during our exploration programs for the 2004 report, we did observe the general headscarp area of the ancient landslide area during our 2012 slope reconnaissance with the aid of the recent Lidar-based landslide maps. An excerpt of the landslide map is appended as Exhibit A-2.

5.2 Structural Data

Bedrock outcrops or exposures were not observed during our site visits on the subject property or immediately downslope of the subject property. As discussed above, the bedrock in the site vicinity is mapped as Tbc-Basalt of Canemah defined as flow or flows of grey medium-grained, open-textured, olivine basalt. Flow structures are common, includes some pyroclastic material of local extent, and widely spaced joint pattern. Lavas and breccias have weathered to residual red clay surface soil. Vertical exposures are susceptible to mass movement and deep bedrock sliding because of failure of underlying material. The rock cores completed for the previously referenced 2004 ZZA report indicate close fracture spacing in the upper, weathered zones of the bedrock grading to wide fracture spacing in the fresh, competent bedrock at depth.

5.3 Off-Site Geologic Conditions

The *Map of Landslide Geomorphology of Oregon City, Oregon, and Vicinity Interpreted from Lidar Imagery and Aerial Photographs, O-06-27, 2006* and the *Landslide Inventory Map of the Northwest Quarter of the Oregon City Quadrangle, Clackamas County, Oregon, IMS-26, 2009,* indicate a mapped landslide area adjacent to the east side of the site. The landslide is identified as a prehistoric or ancient landslide (movement greater than 150 years ago). This is defined by landslide features that are slightly eroded and there is no evidence of historic (recent in last 150

years) movement. In some cases, the observed landslide features have been greatly eroded and/or covered with deposits that result in smoothed and subdued morphology.

During our initial exploration period during 2001-2002, we performed a surface reconnaissance of the steep slope area on the eastern edge of the site and immediately downslope of the site to the east. We also re-visited these areas on July 31, 2012 to determine the current conditions. During our slope reconnaissance visits, we walked and mapped the landslide area. We identified a main head scarp along the eastern site boundary, followed by numerous (3 to 5) internal scarps further east of the site within the ancient mapped landslide itself. A spring was observed at the base of the head scarp approximately 100 feet east of the northeast corner of the site at approximately 350 feet in elevation. A second spring was observed approximately 150 feet east of the southeast corner of the site at approximately 290 feet in elevation. Four nick points (i.e., drops in the streambed from erosion) were observed in the stream bed at the base of the ancient landslide ranging in height from 1½ feet to 6 feet. Gray, stiff to medium stiff, wet, lean clay with cemented clasts of gray clay was observed at various points along the stream bed. These deposits can be correlated to the fine grained portion of the Troutdale formation described above. At the time of our site reconnaissance Terracon did not identify new slide areas immediately downslope of the proposed development.

Our field observations agree with the above-referenced published landslide mapping. We did not observe indications of recent movement during our slope reconnaissance during the 2001-2002 ZZA exploration programs and our recent site visit in July 2012.

5.4 Geologic Cross-Sections

Our interpretation of the site's geologic cross-section is shown in Exhibit A-3 of this report.

5.5 Signature and Certification Number of Engineering Geologist

The signature and certification number of the engineering geologist is provided on the report signature page after the front cover.

5.6 Disturbance of Hazards Statement

The geologic hazards of concern for the site development are the steep slope area and ancient landslide to the east of the site. This geologic hazard area should not be disturbed due to the potential for damage to the site and/or neighboring properties. An exception for disturbance would be the removal of invasive vegetation, such as blackberry bushes, and replanting with species suitable for erosion control purposes. After removal of the invasive vegetation, minor grading may necessary, such as bucket smoothing and track walking the slope with a tracked

excavator, to reduce erosion and help temporary and permanent ground cover (e.g., hydroseed, mulch, bark, plantings, etc.) become established on the slope.

5.7 Civil Plans Review Comments

We have reviewed the current civil grading plans. The current site development plans are described in the Section 3 of this report and do not propose to disturb the geologic hazard area. These plans were developed using the 2004 ZZA report recommendations as a guideline. According to these plans, the maximum permanent cuts are relatively low, on the order of 2 to 3 feet for the retaining walls along the north property line. Fills will be up to approximately 12 feet along the east retaining wall area for the proposed truck route, but this wall will be located outside of a top of slope setback of 35 feet. The retaining walls, drainage behind the walls, and maximum slopes above and below the walls will be engineered as part of future design work for the site, and will consider the weight of the fill and loads on the retaining structure on the stability of the slope area. Consideration of the wall type, bedrock conditions, and associated installation procedures will also be included in the retaining wall design. In our opinion, the proposed site development is feasible from a geotechnical perspective without adverse impacts on the stability to the adjacent slope.

6.0 PRELIMINARY SOIL ENGINEERING REPORT

According to Oregon City's Geologic Hazards Checklist, a preliminary soil engineering report must be prepared that relates the following items to the actual development proposal:

- (6.1) The engineering feasibility of the proposed development and addressing strength properties of surface and subsurface soils with regard to stability of slopes
- (6.2) Appropriate types of foundations together with bearing values and settlement criteria for foundation design, soil erosion potential, permeability and infiltration rates
- (6.3) Excavation, filling and grading criteria including recommended final slopes
- (6.4) Surface and subsurface drainage; planting and maintenance of slopes
- (6.5) Other identified soil or subsurface constraints together with geotechnical remediation and other recommendations to alleviate or minimize their effects; and signature and seal of the geotechnical engineer
- (6.6) The report shall also contain a statement as to whether the proposed development, constructed in accordance with the recommended methods, is reasonably likely to be safe and prevent landslide or other damage to other properties over the long term, and whether any specific areas should not be disturbed by construction.

- (6.7) The report shall include specific comments resulting from their review of the civil plans for the project including recommendations on maximum cuts, structural fills, rockery walls, drainage behind any type of walls, maximum slopes above walls, removal of toe of slopes, the use of rock hammers and blasting, and so forth.

The above items are discussed individually in the following sections.

6.1 Engineering Feasibility

In our opinion, the proposed site development is feasible from a geotechnical perspective. Exhibits A-4 and A-5 show our preliminary slope stability models for static and seismic conditions, respectively. The following soil parameters were used in our analysis.

STRATA	FRICTION ANGLE (DEGREES)	COHESION (PSF)	UNIT WEIGHT (PCF)
Proposed Structural Fill	32	0	125
Existing Fill: Silt w/Debris	27	0	120
Highly – Moderately Weathered Basalt	30	250	125
Slightly Weathered to Fresh Basalt	45	250	150
Possible Slide Material	5	100	120

These parameters were partly based on the direct shear test results reported in the 2004 ZZA report and partly based on our engineering judgment. A horizontal seismic coefficient of 0.13g was used in our analysis, which is approximately one-half of the design earthquake peak ground acceleration determined per 2009 IBC methods. The models indicate factors of safety greater than 1.5 and 1.1 for static and seismic conditions, respectively. Based on the slope stability model, the proposed retaining wall and fill are far enough away from the slope and have low effect on the slope stability at the site from a preliminary standpoint.

6.2 Foundation Types, Soil Erosion Potential, Permeability/Infiltration

The appropriate type of foundation for the proposed buildings are conventional shallow spread footings. Allowable bearing values of 2,000 psf for up to 1 inch of settlement may be used for planning purposes.

According to the USDA Soil Conservation Service, the erosion potential of the site soils are "slight" on the relatively flat areas of the site and "severe" on the steep slope areas east of the site. Permeability ranges from 0.6 to 2.0 in the sites soils, however, infiltration systems are not recommended due to the location of the site adjacent the steep slope area.

6.3 Excavation, Filling, and Grading Criteria

Recommendations for excavation, filling and grading are included in the 2004 ZZA report and may be used for preliminary purposes. This information will be updated in the final geotechnical report.

6.4 Other Soil or Subsurface Constraints

Due to the previous development at the site, including existing foundations and floor slabs, existing fill will likely be encountered during subgrade preparation for fills and foundations. Within the proposed building pad, we recommend that all existing fill be removed down to suitable native soils, and the backfilled with compacted structural fill as recommended in the previous section and the 2004 report. Overexcavation of the existing fill soils will also likely be necessary in the retaining wall area along the east retaining wall (truck route). Alternatives, such as partial overexcavation and replacement or the use of aggregate pier ground improvement, should be considered during the final geotechnical report phase.

6.5 Proposed Development Stability Statement

In our opinion, the proposed development should not adversely affect the stability of the slope nor increase landslide risk to other properties with the incorporation of the 35-foot development setback. Additional fill or loads should not be placed over the unstable steep slope areas. The preliminary setback from the top of slope is currently 35 feet, but this may change on examination of new data and analysis from upcoming exploration and testing. It should be noted that there are documented, existing, ancient and recent landslides further downslope of the property that may continue to move but will not be adversely impacted by the subject site development. One benefit to the site development will actually be control of surface water, which currently is not being controlled above the steep slope area.

6.6 Civil Plans Review Comments

We have reviewed the current civil grading plans. The current site development plans are described in the Section 3 of this report and do not propose to disturb the geologic hazard area. These plans were developed using the 2004 ZZA report recommendations as a guideline. The maximum permanent cuts are relatively low, on the order of 2 to 3 feet for the retaining walls along the north property line. Fills will be up to approximately 12 feet along the east retaining

wall area for the proposed truck route, but this wall will be located outside of a top of slope setback of 35 feet. The retaining walls, drainage behind the walls, and maximum slopes above and below the walls will be engineered as part of future design work for the site, and will consider the weight of the fill and loads on the retaining structure on the stability of the slope area. Consideration of the wall type, bedrock conditions, and associated installation procedures will also be included in the retaining wall design. In our opinion, the proposed site development is feasible from a geotechnical perspective without adversely impacted the stability of the slope to the east.

7.0 GENERAL COMMENTS

Terracon should be retained to review the final design plans and specifications so comments can be made regarding interpretation and implementation of our geotechnical recommendations in the design and specifications. Terracon also should be retained to provide observation and testing services during grading, excavation, foundation construction and other earth-related construction phases of the project.

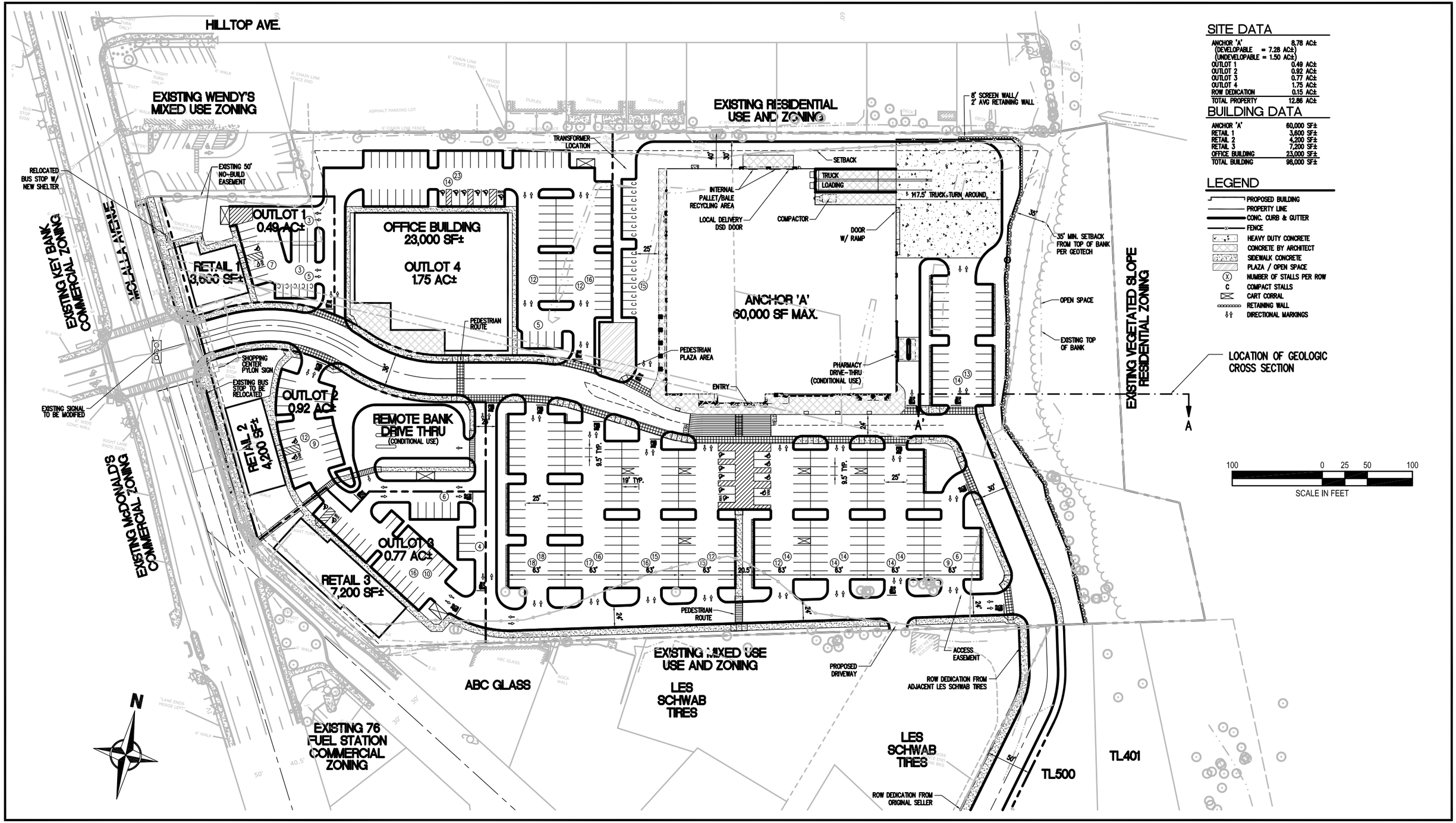
The analysis and recommendations presented in this report are based upon the data obtained from the borings performed at the indicated locations and from other information discussed in this report. This report does not reflect variations that may occur between borings, across the site, or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. If variations appear, we should be immediately notified so that further evaluation and supplemental recommendations can be provided.

The scope of services for this project does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

This report has been prepared in accordance with generally accepted geotechnical engineering practices for the exclusive use of PACLAND, and their respective successors and assigns, for specific application to the project location and stated purpose. No warranties, either express or implied, are intended or made. Site safety, excavation support, and dewatering requirements are the responsibility of others. In the event that changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless Terracon reviews the changes and either verifies or modifies the conclusions of this report in writing.

APPENDIX A

EXHIBITS A-1 to A-5



SITE DATA

ANCHOR 'A' (DEVELOPABLE = 7.28 AC±) (UNDEVELOPABLE = 1.50 AC±)	8.78 AC±
OUTLOT 1	0.49 AC±
OUTLOT 2	0.92 AC±
OUTLOT 3	0.77 AC±
OUTLOT 4	1.75 AC±
ROW DEDICATION	0.15 AC±
TOTAL PROPERTY	12.86 AC±

BUILDING DATA

ANCHOR 'A'	60,000 SF±
RETAIL 1	3,600 SF±
RETAIL 2	4,200 SF±
RETAIL 3	7,200 SF±
OFFICE BUILDING	23,000 SF±
TOTAL BUILDING	98,000 SF±

LEGEND

- PROPOSED BUILDING
- PROPERTY LINE
- CONC. CURB & GUTTER
- FENCE
- HEAVY DUTY CONCRETE
- CONCRETE BY ARCHITECT
- SIDEWALK CONCRETE
- PLAZA / OPEN SPACE
- (X) NUMBER OF STALLS PER ROW
- C COMPACT STALLS
- CART CORRAL
- RETAINING WALL
- DIRECTIONAL MARKINGS

100 0 25 50 100

SCALE IN FEET

REV.	DATE	BY	DESCRIPTION

Terracon
Consulting Engineers and Scientists
4103 SE INTERNATIONAL WAY, SUITE 300 PORTLAND, OREGON 97222
PH. (503) 659-3281 FAX. (503) 659-1287

SITE PLAN

PACLAND

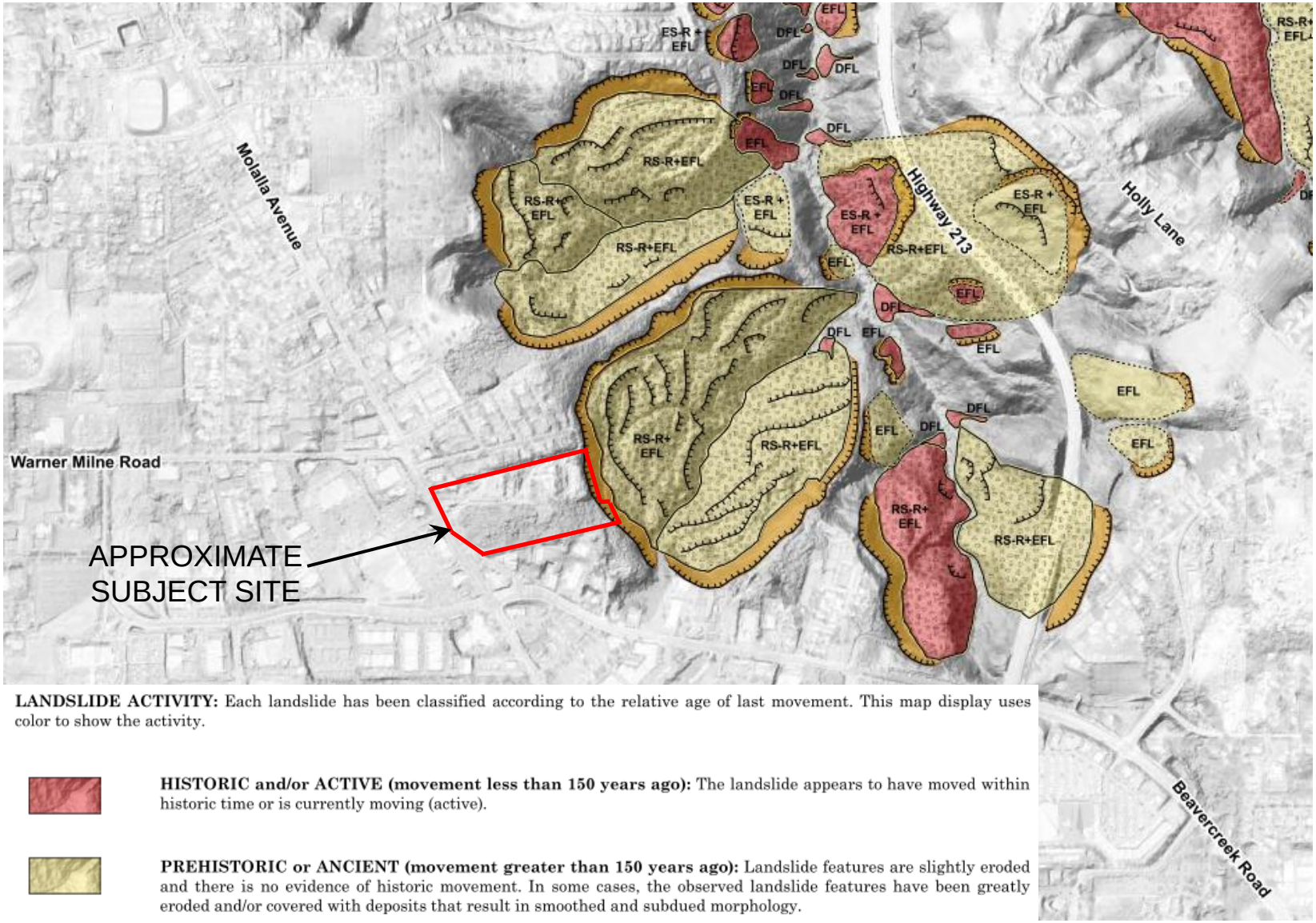
PROPOSED RETAIL DEVELOPMENT

MOLALLA AVENUE AND BEAVERCREEK ROAD

OREGON CITY OREGON

EXHIBIT A-1

DESIGNED BY:	EJL
DRAWN BY:	EJL
APPVD. BY:	EJL
SCALE:	AS SHOWN
DATE:	OCT 2012
JOB NO.	82125030
ACAD NO.	EXH A-1
SHEET NO.:	1 OF 1



LANDSLIDE ACTIVITY: Each landslide has been classified according to the relative age of last movement. This map display uses color to show the activity.

HISTORIC and/or ACTIVE (movement less than 150 years ago): The landslide appears to have moved within historic time or is currently moving (active).

PREHISTORIC or ANCIENT (movement greater than 150 years ago): Landslide features are slightly eroded and there is no evidence of historic movement. In some cases, the observed landslide features have been greatly eroded and/or covered with deposits that result in smoothed and subdued morphology.

REF: Landslide Inventory Map of the Northwest Quarter of the Oregon City Quadrangle, Clackamas County, Oregon (DOGAMI, IMS 26).

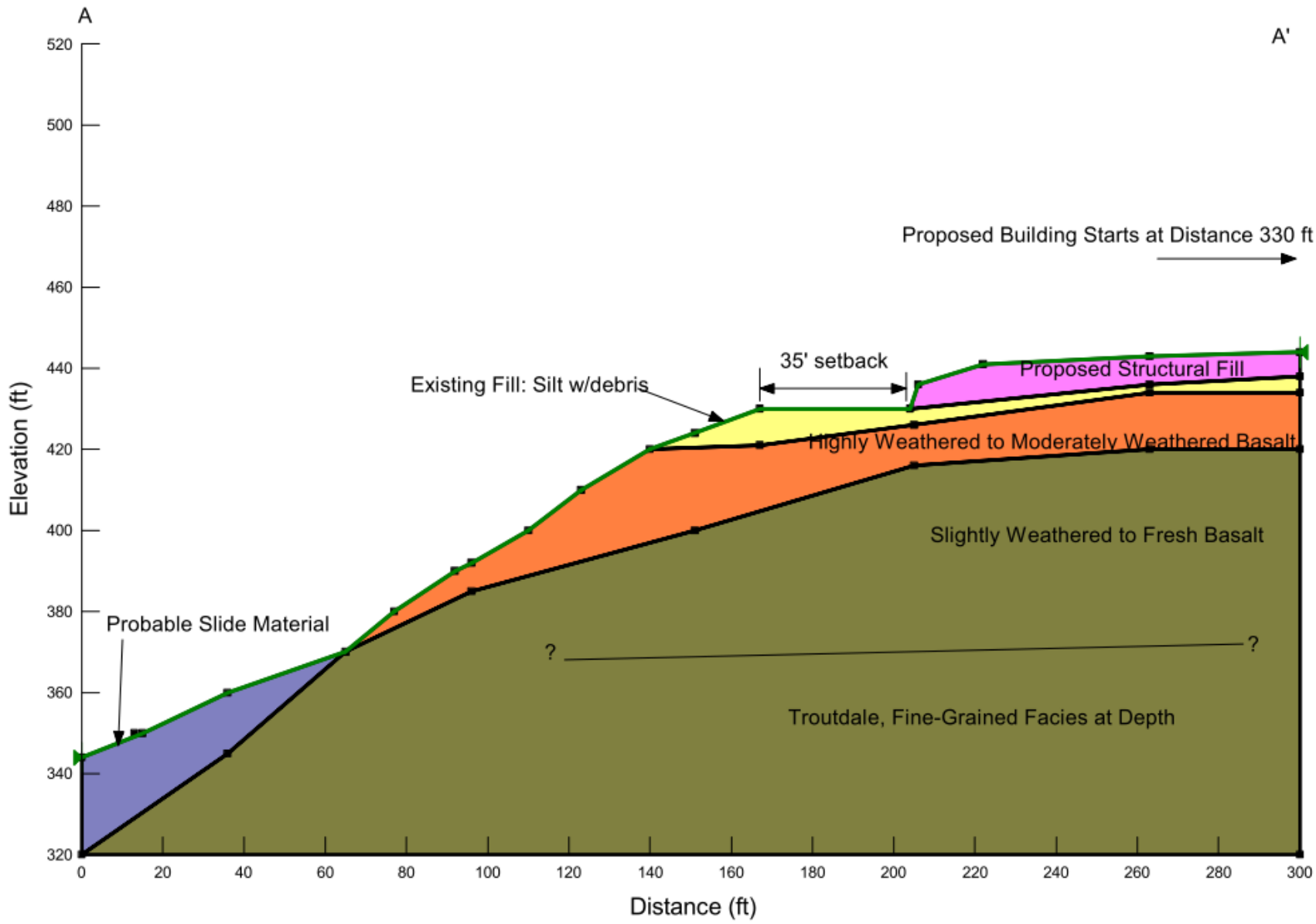
Project Manager:	EJL
Drawn by:	EJL
Checked by:	EJL
Approved by:	EJL
Project No.	82125030
Scale:	As Shown.
File Name:	Exhibit A-2
Date:	Oct. 2012

Terracon
Consulting Engineers & Scientists
4103 SE International Way, #300 Portland, OR 97222
PH. (503) 659-3281 FAX. (503) 659-1287

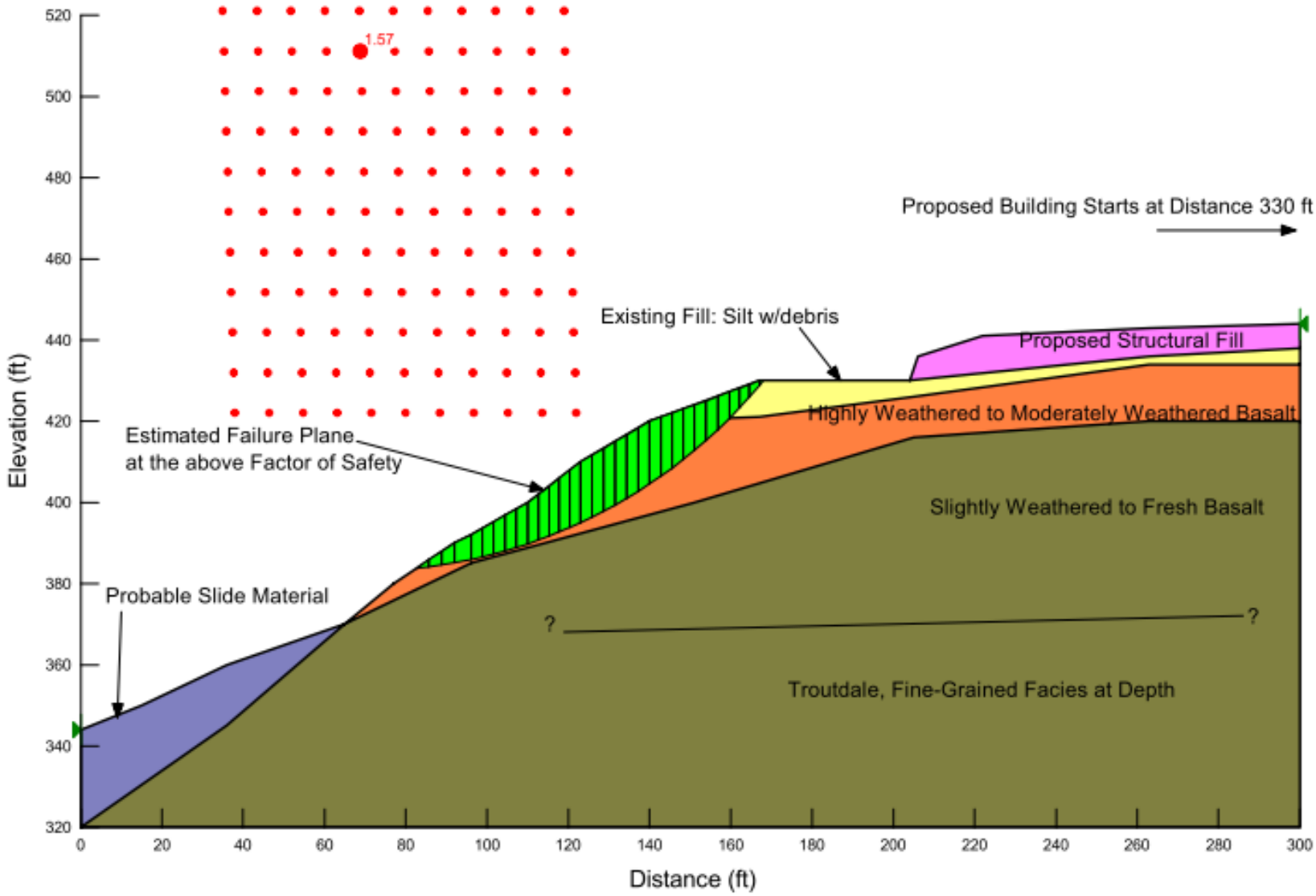
LANDSLIDE MAP EXCERPT

PROPOSED RETAIL DEVELOPMENT
Molalla Avenue and Beavercreek Road
Oregon City, Oregon

Exhibit
A-2

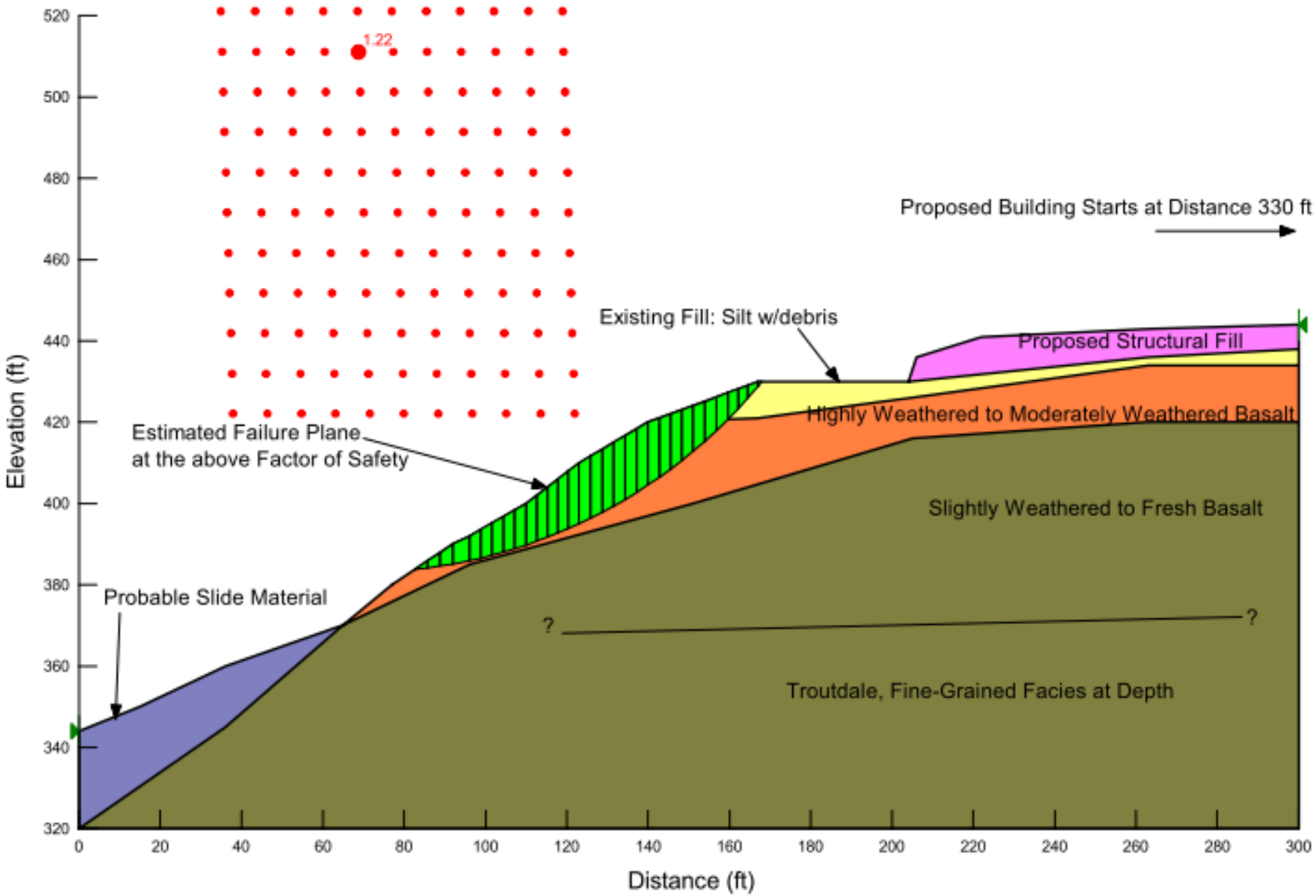


Project Manager: EJL	Project No. 82125030	Terracon Consulting Engineers & Scientists	PRELIMINARY GEOLOGIC CROSS SECTION
Drawn by: EJL	Scale: N.T.S.	4103 SE International Way, #300 Portland, OR 97222	PROPOSED RETAIL DEVELOPMENT Molalla Avenue and Beavercreek Road Oregon City, Oregon
Checked by: EJL	File Name: Exhibit A-2	PH. (503) 659-3281 FAX. (503) 659-1287	Exhibit A-3
Approved by: EJL	Date: Oct. 2012		



Project Manager: EJL	Project No. 82125030	Terracon Consulting Engineers & Scientists	PRELIMINARY STATIC SLOPE STABILITY
Drawn by: EJL	Scale: N.T.S.	4103 SE International Way, #300 Portland, OR 97222	PROPOSED RETAIL DEVELOPMENT
Checked by: EJL	File Name: Exhibit A-2	PH. (503) 659-3281 FAX. (503) 659-1287	Molalla Avenue and Beavercreek Road
Approved by: EJL	Date: Oct. 2012		Oregon City, Oregon

Exhibit A-4



Project Manager: EJL	Project No. 82125030	Terracon Consulting Engineers & Scientists	PRELIMINARY SEISMIC SLOPE STABILITY
Drawn by: EJL	Scale: N.T.S.	4103 SE International Way, #300 Portland, OR 97222	PROPOSED RETAIL DEVELOPMENT
Checked by: EJL	File Name: Exhibit A-2	PH. (503) 659-3281 FAX. (503) 659-1287	Molalla Avenue and Beavercreek Road
Approved by: EJL	Date: Oct. 2012		Oregon City, Oregon

Exhibit A-5

EXPLORATION AND TESTING PROCEDURES

Field Exploration

2001 - 2002 Explorations (J-1200-01)

Exploration Number	Exploration Type	Exploration Depth (feet)	Location	
			Latitude	Longitude
02-B-1	Drilled boring	19.5	45.3355°N	122.5872°W
02-B-2	Drilled boring	13.1	45.3355°N	122.5867°W
02-B-3	Drilled boring	20	45.3360°N	122.5869°W
02-B-4	Drilled boring	21.5	45.3364°N	122.5869°W
02-B-5	Drilled boring	21.5	45.3359°N	122.5875°W
02-B-6	Drilled boring	10	45.3366°N	122.5861°W
02-B-7	Drilled boring	8.5	45.3363°N	122.5860°W
02-B-8	Drilled boring	11	45.3357°N	122.5856°W
02-B-9	Drilled boring	5.5	45.3364°N	122.5863°W
02-B-10	Drilled boring	12.75	45.3361°N	122.5862°W
02-B-11	Drilled boring	13	45.3357°N	122.5861°W
02-B-12	Drilled boring	46	45.3351°N	122.5856°W
02-B-13	Drilled boring	24	45.3352°N	122.5855°W
02-B-14	Drilled boring	50.5	45.3354°N	122.5858°W
02-B-15	Drilled boring	41.5	45.3355°N	122.5858°W
02-B-16	Drilled boring	45.5	45.3357°N	122.5859°W
02-B-17	Drilled boring	24.75	45.3359°N	122.5860°W
02-B-18	Drilled boring	41	45.3361°N	122.5861°W
02-B-19	Drilled boring	26	45.3363°N	122.5861°W
02-B-20	Drilled boring	45	45.3366°N	122.5861°W
02-B-21	Drilled boring	11.5	45.3368°N	122.5867°W
02-B-22	Drilled boring	21.5	45.3366°N	122.5879°W
02-B-23	Drilled boring	18.5	45.3365°N	122.5887°W
02-B-24	Drilled boring	16.5	45.3340°N	122.5854°W
02-MW-1	Drilled boring	20	45.3362°N	122.5875°W
02-MW-2	Drilled boring	26.5	45.3357°N	122.5863°W

Exploration Number	Exploration Type	Exploration Depth (feet)	Location	
			Latitude	Longitude
02-MW-3	Drilled boring	20	45.3359°N	122.5884°W
02-MW-4	Drilled boring	19.5	45.3351°N	122.5892°W
02-MW-5	Drilled boring	20	45.3349°N	122.5891°W
02-TP-1	Test Pit	10	45.3352°N	122.5856°W
02-TP-2	Test Pit	7	45.3351°N	122.5862°W
02-TP-3	Test Pit	11.5	45.3350°N	122.5867°W
02-TP-4	Test Pit	11	45.3349°N	122.5873°W
02-TP-5	Test Pit	7	45.3348°N	122.5878°W
02-TP-6	Test Pit	10	45.3347°N	122.5881°W
02-TP-7	Test Pit	10	45.3347°N	122.5885°W
02-TP-8	Test Pit	11	45.3348°N	122.5889°W
02-TP-9	Test Pit	10.5	45.3350°N	122.5886°W
02-TP-10	Test Pit	11	45.3350°N	122.5882°W
02-TP-11	Test Pit	11	45.3351°N	122.5877°W
02-TP-12	Test Pit	9	45.3352°N	122.5875°W
02-TP-13	Test Pit	6	45.3354°N	122.5875°W
02-TP-14	Test Pit	5.5	45.3354°N	122.5879°W
02-TP-15	Test Pit	10.5	45.3353°N	122.5883°W
02-TP-16	Test Pit	10	45.3353°N	122.5887°W
02-TP-17	Test Pit	10.5	45.3352°N	122.5890°W
02-TP-18	Test Pit	7	45.3356°N	122.5855°W
02-TP-19	Test Pit	7.5	45.3354°N	122.5853°W
02-TP-20	Test Pit	10	45.3354°N	122.5892°W
02-TP-21	Test Pit	10.5	45.3355°N	122.5888°W
02-TP-22	Test Pit	10	45.3355°N	122.5884°W
02-TP-23	Test Pit	7.5	45.3357°N	122.5880°W
02-TP-24	Test Pit	4	45.3358°N	122.5876°W
02-TP-25	Test Pit	10.5	45.3360°N	122.5878°W
02-TP-26	Test Pit	11	45.3359°N	122.5881°W
02-TP-27	Test Pit	10.5	45.3359°N	122.5885°W
02-TP-28	Test Pit	8.5	45.3358°N	122.5890°W

Exploration Number	Exploration Type	Exploration Depth (feet)	Location	
			Latitude	Longitude
02-TP-29	Test Pit	11	45.3355°N	122.5895°W
02-TP-30	Test Pit	11.5	45.3358°N	122.5898°W
02-TP-32	Test Pit	11	45.3361°N	122.5890°W
02-TP-33	Test Pit	11	45.3361°N	122.5886°W
02-TP-31	Test Pit	11.5	45.3359°N	122.5892°W
02-TP-34	Test Pit	12.5	45.3362°N	122.5882°W
02-TP-35	Test Pit	10.5	45.3363°N	122.5879°W
02-TP-36	Test Pit	11	45.3364°N	122.5871°W
02-TP-37	Test Pit	12.5	45.3365°N	122.5867°W
02-TP-38	Test Pit	5.5	45.3364°N	122.5863°W
02-TP-39	Test Pit	13	45.3357°N	122.5860°W
02-TP-40	Test Pit	10	45.3352°N	122.5864°W
02-TP-41	Test Pit	10	45.3351°N	122.5870°W
02-TP-42	Test Pit	6.5	45.3353°N	122.5859°W
02-TP-43	Test Pit	11	45.3341°N	122.5854°W
02-TP-44	Test Pit	11	45.3343°N	122.5858°W
02-TP-45	Test Pit	6	45.3346°N	122.5856°W
02-TP-46	Test Pit	7	45.3347°N	122.5857°W
02-TP-47	Test Pit	11	45.3349°N	122.5855°W
02-TP-48	Test Pit	10	45.3364°N	122.5862°W
02-TP-1A	Test Pit	9	45.3357°N	122.5860°W
02-TP-2A	Test Pit	11	45.3359°N	122.5860°W
02-TP-3A	Test Pit	12	45.3360°N	122.5861°W
02-TP-4A	Test Pit	12	45.3361°N	122.5861°W
02-TP-5A	Test Pit	11	45.3363°N	122.5861°W
02-TP-6A	Test Pit	6.5	45.3364°N	122.5863°W
02-TP-7A	Test Pit	9	45.3359°N	122.5865°W
02-TP-8A	Test Pit	7.5	45.3359°N	122.5866°W
02-TP-9A	Test Pit	9.5	45.3363°N	122.5871°W
02-TP-10A	Test Pit	7	45.3364°N	122.5870°W
02-TP-11A	Test Pit	11	45.3358°N	122.5877°W

Exploration Number	Exploration Type	Exploration Depth (feet)	Location	
			Latitude	Longitude
02-TP-12A	Test Pit	10	45.3361°N	122.5880°W
02-TP-13A	Test Pit	9.5	45.3363°N	122.5879°W
02-TP-14A	Test Pit	4.5	45.3362°N	122.5875°W
02-TP-15A	Test Pit	11.5	45.3360°N	122.5891°W
02-TP-16A	Test Pit	9.5	45.3361°N	122.5885°W
02-TP-17A	Test Pit	10	45.3359°N	122.5883°W
02-TP-18A	Test Pit	10	45.3357°N	122.5883°W
02-TP-19A	Test Pit	8	45.3357°N	122.5887°W
02-TP-20A	Test Pit	10	45.3357°N	122.5895°W

2021 Exploration

Exploration Number	Exploration Type	Exploration Depth (feet)	Location	
			Latitude	Longitude
21-B-1	Drilled Boring	90½	45.3363°N	122.5863°W

Exploration Layout and Elevations: Terracon personnel provided the exploration layout. Coordinates were obtained with a handheld GPS unit (estimated horizontal accuracy of about ±10 feet) and approximate elevations were obtained from Google Earth Pro data. If elevations and a more precise exploration layout are desired, we recommend explorations be surveyed following completion of fieldwork.

Subsurface Exploration Procedures: We advance soil borings with a truck-mounted drill rig using continuous flight augers (hollow stem or solid stem). Four samples were typically obtained in the upper 10 feet of each boring and at intervals of 5 feet thereafter. Soil sampling was performed using thin-wall tube and/or split-barrel sampling procedures. In the thin-walled tube sampling procedure, a thin-walled, seamless steel tube with a sharp cutting edge is pushed hydraulically into the soil to obtain a relatively undisturbed sample. In the split barrel sampling procedure, a standard 2-inch outer diameter split barrel sampling spoon is driven into the ground by a 140-pound automatic hammer falling a distance of 30 inches. The number of blows required to advance the sampling spoon the last 12 inches of a normal 18-inch penetration is recorded as the Standard Penetration Test (SPT) resistance value. The SPT resistance values, also referred to as N-values, are indicated on the boring logs at the test depths. The samples were placed in appropriate containers, taken to our soil laboratory for testing, and classified by a geotechnical engineer. In addition, we observed and recorded groundwater levels during drilling and sampling.

All explorations were supervised and logged by a field geologist who recorded field test data, classified soils, and collected the samples from the explorations. Our exploration team prepared field boring logs as part of standard drilling operations including sampling depths, penetration distances, and other relevant sampling information. Field logs include visual classifications of materials encountered during drilling, and our interpretation of subsurface conditions between samples. Final boring logs, prepared from field logs, represent the geotechnical engineer's interpretation, and include modifications based on observations and laboratory tests.

Upon encountering bedrock or refusal-to-drilling conditions, rock coring (using NQ/NX rock core barrel) was performed within select borings.

All explorations were supervised and logged by a field engineer or field geologist who recorded field test data, classified soils, and collected the samples from the explorations. Our exploration team prepared field boring logs as part of standard drilling operations including sampling depths, penetration distances, and other relevant sampling information. Field logs include visual classifications of materials encountered during drilling, and our interpretation of subsurface conditions between samples. Final boring logs, prepared from field logs, represent the geotechnical engineer's interpretation, and include modifications based on observations and laboratory tests.

Vibrating Wire Piezometer: We installed one vibrating wire piezometer (VWP) in boring 21-B-1 on December 17, 2021. The VWP was installed at a depth of approximately 30¾ feet below the ground surface (bgs), at the top of the intact, very low permeability, Boring lava (basaltic bedrock). This depth was determined by the project geotechnical engineer following completion of drilling. Prior to installation, the lower portion of the boring was filled with a bentonite chip-grout mixture and low-permeability grout was extended from approximately 35 feet bgs to about 1-foot bgs.

During installation, the VWP was taped to a one-inch diameter PVC pipe with the pressure sensor facing upwards. The VWP cable was taped to the PVC pipe on approximate 3-foot intervals as it was lowered into the boring. Once the VWP was at the target depth, a bentonite chip-grout mixture was placed from the bottom of the exploration to a depth of approximately 35 feet bgs. Then a low permeability grout was introduced to seal the upper portion of the exploration and allow the mini data logger to record changes in the vibrating wire frequency, and thus changes in pressure. The VWP wire was connected to a mini data logger housed within a steel, flush-mount wellhead. The mini data logger was set to record vibrating wire readings every 4 hours, starting December 20, 2021 at 5:00PM. Completion of the VWP is summarized in the following table:

Depth (feet bgs)	Description	Detail
0	Steel, flush-mount wellhead	Approximate 8-inch diameter and 18-inches tall
0 to 1	Void (open space)	---
1 to 35	Low permeability grout	50 PSI Grout for Medium to Hard Soils 30 gallon Water / 94 lb. Portland Cement
30¾	VWP piezometer installation	Geokon 4500S-350KPA (51psi)
35 to 90½	Bentonite chip-low permeability grout mixture	50 PSI Grout for Medium to Hard Soils 30 gallon Water / 94 lb. Portland Cement / 25 lb. Bentonite

Property Disturbance: We backfilled borings according to local jurisdiction requirements after completion of each exploration. Our services do not include repair of the site beyond backfilling our boreholes. Excess auger cuttings were dispersed in the general vicinity of each borehole. Since backfill material often settles below the surface after a period, we recommend boreholes be checked periodically and additional backfill added, if necessary.

Laboratory Testing

The project engineer reviewed the field data and assigned laboratory tests to understand the engineering properties of the various soil strata, as necessary, for this project. The following tests were performed for this project.

- ASTM D2216 Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
- ASTM D6913 Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis
- AASHTO T-267 Standard Method of Test for Determination of Organic Content in Soils by Loss on Ignition
- ASTM D1883 Standard Test Method for California Bearing Ratio (CBR) of Laboratory-Compacted Soils
- ASTM D6913 Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis
- ASTM D1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort
- ASTM G51 Standard Test Method for Measuring pH of Soil for Use in Corrosion Testing
- ASTM C 1580 Standard Test Method for Water-Soluble Sulfate in Soil
- ASTM G187 Standard Test Method for Measurement of Soil Resistivity Using the Two-Electrode Soil Box Method
- ASTM D2938 Standard Test Method for Unconfined Compressive Strength of Intact Rock Core Specimens
- ASTM D3080 Standard Test Method for Direct Shear Test Of Soils Under Consolidated Drained Conditions

The laboratory testing program included examination of soil samples by an engineer. Based on the material's texture and plasticity, we described and classified the soil samples in accordance with the Unified Soil Classification System.

Rock classification was conducted using locally accepted practices for engineering purposes; petrographic analysis may reveal other rock types. Rock core samples typically provide an improved specimen for this classification. Boring log rock classification was determined using the Description of Rock Properties.



Western portion of site, facing north



Central portion of site, facing west



Top of headscarp, facing south



Base of scarp in area of observed spring, facing south

EXPLORATION RESULTS

Contents:

2021 Boring Log (21-B-1)
2002-4 Exploration Logs (B-1 through B-24, MW-1 through MW-5, TP-1 through TP-46, TP-1A through TP-20A)
2002 Lab Test Results
- Grain Size Distribution Results (12 pages)
- Atterberg Limits Results
- CBR Results
- Direct Shear Test Results
- Unconfined Compression Test Results
- Soil Chemical Analysis Results
- Organic Content Results

Note: All attachments are one page unless noted above.

BORING LOG NO. 21-B-1

PROJECT: Oregon City Development

CLIENT: The Wolff Company LLC
Scottsdale, AZ

SITE: 1367 Molalla Avenue
Oregon City, OR

LOCATION See Exploration Plan

Latitude: 45.3363° Longitude: -122.5863°

Surface Elev.: 429 (Ft.)

DEPTH	ELEVATION (Ft.)	Description	DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS
0.2	429	**ASPHALT**, moist			
1.0	428	**FILL - LEAN CLAY WITH GRAVEL (CL)**, medium to high plasticity, red, moist			
		FILL - POORLY GRADED GRAVEL WITH CLAY AND SAND (GP-GC), dark gray, moist Basalt boulder from 5 to 7 feet bgs	5		50/1"
7.0	422	**CLAYEY SAND WITH GRAVEL (SC)**, low to medium plasticity, red, white, and black, moist, very loose, residual soil	10		3-5-7 N=12 .25 (HP)
		nonplastic, gray, moist, very dense, probably heavily weathered rock	15		21-38-50/5" 1.75 (HP)
		basalt frgaments present	20		50/5"
			25		50/1"
30.5	398.5	vibrating wire piezometer installed at 30 ft bgs	30		50/5" RQD = 0%
		BASALT, gray, moist, sound, moderate spacing, unweathered, very strong	35		RQD = 88%
			40		RQD = 95%
			45		RQD = 92%
			50		RQD = 91%

STRENGTH TEST			WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS
TEST TYPE	COMPRESSIVE STRENGTH (tsf)	STRAIN (%)			LL-PL-PI

Stratification lines are approximate. In-situ, the transition may be gradual.
Vibrating wire piezometer installed at 30' bgs

Hammer Type: Automatic

Advancement Method:
Mud Rotary/Coring

Abandonment Method:
Boring Grouted with vibrating wire piezometer

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevation estimated from site topographic map

Notes:
Vibrating Piezometer installed at this depth

Serial No. 2146354

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
700 NE 55th Ave
Portland, OR

Boring Started: 12-16-2021 | Boring Completed: 12-17-2021

Drill Rig: Truck-mounted | Driller: Western States

Project No.: 82215043

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 82215043 OREGON CITY DEVEL.GPJ TERRACON_DATATEMPLATE.GDT 1/5/22

BORING LOG NO. 21-B-1

PROJECT: Oregon City Development

CLIENT: The Wolff Company LLC
Scottsdale, AZ

SITE: 1367 Molalla Avenue
Oregon City, OR

LOCATION See Exploration Plan

Latitude: 45.3363° Longitude: -122.5863°

Surface Elev.: 429 (Ft.)

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI
		55	RQD = 78%						
		60	RQD = 68%						
		65	RQD = 70%						
		70	RQD = 67%						
		75	RQD = 30%						
		80	RQD = 0%						
		85	RQD = 0%						
		90	RQD = 91%						

BASALT, gray, moist, sound, moderate spacing, unweathered, very strong *(continued)*

moderately fractured, very close fracture spacing, slightly weathered, fractured zone 70 to 80 feet bgs

sound, moderate spacing, unweathered, strong rock

90.5 338.5

Boring Terminated at 90.5 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.
Vibrating wire piezometer installed at 30' bgs

Hammer Type: Automatic

Advancement Method:
Mud Rotary/Coring

Abandonment Method:
Boring Grouted with vibrating wire piezometer

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevation estimated from site topographic map

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
700 NE 55th Ave
Portland, OR

Boring Started: 12-16-2021 | Boring Completed: 12-17-2021

Drill Rig: Truck-mounted | Driller: Western States

Project No.: 82215043

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 82215043 OREGON CITY DEVEL.GPJ TERRACON_DATATEMPLATE.GDT 1/5/22

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-1 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 443 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot)	N-values	Testing
	Soft, wet, brown, SILT with some clay and fine roots. (Topsoil)						
	Stiff to very stiff, moist, orange-brown, SILT with trace clay and trace to some sand.						
	Medium dense, wet, orange-brown, silty, fine to medium SAND and stiff to very stiff, wet, orange-brown, SILT with trace clay and sand with occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)		S-1			23	
5			S-2			15	
			S-3		57	17	
10			S-4		58	47	
	Dense, damp, light gray, moderately weathered ANDESITE boulder encountered from 11 to 12.5 feet.						
15	Grades to dense, orange-gray, silty, fine to medium SAND and stiff, wet, orange-brown, SILT with trace clay and sand.		S-5		49	37	
	Very dense, damp, light gray, moderately weathered ANDESITE boulder encountered from 17 to 19.5 feet.						
20	Boring completed at 19.5 feet on 10/29/01. No groundwater seepage observed at time of drilling.		S-6		50/4"		
25							

0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 10/29/01	Logged By: JPG

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-2 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 440 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot)	N-values	Testing
	Soft, wet, brown, SILT with trace clay and fine roots. (Topsoil)						
	Very stiff to hard, damp to moist, orange-brown, SILT with trace clay and some sand.						
			S-1		▲ 20	34	
5	Very dense, moist, orange-gray, silty, fine to medium SAND with trace to some clay and occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)		S-2		▲ 50	52	
	Very dense, damp, gray, moderately weathered ANDESITE boulder encountered from 7 to 8.5 feet.		S-3		▲ 50/1"	50/1"	
10			S-4		▲ 50/6"	50/6"	
	Very dense, damp, gray, moderately weathered ANDESITE boulder encountered from 12.5 to 13.5 feet.						
	Boring completed at approximately 13.1 feet on 10/29/01 with refusal on Andesitic boulder. No groundwater seepage observed at time of drilling.		S-5		▲ 50/1"	50/1"	
15							
20							
25							

0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 10/29/01	Logged By: JPG

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-3 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 440 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (Standard ▲ / Other △; Blows per foot)	N-values	Testing
	6" Asphalt pavement.						
	Stiff to medium stiff, orange-brown, SILT with trace to some clay and sand.		S-1		4		
5	Medium dense, wet, orange-brown, silty, fine to medium SAND and stiff to very stiff, wet, orange-brown, clayey SILT with trace sand with occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)		S-2		50	12	
			S-3		48	14	
10			S-4		57	14	
15	Grades to orange-gray.		S-5		55	33	
20	Grades to saturated at 19 feet.		S-6	ATD	50	50/4"	
	Boring completed at 20 feet on 10/29/01. Perched groundwater seepage observed at 19 feet at time of drilling.						
25							

Penetration Resistance scale: 0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 10/29/01	Logged By: JPG

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-4 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 439 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot)	N-values	Testing
	10" Asphalt pavement.						
	Stiff grading to very stiff, moist to wet, orange-brown, SILT with trace to some clay and sand.						
	Medium dense , moist to wet, orange-brown, silty, fine to medium SAND and stiff to very stiff, wet, orange-brown, clayey SILT with trace sand with occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)		S-1		▲ 19	19	
5			S-2		▲ 16	16	
	Grades to wet		S-3		▲ 50/24	24	
10							
	Grades to dense and orange-gray.		S-4		▲ 49/40	40	
15			S-5		▲ 50	50	
20	Grades to very dense.		S-6		▲ 52	52	
	Boring completed at 21.5 fet on 10/29/01. No groundwater seepage observed at time of drilling.						
25							

Penetration Resistance scale: 0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 10/29/01	Logged By: JPG

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-5 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 445 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (Standard ▲ / Other △; Blows per foot)	N-values	Testing
	4" Asphalt pavement.						
	Loose, moist to wet, brown, SILT with trace to some fine sand. (Topsoil)						
	Medium dense, moist to wet, orange-brown, SILT with trace to some clay and fine sand.		S-1		13		
5	Medium dense, wet, orange-brown, silty SAND and stiff to very stiff, wet, orange-brown, SILT with trace clay and sand with occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)		S-2		55	21	
			S-3		49	50/6"	
10	Very dense, damp, light gray, moderately weathered ANDESITE boulder encountered from 8.5 to 9.5 feet.		S-4		52	16	
15	Grades to dense.		S-5			33	
20			S-6		53	33	
	Boring completed at 21.5 feet on 10/29/01. No groundwater seepage observed at time of drilling.						
25							

Penetration Resistance axis: 0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 10/29/01	Logged By: JPG

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-6 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 425 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0 10 20 30 40 50)	N-values	Testing
	6" Very loose, wet, brown, sandy SILT with some organic debris and roots. (Topsoil)						
	Very stiff, moist, orange-brown, SILT with some sand to sandy SILT.						
	Medium dense, moist to wet, orange-brown, silty SAND and stiff to very stiff, wet, orange-brown, SILT with trace clay and sand with occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)		S-1			24	
5			S-2			14	
			S-3			25	
	Grades to orange gray.						
10			S-4			29	
	Boring completed at 10 feet on 10/29/01 with refusal. No groundwater seepage observed at time of drilling.						
15							
20							
25							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc.
Geotechnical & Environmental Consultants

BORING LOG	Figure A-1
Date Drilled: 10/29/01	Logged By: JPG

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-7 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 400 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot)	N-values	Testing
	Very loose, moist to wet, orange-brown, sandy SILT.						
	Very loose, moist to wet, orange-brown, sandy SILT						
	Medium dense, moist to wet, orange-brown, silty SAND and stiff to very stiff, wet, orange-brown, SILT with trace clay and sand with occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)	I	S-1			33	
5	Grades to dense. (Possible boulder)	I	S-2			50	
	Grades to medium dense.	I	S-3			37	
	Boring completed at 8.5 feet on 10/29/01 with refusal. No groundwater seepage observed at time of drilling.						
10							
15							
20							
25							

0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc.
Geotechnical & Environmental Consultants

BORING LOG | **Figure A-1**

Date Drilled: 10/29/01 | **Logged By: JPG**

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-8 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 395 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot)	N-values	Testing
	Very loose, wet, brown, sandy SILT with some organic debris and roots. (Topsoil)						
	Very loose, moist, orange-brown, sandy SILT. (Colluvium)						
	Loose, moist to wet, orange-brown, silty SAND and stiff to very stiff, wet, orange-brown, SILT with trace clay and sand with occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)	I	S-1		▲ 7	7	
5	Grades to medium dense.	I	S-2		▲ 25	25	
	Grades to dense.	I	S-3		▲ 42	42	
10	Grades to very dense and light gray. (Probable boulder)	I	S-4		▲ 50/4"	50/4"	
	Boring completed at approximately 11 feet on 10/31/01 with refusal. No groundwater seepage observed at time of drilling.						
15							
20							
25							

Penetration Resistance scale: 0 10 20 30 40 50

Explanation

- I — 2-inch O.D. split spoon sample
- II — 3-inch I.D Shelby tube sample
- ⊗ — No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 10/31/01	Logged By: JPG

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-9 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 433 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot; 0 10 20 30 40 50)	N-values	Testing
	Loose, moist to wet, mottled orange-brown and brown, sandy SILT with trace to some gravel. Occasional clasts of asphalt and plastic observed. (Fill)		S-1			10	
5	Concrete debris in tip of sampler.		S-2			50/6"	
	Boring terminated at 5.5 feet with refusal on concrete debris. Moved drill rig approximately 8 feet east and redrilled to refusal on concrete at 6.5 feet. No groundwater seepage observed at time of drilling.						
10							
15							
20							
25							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 10/31/01	Logged By: JPG

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-10 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 433 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot)	N-values	Testing
	6" Asphalt pavement						
	Medium dense, wet, mottled brown-gray, SILT with trace to some clay and gravel. Slight hydrocarbon odor. (Fill)	I	S-1			12	
5	Stiff, wet, orange-brown, SILT with some sand.	I	S-2			15	
	Medium dense , moist to wet, orange-brown, silty, fine to medium SAND and stiff to very stiff, wet, orange-brown, SILT with trace clay and sand with occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)	I	S-3			24	
10	grades to very dense, wet, and orange-gray.	I	S-4			57	
		I	S-5			50/4"	
	Boring completed at approximately 12.75 feet on 11/1/01. No groundwater seepage observed at time of exploration.						
15							
20							
25							

0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc.
Geotechnical & Environmental Consultants

BORING LOG | **Figure A-1**

Date Drilled: 11/1/01 | **Logged By: JPG**

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-11 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 433 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0 10 20 30 40 50)	N-values	Testing
	6" Asphalt pavement.						
	Medium stiff to stiff, wet, mottled brown, sandy SILT with trace to some gravel. (Fill)		S-1			5	
5	Grades to SILT with some sand. (Fill)		S-2			9	
	Asphalt observed at 7 feet.						
	Loose to medium dense, wet, orange-brown, silty SAND and stiff to very stiff, wet, orange-brown, SILT with trace clay and sand with occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)		S-3			13	
10			S-4			9	
	Very dense, damp, light gray, moderately weathered ANDESITE boulder encountered from 11.5 to 13 feet.		S-5			53	
	Boring completed at 13 feet on 11/1/01. No groundwater seepage observed at time of drilling.						
15							
20							
25							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 11/1/01	Logged By: JPG

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-12	PAGE 1 OF 3
Location: Oregon City, Oregon	Approximate Elevation: 433 feet		

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	N-values	Testing
	Blackberries and wood refuse.					
	Stiff, moist, red-brown, clayey SILT with some sand (probable fill).		S-1		9	
5	Stiff, moist, brown, SILT with trace to some clay and some fine organics (probable fill).		S-2		10	
	Medium stiff, moist, red, brown, and gray, sandy CLAY (completely weathered bedrock).		S-3		7	
10	Medium dense, moist, red, brown, and gray, friable, silty SAND with trace clay and gravel (completely weathered bedrock).		S-4		15	GS
15	Medium stiff, moist, red, brown, and gray, friable, sandy SILT with trace clay (completely weathered bedrock).		S-5		7	
20	Very stiff, moist, red, brown, and gray, friable, sandy SILT with trace clay (completely weathered bedrock).		S-6		28	
25						

Penetration Resistance

▲ Standard — Blows per foot — △ Other

0 10 20 30 40 50

59

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- ⊗ No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-12
	Date Drilled: 3/14/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-12 | **PAGE 2 OF 3**

Location: Oregon City, Oregon | **Approximate Elevation:** 433 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot)	N-values	Testing
	Stiff, moist, red, brown, and gray, friable, sandy (completely weathered bedrock).	I	S-7			10	
30	Dense, gray, slightly weathered to fresh, basaltic ANDESITE (bedrock). Switch to coring - see next sheet.	I	S-8			50/6"	
35							
40							
45							
50							

Penetration Resistance scale: 0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. **Geotechnical & Environmental Consultants**	**BORING LOG**	**Figure A-12**
	Date Drilled: 3/14/02	**Logged By: EL**

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-12 | **PAGE 3 OF 3**

Location: Oregon City, Oregon | **Approximate Elevation:** 433 feet

Depth (ft)	Fracture: Profile	Fracture: Infilling	Fracture: Inclination	Rock Description	Time	Core Run	RQD (%)	Recovery (%)	Comments
30				Coring intiated at 31 feet					
35			65°	Gray, slightly to moderately weathered, closely to moderately fractured, weak to moderately strong, basaltic ANDESITE.	1:24 1:32	1	63	100	
40				Gray with red discoloration, moderately weathered, very closely to closely fractured, weak, basaltic ANDESITE. Gray, fresh, widely fractured, strong, basaltic ANDESITE.	1:35 1:47	2	30	100	
45				Gray, fresh, widely fractured, strong, basaltic ANDESITE.		3	100	100	Circulation loss.
50				Coring terminated at 46 feet.					
55									

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	CORING LOG	Figure A-12
	Date Drilled: 3/14/02	Logged By: EL

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-13	PAGE 1 OF 2
Location: Oregon City, Oregon	Approximate Elevation: 425 feet		

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0 10 20 30 40 50)	N-values	Testing
	Blackberry bushes over very soft, wet, brown, SILT with forest duff (topsoil).						
	Medium stiff, wet, red, residual silty CLAY with trace to some sand, silty SAND, and sandy SILT (completely weathered bedrock).		S-1		▲	6	
5	Stiff, moist, red/gray/black, residual silty CLAY (completely weathered bedrock).		S-2		▲	15	
	Stiff, moist, red/gray/black, friable, residual sandy SILT/silty SAND with trace clay (completely weathered bedrock).		S-3		▲ 63●	8	GS
10	Stiff, moist, red/gray/black, friable, residual, sandy SILT/silty SAND with trace clay (highly to completely weathered bedrock).		S-4		▲	13	
15	Stiff, moist, red/gray/black, friable, residual sandy SILT with trace to some clay (highly to completely weathered bedrock).		S-5		▲	12	
20	Refusal bedrock at 19 feet. Start of coring - see next sheet.						
25							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- ⊗ No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

0 10 20 30 40 50

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-13
	Date Drilled: 3/14/02	Logged By: EL

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-13	PAGE 2 OF 2
Location: Oregon City, Oregon	Approximate Elevation: 425 feet		

Depth (ft)	Fracture: Profile	Fracture: Infilling	Fracture: Inclination	Rock Description	Time	Core Run	RQD (%)	Recovery (%)	Comments
				Coring initiated at 19 feet.					
20				Gray, fresh, widely fractured, strong, basaltic ANDESITE.	9:15	1	52	95	Unconfined compressive strength = 8880 psi.
				Red-brown with black specks, highly weathered, very closely fractured, friable, basaltic ANDESITE.	9:28				Infilling soil loss.
25				Coring terminated at 24 feet.					
30									
35									
40									
45									

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	CORING LOG	Figure A-13
	Date Drilled: 3/13/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-14 | **PAGE** 1 OF 3

Location: Oregon City, Oregon | **Approximate Elevation:** 424 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	Very soft, wet, brown, organic SILT (forest duff and organic-rich topsoil).						
	Medium stiff to stiff, moist to wet, red with gray and black, residual silty CLAY/clayey SILT with some fine sand (completely weathered bedrock).		S-1		▲	8	
5	Stiff, moist to wet, red with gray and black, residual silty CLAY/clayey SILT with some fine sand (completely weathered bedrock).		S-2		▲	10	
	Very stiff, moist, gray and red, friable, residual sandy SILT/silty SAND with trace clay (completely weathered bedrock).		S-3		▲	21	
10	Very stiff, moist, gray and red, friable, residual sandy SILT/silty SAND with trace clay (completely weathered bedrock).		S-4		▲	20	
15	Very stiff, moist, gray and red, friable, residual sandy SILT/silty SAND (highly weathered bedrock).		S-5		▲	50/2"	
	Drilling terminated on bedrock. Switch to coring. See next sheet.						
20							
25							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- ⊗ No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

0 10 20 30 40 50

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-14
	Date Drilled: 3/13/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-14 | **PAGE 2 OF 3**

Location: Oregon City, Oregon | **Approximate Elevation:** 424 feet

Depth (ft)	Fracture: Profile	Fracture: Infilling	Fracture: Inclination	Rock Description	Time	Core Run	RQD (%)	Recovery (%)	Comments
15				Coring initiated at 15.5 feet.					
20				Gray, fresh, moderately fractured, strong, basaltic ANDESITE. Red-brown with black specks, moderately to highly weathered, very closely fractured, friable to weak, basaltic ANDESITE.	11:52 12:01	1	18	100	
25				Red-brown and black, moderately to highly weathered, very closely fractured, friable to weak. basaltic ANDESITE. Gray, red and black, moderately weathered, very closely fractured, weak, basaltic ANDESITE.	12:05 12:20	2	8	100	
30				Gray and black, moderately weathered, very closely to closely fractured, weak to moderately strong, basaltic ANDESITE.	12:24 12:37	3	13	100	Circulation loss.
35				Gray, fresh, widely fractured, strong, basaltic ANDESITE.	13:41	4	100	100	
40				Gray, fresh, widely fractured, strong, basaltic ANDESITE.	13:55	5	100	100	

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	CORING LOG	Figure A-14
	Date Drilled: 3/13/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-14 | **PAGE 3 OF 3**

Location: Oregon City, Oregon | **Approximate Elevation:** 424 feet

Depth (ft)	Fracture: Profile	Fracture: Infilling	Fracture: Inclination	Rock Description	Time	Core Run	RQD (%)	Recovery (%)	Comments
45		Red clay	70° 70°	Gray, fresh, widely fractured, strong, basaltic ANDESITE.	14:05	6	75	100	
50			70°	Gray, fresh, widely fractured, strong, basaltic ANDESITE.	14:30	7	100	100	
55				Coring terminated at 50.5 feet.					
60									
65									
70									

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	CORING LOG	Figure A-14
	Date Drilled: 3/13/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-15 | **PAGE 1 OF 2**

Location: Oregon City, Oregon | **Approximate Elevation:** 422 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	Very soft, wet, brown, organic SILT (topsoil).						
	Medium stiff, moist to wet, red and black, residual, silty CLAY/clayey SILT (completely weathered bedrock).		S-1		▲	7	
5	Medium stiff to stiff, moist, red, gray and black, friable, residual sandy SILT/silty SAND with trace clay (completely weathered bedrock).		S-2		▲	8	
	Stiff, moist, red, gray and black, friable, residual sandy SILT/silty SAND with trace clay (completely weathered bedrock).		S-3		▲	11	
10	Very stiff, moist, red, gray and black, friable, residual sandy SILT/silty SAND with trace clay (completely weathered bedrock).		S-4		▲	23	
15	Stiff, moist, red, gray and black, friable, residual sandy SILT/silty SAND witht race clay (completely weathered bedrock).		S-5		▲	11	
20	Very stiff, moist, red, gray and black, friable, residual sandy SILT/silty SAND with trace clay (completely weathered bedrock).		S-6		▲	24	
25							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content (0, 10, 20, 30, 40, 50)

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-15
	Date Drilled: 3/12/02-3/13/02	Logged By: EL

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-15	PAGE 2 OF 2
Location: Oregon City, Oregon	Approximate Elevation: 422 feet		

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot)	N-values	Testing
	Dense, moist, red with gray and black, silty SAND with trace clay (highly to completely weathered bedrock).		S-7			32	
30	Dense, moist, gray, friable, residual silty SAND with trace clay (moderately to highly weathered bedrock).		S-8			43	
35	Medium dense, moist, gray, friable, residual silty SAND with trace clay (moderately to highly weathered bedrock).		S-9			27	
40	Very dense, moist, gray, friable, residual silty SAND with trace clay (moderately to highly weathered bedrock).		S-10			50/5"	
	Drilling terminated on bedrock at 41.5 feet. No groundwater observed at time of drilling.						
45							
50							

Penetration Resistance scale: 0, 10, 20, 30, 40, 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-15
	Date Drilled: 3/12/02-3/13/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-16 | **PAGE 1 OF 3**

Location: Oregon City, Oregon | **Approximate Elevation:** 430 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	N-values
	Blackberry bushes, junk, asphalt debris over soft, moist, red, sandy silty CLAY (fill).				
	Medium stiff, moist, red, residual sandy SILTwith some clay (fill).		S-1		5
5	Soft, moist, red, residual sandy silty CLAY/clayey SILT (fill).		S-2		3
	Soft, moist, red, residual sandy silty CLAY (fill).		S-3		3
10	Soft, wet, dark gray-brown, clayey SILT with small pieces of rubber and glass (relic topsoil).				
	Med. dense, moist, tan, residual, silty SAND with trace clay		S-4		5
	Medium stiff, moist to wet, red, residual silty CLAY (completely weathered bedrock).				
15	Hard, moist, red, gray, and black, friable, residual sandy SILT/silty SAND with trace clay (highly weathered bedrock).		S-5		50/5"
	Very dense, damp, gray, fine to coarse SAND (moderately weathered bedrock). Rough/difficult drilling action.				
20	No recovery.		S-6		15
25					

Penetration Resistance

▲ Standard △ Other

Blows per foot: 0 10 20 30 40 50

Testing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- ⊗ No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-16
	Date Drilled: 3/8/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-16 | **PAGE 2 OF 3**

Location: Oregon City, Oregon | **Approximate Elevation:** 430 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	Medium dense, moist, gray, friable, residual silty fine to coarse SAND (moderately weathered bedrock).		S-7			25	
	Medium dense, wet, red and gray, friable, residual silty SAND with trace to some clay (highly weathered bedrock).						
30	No recovery. Switch to coring - see next sheet.		S-8		50/1"		
35							
40							
45							
50							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-16
	Date Drilled: 3/8/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-16 | **PAGE 3 OF 3**

Location: Oregon City, Oregon | **Approximate Elevation:** 430 feet

Depth (ft)	Fracture: Profile	Fracture: Infilling	Fracture: Inclination	Rock Description	Time	Core Run	RQD (%)	Recovery (%)	Comments
				Coring initiated at 29.5 feet.					
30				Gray, fresh, widely fractured, strong, basaltic ANDESITE.	11:00 11:15	1	100	100	
			70°	Gray with red discoloration, moderately weathered, closely fractured, weak, basaltic ANDESITE.	11:36	2	33	100	
35					12:00				
			70°	Gray with red discoloration, slightly weathered, moderately to widely fractured, moderately strong, basaltic ANDESITE.	12:45	3	43	100	
40				Gray, fresh, moderately fractured, strong, basaltic ANDESITE.					
				Gray, fresh, moderately fractured, strong, basaltic ANDESITE.	13:30	4	98	100	
45				Gray, slightly weathered, closely fractured, moderately strong, basaltic ANDESITE.					
				Coring terminated at 45.5 feet.					
50									
55									

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	CORING LOG	Figure A-16
	Date Drilled: 3/8/02	Logged By: EL

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-17	PAGE 1 OF 1
Location: Oregon City, Oregon	Approximate Elevation: 431 feet		

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0 10 20 30 40 50)	N-values	Testing
	Junk and asphalt debris over soft, wet, red, silty CLAY with some fine sand (probable fill).						
	Soft, wet, red, silty CLAY/clayey SILT with some fine sand (probable fill).		S-1		▲	2	
5	Soft to medium stiff, wet, red, silty CLAY/clayey SILT with some fine sand (probable fill).		S-2		▲	4	
	Soft to medium stiff, wet, red, silty CLAY with some fine sand (probable fill).		S-3		▲	4	
10	Very soft, wet, brown, silty CLAY (probable relic topsoil).		S-4		▲ ●	6	ATT
	Medium stiff, moist, red, gray-brown, and black, friable, residual silty clayey SAND (completely weathered bedrock).						
15	Medium stiff, moist, red, gray-brown, and black, friable, residual silty clayey SAND (completely weathered bedrock).		S-5		▲	9	
20	Medium stiff, moist, red, gray-brown, and black, friable, residual silty SAND with trace clay (highly weathered bedrock).		S-6		▲	50/5"	
	Very dense, moist, gray with red discoloration, slightly to moderately weathered, basaltic ANDESITE (bedrock).						
25	Refusal on bedrock at 24.75 feet. No groundwater observed at time of drilling.				▲	50/3"	

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-17
	Date Drilled: 3/11/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-18 | **PAGE** 1 OF 2

Location: Oregon City, Oregon | **Approximate Elevation:** 432 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	Junk debris over soft, wet, red, silty CLAY with some fine sand (probable fill).						
	Soft, wet, red, silty CLAY with some sand and gravel (probable fill).		S-1		▲	3	
5	Soft, wet, red, silty CLAY with some sand and gravel (probable fill).		S-2		▲	2	
	Soft, wet, brown, silty CLAY with fine woody debris (relic topsoil).		S-3		▲	8	
10	Very stiff, moist, red, gray, and black, friable, residual silty SAND with trace to some clay (highly to completely weathered bedrock).		S-4		▲	21	
15	Very stiff, moist, red, gray, and black, friable, residual silty SAND with trace clay (highly weathered bedrock).		S-5		▲	50/4"	
	Drilling terminated at 16 feet. Start of coring - see next sheet.						
20							
25							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit (0, 10, 20, 30, 40, 50)

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-18
	Date Drilled: 3/11/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-18 | **PAGE 2 OF 2**

Location: Oregon City, Oregon | **Approximate Elevation:** 432 feet

Depth (ft)	Fracture: Profile	Fracture: Infilling	Fracture: Inclination	Rock Description	Time	Core Run	RQD (%)	Recovery (%)	Comments
				Coring initiated at 16 feet.					
20				Gray with red discoloration, moderately weathered, closely to moderately fractured, weak to moderately strong, basaltic ANDESITE.	13:45 14:00	1	42	100	
25				Gray, slightly weathered, moderately fractured, strong, basaltic ANDESITE. Gray with red discoloration, moderately weathered, very closely fractured, weak, basaltic ANDESITE.	14:55 15:15	2	43	90	
30				Gray with red discoloration, moderately weathered, very closely fractured, friable to weak, basaltic ANDESITE. Gray, fresh, moderately to widely fractured, strong, basaltic ANDESITE.	15:32	3	28	100	Loss of circulation.
35			45°	Gray, fresh to slightly weathered, moderately fractured, strong, basaltic ANDESITE.	15:32 ~15:45	4	100	100	
40			45°	Gray, fresh, widely fractured, strong, basaltic ANDESITE.	~16:00 16:11	5	100	100	
45				Coring terminated at 41 feet.					

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	CORING LOG	Figure A-18
	Date Drilled: 3/11/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-19 | **PAGE 1 OF 2**

Location: Oregon City, Oregon | **Approximate Elevation:** 431 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, ● Other; Blows per foot: 0 10 20 30 40 50)	N-values	Testing
	Blackberry bushes over soft, wet, red, silty CLAY with some sand (probable fill).						
	Medium stiff, wet, red, silty CLAY with some sand (probable fill).		S-1		▲ ●	5	ATT
5	Soft, wet, red, silty CLAY with some sand (probable fill).		S-2		▲	3	
	Medium stiff, wet, red, silty CLAY with some sand (probable fill).		S-3		▲	3	
10	Very soft, wet, brown, organic silty CLAY (relic topsoil).						
	Medium stiff, moist to wet, red, residual silty CLAY (completely weathered bedrock).		S-4		▲	8	
15	Dense, moist, gray and red, friable, residual silty SAND (highly to moderately weathered bedrock).		S-5		▲	42	
20	Medium dense, moist, gray and red, friable, residual silty SAND (highly to moderately weathered bedrock).		S-6		▲	20	
25							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-19
	Date Drilled: 3/12/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-19 | **PAGE 2 OF 2**

Location: Oregon City, Oregon | **Approximate Elevation:** 431 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	Very dense, moist, gray, slightly weathered ANDESITE bedrock.	I	S-7		▲ 50/1"		
	Drilling terminated at 26 feet. No groundwater observed at time of drilling.						
30							
35							
40							
45							
50							

0 10 20 30 40 50

Explanation

- I — 2-inch O.D. split spoon sample
- II — 3-inch I.D Shelby tube sample
- ⊗ — No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-19
	Date Drilled: 3/12/02	Logged By: EL

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-20	PAGE 1 OF 2
Location: Oregon City, Oregon	Approximate Elevation: 429 feet		

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (Standard ▲, Other △; Blows per foot: 0 10 20 30 40 50)	N-values	Testing
	Soft, wet, red, sandy silty CLAY (probable fill).						
	Medium stiff, wet, red, sandy silty CLAY (probable fill).		S-1		▲	6	
5	Very loose, wet, red, silty SAND with some clay and gravel (probable fill).		S-2		▲ ●	4	GS
	Very soft, wet, red, sandy silty CLAY (probable fill).		S-3		▲	1	
	Very soft, wet, brown, organic SILT (relic topsoil).						
10	Very soft, wet, brown, organic SILT (relic topsoil).		S-4		▲	8	
	Medium stiff, moist to wet, red, residual silty CLAY with some sand (completely weathered bedrock).						
15	Very stiff, moist, gray, red, and black, friable, residual silty SAND with trace clay (highly weathered bedrock).		S-5		▲	18	
	Drilling terminated at 18 feet. Start of coring - see next sheet.		S-6		▲	50/1"	
20							
25							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-20
	Date Drilled: 3/12/02	Logged By: EL

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-20	PAGE 2 OF 2
Location: Oregon City, Oregon	Approximate Elevation: 429 feet		

Depth (ft)	Fracture: Profile	Fracture: Infilling	Fracture: Inclination	Rock Description	Time	Core Run	RQD (%)	Recovery (%)	Comments
				Coring initiated at 18 feet.					
20				Gray, fresh, widely fractured, basaltic ANDESITE.	11:45 11:50	1	100	100	
25		Red clay		Gray with red discoloration, moderately to highly weathered, very closely fractured, friable to weak, basaltic ANDESITE. Gray, fresh, moderately fractured, strong, basaltic ANDESITE.	12:05	2	18	60	Loss of circulation.
30		Red clay		Gray with red discoloration, moderately to highly weathered, very closely fractured, friable to weak, basaltic ANDESITE.	13:12	3	18	80	Loss of circulation.
35		Red clay		Gray with red discoloration, moderately to highly weathered, very closely fractured, weak to moderately strong, basaltic ANDESITE.	13:30	4	25	90	Intermittent loss of circulation.
40		Red clay		Gray with red and black discoloration, moderately to highly weathered, closely fractured, weak, basaltic ANDESITE.	13:50	5	20	100	
45		Red clay		Gray with red discoloration, moderately to highly weathered, closely fractured, weak, basaltic ANDESITE. Gray with slight red discoloration, slightly weathered, moderately fractured, moderately strong, basaltic ANDESITE.		6	22	100	Loss of circulation.
				Coring terminated at 45 feet.					

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	CORING LOG	Figure A-20
	Date Drilled: 3/12/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-21 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 442 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	Sod over soft, wet, brown, silty CLAY with some fine sand.						
	Soft, wet, brown with red-orange and black specks, residual silty CLAY with some sand.	I	S-1		▲	2	
5	Medium stiff, wet, orange, gray, and brown, residual silty CLAY/clayey SILT with some sand.	I	S-2		▲	5	
	Stiff, wet, orange, gray, and brown, silty CLAY/clayey SILTwith some sand.	I	S-3		▲	13	
10	Medium stiff, wet, orange, gray, and brown, residual sandy SILT with clay stringers.	I	S-4		▲	5	
	Drilling terminated at 11.5 feet. No groundwater observed at time of drilling.						
15							
20							
25							

0 10 20 30 40 50

Explanation

- I — 2-inch O.D. split spoon sample
- II — 3-inch I.D Shelby tube sample
- ⊗ — No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-21
	Date Drilled: 3/7/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-22 | **PAGE** 1 OF 1

Location: Oregon City, Oregon | **Approximate Elevation:** 451 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	Sod over soft, wet, brown, silty CLAY with some sand.						
	Medium stiff, wet, red, residual silty CLAY with some sand.		S-1			6	
5	Stiff to very stiff, moist, red, friable, residual silty SAND/sandy SILT with trace to some clay.		S-2			18	
	Stiff, moist to wet, red and gray, friable, residual silty SAND/sandy SILT with trace to some clay.		S-3			9	
10	Stiff, moist to wet, red and gray, friable, residual silty SAND/sandy SILT with trace to some clay.		S-4			9	
15	Stiff, moist to wet, red and gray, friable, residual silty SAND/sandy SILT with trace to some clay.		S-5			11	
20	Stiff, saturated, red and gray, friable, residual silty SAND/sandy SILT with trace clay.		S-6	▼ ATD		13	
	Drilling terminated at 21.5 feet. Groundwater observed at approximately 20 feet at time of drilling.						
25					0 10 20 30 40 50		

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- ⊗ No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-22
	Date Drilled: 3/7/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-23 | **PAGE** 1 OF 1

Location: Oregon City, Oregon | **Approximate Elevation:** 456 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	3" asphalt and 6" crushed rock over medium stiff, moist, red, silty CLAY.						
	Medium stiff, moist, red, residual silty CLAY with some sand.		S-1		▲	7	
5	Very stiff, moist, red, residual silty CLAY with some sand.		S-2		▲	17	
	Medium stiff to stiff, moist to wet, red and gray, friable, residual sandy SILT with trace to some clay.		S-3		▲	8	
10	Stiff, moist to wet, red and gray, friable, residual clayey silt with some sand.		S-4		▲	11	
15	Stiff, moist to wet, red and gray, friable, residual sandy SILT with trace clay.		S-5		▲	12	
	Drilling terminated at 16.5 feet. No groundwater observed at time of drilling.						
20							
25							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-23
	Date Drilled: 3/7/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-24 | **PAGE** 1 OF 1

Location: Oregon City, Oregon | **Approximate Elevation:** 427 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot; 0 10 20 30 40)	N-values	Testing
	1" crushed rock over medium stiff, moist, dark brown, SILT with fine woody debris (fill).						
5	Medium stiff, moist, dark brown, clayey SILT with fine woody debris (fill),	I	S-1		▲	7	
10	Medium stiff, moist, dark brown, clayey SILT with fine woody debris (fill),	I	S-2		▲	5	
15	Soft, wet, dark brown, clayey SILT with fine woody debris (probable fill, possible relic topsoil),	I	S-3		▲	3	
	Drilling terminated at 16.5 feet. No groundwater observed at time of drilling.						
20							
25							

0 10 20 30 40 50

Explanation

- I — 2-inch O.D. split spoon sample
- II — 3-inch I.D Shelby tube sample
- ⊗ — No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-24
	Date Drilled: 3/14/02	Logged By: EL

PROJECT: Proposed Retail Development - Phase II ESA **JOB NO.** J-1200-02 **BORING** MW-1 **PAGE 1 OF** 1

Location: Oregon City, Oregon **Approximate Elevation:** 443 feet +/-

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (Standard ▲ / Other △; Blows per foot)	N-values	Testing
	Grass and debris over medium dense, damp, brown-gray, sandy silty GRAVEL. (FILL)		S-1			25	
		⊗	S-2			9	
5	Loose, damp to wet, orange-brown, SILT with trace fine sand and occasional volcanic cinders.		S-3			8	
			S-4	11/2/01 15:32		14	
10			S-5			17	
15	Medium dense grading to dense, damp to moist, orange-brown, SILT with fine sand. (Severely weathered, highly fractured, gray basaltic andesite.)		S-6	ATD		17	
20	Monitoring well completed at 20.0 feet on 10/30/01. Wells included above-ground monuments and protective bollards. Groundwater encountered at 14 feet bgs at time of drilling, later measured at 8 feet bgs at time of development.	⊗				50/1"	
25							

Penetration Resistance scale: 0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- ⊗ No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- 2" Sch. 40 PVC
- Bentonite
- Concrete
- 10-slot screened casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 10/30/01	Logged By: MJB

PROJECT: Proposed Retail Development - Phase II ESA | **JOB NO.** J-1200-02 | **BORING** MW-2 | **PAGE 1 OF 2**

Location: Oregon City, Oregon | **Approximate Elevation:** 438 feet +/-

Depth (ft)	Soil Description	Sample Number	N-values
	Asphalt surfacing.		
	Dense, damp to moist, gray to dark gray, sandy silty GRAVEL with occasional asphalt. (FILL)	S-1	44
5		S-2	8
		S-3	11
10	Medium stiff to stiff, damp to moist, orange-brown grading to red-brown, SILT with trace fine sand and clay.	S-4	6
15		S-5	42
20	Dense to very dense, damp to moist, orange to red-brown, SILT with fine sand. (Severely weathered, highly fractured, gray basaltic andesite.)	S-6	54
25			

Penetration Resistance: ▲ Standard, Blows per foot, △ Other; 0 10 20 30 40 50

Ground Water | Sample Type | Testing

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- 2" Sch. 40 PVC
- Bentonite
- Concrete
- 10-slot screened casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-2
	Date Drilled: 10/30/01	Logged By: MJB

PROJECT: Proposed Retail Development - Phase II ESA **JOB NO.** J-1200-02 **BORING MW-2** **PAGE 2 OF 2**

Location: Oregon City, Oregon **Approximate Elevation:** 438 feet +/-

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot)	N-values	Testing
	Very dense, damp to moist, orange to red-brown, SILT with fine sand. (Severely weathered, highly fractured, gray basaltic andesite.)	I	S-7			61	
	Boring completed at 26.5 feet on 10/30/01, Monitoring well installed from 25 feet bgs. Wells included above-ground monuments and protective bollards. No groundwater encountered at time of drilling or at time of development, 16:31 on 11/2/01.						

Penetration Resistance scale: 0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- 2" Sch. 40 PVC
- Bentonite
- Concrete
- 10-slot screened casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-2
	Date Drilled: 10/30/01	Logged By: MJB

PROJECT: Proposed Retail Development - Phase II ESA | **JOB NO.** J-1200-02 | **BORING** MW-3 | **PAGE** 1 OF 1

Location: Oregon City, Oregon | **Approximate Elevation:** 450 feet +/-

Depth (ft)	Soil Description	Sample Number	N-values
	2-inches asphalt over loose to medium dense, damp to wet, orange-brown, SILT with trace fine sand and occasional volcanic cinders.	S-1	7
		S-2	16
5		S-3	10
		S-4	10
10	Loose grading to dense, damp to moist, orange-brown, SILT with fine sand. (Severely weathered, highly fractured, gray basaltic andesite.)	S-5	9
15		S-6	9
20		S-7	36
	Monitoring well completed at 20.0 feet on 10/30/01. Wells included above-ground monuments and protective bollards. Groundwater encountered at 16 feet bgs at time of drilling, later measured at 17.5 feet bgs at time of development.		
25			

Sample Type | Ground Water | Penetration Resistance | Testing

Penetration Resistance: ▲ Standard, △ Other; Blows per foot; 0 10 20 30 40 50

ATD

11/2/01 15:43

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- ⊗ No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- 2" Sch. 40 PVC
- Bentonite
- Concrete
- 10-slot screened casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-3
	Date Drilled: 10/31/01	Logged By: MJB

PROJECT: Proposed Retail Development - Phase II ESA | **JOB NO.** J-1200-02 | **BORING** MW-4 | **PAGE** 1 OF 1

Location: Oregon City, Oregon | **Approximate Elevation:** 445 feet +/-

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (Standard ▲, Blows per foot, Other △)	N-values	Testing
5	Grass over loose, damp to wet, orange-brown, SILT with trace fine sand, occasional gravel and pieces of visqueen. (FILL)		S-1			8	
			S-2			8	
			S-3			7	
10			S-4	11/2/01 13:50		4	
15	Dense, damp to moist, orange-brown, SILT with fine sand. (Severely weathered, highly fractured, gray basaltic andesite.)		S-5	ATD		36	
20	Very dense, wet, gray, moderately to severely weathered, highly fractured,basaltic andesite.		S-6			50/5"	
25	Monitoring well completed at 19.5 feet on 10/30/01 due to drilling refusal. Wells included above-ground monuments and protective bollards. Groundwater encountered at 15 feet bgs at time of drilling, later measured at 11.2 feet bgs at time of development.						

Penetration Resistance scale: 0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- 2" Sch. 40 PVC
- Bentonite
- Concrete
- 10-slot screened casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-4
	Date Drilled: 10/31/01	Logged By: MJB

PROJECT: Proposed Retail Development - Phase II ESA **JOB NO.** J-1200-02 **BORING MW-5** **PAGE 1 OF 1**

Location: Oregon City, Oregon **Approximate Elevation:** 445 feet +/-

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot)	N-values	Testing
	Grass over loose, damp to moist, brown, sandy gravelly SILT. (FILL)		S-1			16	
5	Medium dense, damp to wet, orange-brown, SILT with trace fine sand and occasional angular pieces of gray, severely weathered, highly fractured basaltic andesite.		S-2			13	
			S-3			20	
10			S-4	11/2/01 12:49 ATD		14	
15	Medium dense, damp to moist, orange-brown, SILT with fine sand. (Severely weathered, highly fractured, gray basaltic andesite.)		S-5			17	
20	Very dense, wet, gray, moderately to severely weathered, highly fractured,basaltic andesite.		S-6			50/6"	
25	Monitoring well completed at 20.0 feet on 10/30/01 due to drilling refusal. Wells included above-ground monuments and protective bollards. Groundwater encountered at 15 feet bgs at time of drilling, later measured at 11.2 feet bgs at time of development.						

Penetration Resistance axis: 0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- 2" Sch. 40 PVC
- Bentonite
- Concrete
- 10-slot screened casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-5
	Date Drilled: 10/31/01	Logged By: MJB

Test Pit TP-1
Approximate ground surface elevation: 425 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Duff over soft, damp, brown, SILT with trace fine sand. (Topsoil) Sparse fine roots to 1.2 feet and sparse medium roots to 2 feet.	S-1@0.5' MC=24%
1.0-3.0	Soft grading to stiff, damp, orange-brown, SILT with trace clay and trace to some 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, rounded, basaltic andesite cobbles.	S-2@2' MC=16%
3.0-10.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp to moist, reddish orange-brown sandy silt with trace clay.	
	Test pit completed at 10.0 feet on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-2
Approximate ground surface elevation: 435 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.8	Duff over soft, damp to moist, dark brown, SILT with trace fine sand and occasional fine gravel. (Topsoil) Sparse fine roots to one foot and sparse medium to large roots to 2 ½ feet. Pocket penetrometer at 0.5 feet = 1.75 tons per square foot (tsf.)	
0.8-3.0	Soft grading to stiff, damp, orange-brown, SILT with trace clay, fine sand, and trace to some 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, rounded, basaltic andesite boulders. Pocket penetrometer at 1.5 feet > 4.5 tsf.	S-1@1.5'
3.0-7.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish orange-brown silt with trace clay to silty SAND. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-2@3.5' MC=31%
	Digging refusal at 7.0 feet on a boulder on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-3
Approximate ground surface elevation: 440 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Duff over soft, moist to wet, dark brown, SILT with trace fine sand and occasional gray, moderately weathered, round, basaltic andesite boulders. (Topsoil) Sparse fine to medium roots to 1.2 feet.	S-1@0.5' S-2@1.0' MC=41%
1.0-2.5	Soft grading to stiff, damp to moist, orange-brown, SILT with trace clay and trace to some 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Pocket penetrometer at 2.0 feet = 2.75 tsf.	S-3@2.0' MC=25%
2.5-11.5	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish orange-brown sandy silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-4@10.5' MC=44%
	Test pit terminated at 11.5 feet on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-4
Approximate ground surface elevation: 440 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.3	Duff over soft, damp to moist, dark brown, SILT with trace fine sand (Topsoil.) Moderate to dense fine roots to 1.2 feet and sparse medium roots to 1.2 feet.	S-1@1.0' MC=36%
1.3-3.0	Medium stiff, damp to moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Pocket penetrometer at 2.5 feet = 1.5 tsf.	S-2@2.5' MC=24%
3.0-11.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown silt with trace clay.	S-3@6.0' MC=53%
	Test pit terminated at 11.0 feet on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-5
Approximate ground surface elevation: 441 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.7	Duff over soft, moist to wet, dark brown, SILT with trace fine sand (Topsoil) Moderate to dense fine roots to 1.0 feet and sparse medium roots to 1.2 feet.	S-1@0.5’
0.7-3.5	Medium stiff, damp to moist, orange-brown, sandy SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Pocket penetrometer at 3 feet > 4.5 tsf.	
3.5-7.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown sandy silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite boulders.	S-2@7.0’
	Test pit terminated at 7.0 feet on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-6
Approximate ground surface elevation: 442 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.7	Duff over soft, moist, dark brown, SILT with trace fine sand. (Topsoil) Moderate to dense fine roots to 0.8 feet and sparse medium roots to 1.2 feet.	
0.7-3.5	Medium stiff, damp to moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Pocket penetrometer at 3 feet = 2.0 to 2.5 tsf.	S-1@1.0’ S-2 @3.0’
3.5-10.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay.	S-3@5.5’
	Test pit terminated at 10.0 feet on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-7
Approximate ground surface elevation: 443 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Short to medium length grass and blackberry vines over soft, moist to wet, dark brown, SILT with trace fine sand and occasional pockets of 3/8" minus crushed rock (Topsoil/FILL) Moderate to dense fine roots to medium roots to 1.2 feet.	S-1@0.5' MC=30%
1.0-3.5	Medium stiff, damp to moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Pocket penetrometer at 2.0 feet = 3.75 tsf.	S-2@2.0' MC=21%
3.5-10.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown silt with trace clay. Occasional dark gray, subangular, slightly weathered, basalt with visible vesicles.	S-3@10.0' MC=56%
	Test pit terminated at 10.0 feet on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-8
Approximate ground surface elevation: 443 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.2	Grass over soft, moist to wet, dark brown, sandy, gravelly SILT (Topsoil/FILL) Dense fine roots to 1.0 feet.	S-1@1.0'
1.2-4.0	Medium stiff, damp to moist, orange-brown, SILT with trace clay and trace to some 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, round, basaltic andesite boulders. Pocket penetrometer at 3.0 feet > 4.5 tsf.	
4.0-11.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	S-2@10.5'
	Test pit terminated at 11.0 feet on 11/1/01. Slight groundwater seepage observed at 11.0 feet. No caving observed.	

Test Pit TP-9
Approximate ground surface elevation: 444 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.7	Short grass and blackberry vines over soft, moist to wet, brown, gravelly SILT with trace fine sand. (Topsoil/FILL) Moderate to dense fine to medium roots to 1.0 feet.	S-1@0.5’
0.7-6.0	Medium stiff, damp to moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
6.0-10.5	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay.	
	Test pit terminated at 10.5 feet on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-10
Approximate ground surface elevation: 444 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Blackberry vines over soft, moist to wet, brown, SILT with trace fine sand. (Topsoil) Moderate to dense fine to medium roots to 1.2 feet.	S-1@1.0’ MC=28%
1.0-3.0	Soft grading to stiff, damp to moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
3.0-11.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay.	S-2@5.0’ MC=20%
	Test pit terminated at 11.0 feet on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-11
Approximate ground surface elevation: 444 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Blackberry vines over soft, moist to wet, dark brown, SILT with occasional gravel. (Topsoil) Moderate to dense fine to medium roots to 1.8 feet.	S-1@0.5 MC=32%
1.0-3.0	Medium stiff, damp to moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2@2.0' MC=29% S-3@5.0' MC=44%
3.0-11.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders. Test pit terminated at 11.0 feet on 11/1/01. No groundwater seepage observed. No caving observed.	S-4@9.0' MC=59%

Test Pit TP-12
Approximate ground surface elevation: 444 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.5	Short grass and blackberry vines over soft, moist to wet, brown, gravelly SILT with trace fine sand. (Topsoil/FILL) Moderate fine to medium roots to 0.9 feet.	S-1@1.0'
1.5-3.5	Soft grading to stiff, damp to moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Pocket penetrometer at 2.0 feet = 1.75 tsf. Pocket penetrometer at 3.0 feet > 4.5 tsf.	
3.5-9.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders. Test pit terminated at 9.0 feet on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-13
Approximate ground surface elevation: 445 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.5	Short grass and blackberry vines over soft, wet, brown, SILT with trace to some sand. (Topsoil) Moderate fine to medium roots to 1.5 feet.	S-1@0.3' MC=24%
0.5-3.0	Medium stiff grading to stiff, moist to wet, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2@2.0'
3.0-6.0	Medium dense grading to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	
	Test pit terminated at 6.0 feet on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-14
Approximate ground surface elevation: 447 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.5	Short grass and blackberry vines over soft, wet, brown, SILT with trace to some sand. (Topsoil) Moderate fine roots to 1.0 feet.	S-1@0.3'
0.5-4.0	Medium stiff to stiff, moist to wet, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2@3.0'
4.0-5.5	Medium dense grading to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	
	Test pit terminated at 5.5 feet on 11/2/01 due to equipment failure. No groundwater seepage observed. No caving observed.	

Test Pit TP-15
Approximate ground surface elevation: 447 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.5	Grass over soft, damp to moist, brown, SILT with SILT and occasional gravel. (Topsoil) Moderate fine roots to 2.0 feet.	S-1@1.0' MC=27%
1.5-7.0	Medium stiff to stiff, damp to moist, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
7.0-10.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown sandy silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	S-2@9.0' MC=59%
	Test pit terminated at 10.5 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-16
Approximate ground surface elevation: 446 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Grass and blackberry vines over soft, damp, brown, SILT with trace fine sand. (Topsoil) Moderate to dense fine roots to 1.0 feet.	S-1@0.5'
1.0-4.0	Medium stiff to stiff, damp to moist, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
4.0-7.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown sandy silt with trace clay.	S-2@6.0'
7.0-10.0	Medium dense to very dense, dark gray, moderately weathered, subangular to rounded, poorly sorted, vesicular basalt clasts in a matrix of medium stiff to stiff, damp, red silt with trace clay.	
	Test pit terminated at 10.0 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-17
Approximate ground surface elevation: 447 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.7	Grass and blackberry vines over soft, damp, brown, SILT with trace fine sand. (Topsoil) Moderate to dense fine roots to 1.0 feet.	S-1@0.5' MC=26% S-2@1.0' MC=26%
1.7-3.0	Medium stiff, damp to moist, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-3@2.5' MC=21%
3.0-7.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay.	S-4@5.5' MC=26%
7.0-10.5	Medium dense to very dense, dark gray, moderately weathered, subangular to rounded, poorly sorted, vesicular basalt clasts in a matrix of medium stiff to stiff, damp, red silt with trace clay.	S-5@9.5' MC=55%
	Test pit terminated at 10.5 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-18
Approximate ground surface elevation: 405 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Soft, wet, dark brown, SILT with some gravel, organic debris and roots. (Topsoil)	
1.0-7.0	Very dense, moderately weathered, sub-rounded basaltic andesite boulders in matrix of medium dense, moist, orange-gray, silty SAND to sandy SILT.	
	Test pit completed at 7.0 on feet on 11/2/01 with refusal on boulder. No groundwater seepage observed. No caving observed.	

Test Pit TP-19
Approximate ground surface elevation: 402 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.8	Soft, wet, dark brown, SILT with some clay and sand, organic debris and roots. (Topsoil)	
0.8-2.5	Loose to medium dense, moist, orange-gray, silty SAND to sandy SILT with occasional cobbles and boulders of severely weathered basalt.	S-1@2’
2.5-7.5	Very dense basaltic andesite boulders from 2 to 8 feet in diameter in a medium stiff, sandy SILT matrix.	
	Test pit completed at 7.5 feet on 11/2/01 with refusal on boulder. No groundwater seepage observed. No caving observed.	

Test Pit TP-20
Approximate ground surface elevation: 448 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.8	Grass over soft, damp, brown, SILT with trace fine sand. (Topsoil) Moderate fine roots to 0.8 feet, sparse medium roots to 1.2 feet.	
0.8-2.5	Medium stiff, damp to moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-1@1.5’ MC=28%
2.5-10.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional, gray, moderately weathered, round basaltic andesite cobbles and boulders.	S-2@4.0’ MC=56%
	Test pit terminated at 10.0 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-21
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.3	Grass and blackberry vines over soft, damp, brown, SILT with trace fine sand. (Topsoil) Moderate fine to medium roots to 1.5 feet.	S-1@0.5’
1.3-9.5	Medium stiff to stiff, damp to moist, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2@2.0’
9.5-10.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	
	Test pit terminated at 10.5 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-22
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Grass and blackberry vines over soft, damp, brown, SILT with trace fine sand. (Topsoil) Moderate fine and medium roots to 1.0 feet.	
1.0-6.5	Medium stiff to stiff, damp to moist, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	
6.5-10.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	
	Test pit terminated at 10.0 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-23
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.7	Wood debris and blackberry vines over soft, damp, brown, SILT with trace fine sand. (Topsoil) Moderate fine and medium roots to 1.0 feet.	S-1@0.5' MC=25%
0.7-6.5	Medium stiff to stiff, damp to moist, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Pocket penetrometer at 2.0 feet = 1.75 tsf. Pocket penetrometer at 3.5 feet = 3.0 to >4.5 tsf.	S-2@1.5' MC=26%
6.5-7.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay.	
	Test pit terminated at 7.5 feet due to space constraints on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-24
Approximate ground surface elevation: 448 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.8	Metal debris over soft, damp, brown, blocky, SILT with trace fine sand. (Fill) Trace fine roots to 0.7 feet.	S-1@0.5' S-2@1.0'
0.8-1.5	Soft to medium stiff, moist, brown, SILT with trace clay. (FILL)	
1.5-3.5	Soft to medium stiff to stiff, moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-3@2.5'
3.5-4.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay.	
	Test pit terminated at 4.0 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-25
Approximate ground surface elevation: 448 Feet

Depth (feet)	Material Description	Sample No.
0.0-4.5	Wrecking yard debris over soft to medium stiff, damp, brown, SILT with occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite and wrecking yard debris. (Fill) Trace fine to medium roots to 1.0 feet.	S-1@0.5' S-2@2.0'
4.5-7.5	Medium stiff to stiff, moist, orange-brown, sandy SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
7.5-10.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-3@10.5'
	Test pit terminated at 10.5 feet on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-26
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.4	1-inch of asphalt over 3-inches of 5/8" minus crushed rock base.	S-1@0.5' MC=26%
0.4–1.1	Soft to medium stiff, damp to moist, brown, SILT with trace fine sand and occasional gravel (Topsoil prior to paving.) Trace fine to medium roots to 0.6 feet. Pocket penetrometer at 1.0 feet > 1.5 tsf.	S-2@1.0' MC=27%
1.1-4.5	Medium stiff to stiff, damp to moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders. Pocket penetrometer at 2.5 feet = A.5 tsf.	S-3@2.5' MC=37%
4.5-11.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay to silty SAND.	S-4@10.5' MC=46%
	Test pit terminated at 11.0 feet on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-27
Approximate ground surface elevation: 451 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.6	Grass over loose, damp to wet, brown silty GRAVEL and wrecking yard debris. (FILL). Trace fine to medium roots to 1.6 feet.	S-1@0.5’
0.6–1.3	Soft to medium stiff, damp, brown, SILT with trace fine sand and occasional gravel (Relic topsoil)	
1.3-3.0	Medium stiff to stiff, moist, orange-brown, sandy SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2@1.5’
3.0-10.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	
	Test pit terminated at 10.5 feet on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-28
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.8	Blackberry vines over loose, damp to wet, brown silty GRAVEL and wrecking yard debris. (FILL) Trace fine to medium roots to 1.5 feet.	S-1@0.5' MC=16%
0.8–1.5	Soft to medium stiff, damp to moist, dark brown, SILT with trace fine sand and occasional gravel. (Relic topsoil)	S-2@1.0' MC=32%
1.3-3.2	Medium stiff to stiff, moist, orange-brown grading to reddish-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-3@2.5' MC=31%
3.2-8.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite and boulders.	S-4@6.0' MC=57%
	Test pit terminated at 8.5 feet on a boulder on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-29
Approximate ground surface elevation: 449 Feet

Depth (feet)	Material Description	Sample No.
0.0-4.0	Grass over soft to medium stiff, damp to moist, brown, SILT with gravel and occasional asphalt debris. (Fill) Dense fine roots to 0.5 feet.	S-1@1.5'
4.0-7.5	Medium stiff to stiff, moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2@5.0'
7.5-11.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	
	Test pit terminated at 11.0 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-30
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.8	Grass and gravel over soft to medium stiff, damp to moist, brown, SILT with gravel and occasional asphalt debris. (FILL) Moderate fine roots to 0.3 feet. Occasional gray, moderately weathered, round, basaltic andesite boulders.	S-1@1.0’
1.8-6.0	Medium stiff to stiff, moist, orange-brown grading to red-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
6.0-11.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	
	Test pit terminated at 11.5 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-31
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-5.0	Grass and gravel over soft to medium stiff, damp to moist, brown, SILT with gravel and occasional asphalt debris. (FILL) Moderate fine roots to 1.1 feet.	
5.0-9.5	Medium stiff to stiff, moist, orange-brown grading to red-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-1@6.0’ MC=25%
9.5-11.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-2@11.0’ MC=53%
	Test pit terminated at 11.0 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-32
Approximate ground surface elevation: 451 Feet

Depth (feet)	Material Description	Sample No.
0.0–1.0	Blackberry vines over loose, damp to moist, dark brown, SILT with gravel and occasional metal debris. (Topsoil/FILL) Moderate fine to medium roots to 1.2'.	S-1@0.5' MC=11%
1.0-1.7	Soft to medium stiff, damp, light brown, SILT with trace sand and occasional gravel and metal debris. (FILL)	S-2@1.3' MC=25%
1.7-3.0	Medium stiff, damp, light brown, SILT with occasional asphalt and metal debris. (FILL)	S-3@2.5' MC=20%
3.0-4.7	Medium stiff, damp, reddish-brown, SILT with occasional fine to medium roots.	
4.7-9.0	Medium stiff to stiff, moist, orange-brown grading to reddish-brown, sandy SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-4@7.5' MC=27%
9.0-11.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-5@9.5'

Test pit terminated at 11.0 feet on 11/2/01.
No groundwater seepage observed.
No caving observed.
Fill was from Molalla Avenue cut, approximately 50 years ago, according to Rocky Younger, property owner.

Test Pit TP-33
Approximate ground surface elevation: 451 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Short grass, blackberry vines, and metal debris over soft, damp, dark brown, SILT with trace fine sand and occasional pockets of gravel. (Topsoil/FILL) Moderate fine to medium roots to 1.0 feet.	S-1@0.8’
1.0-5.5	Medium stiff, damp, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
5.5-11.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	
	Test pit terminated at 11.5 feet on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-34
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-2.0	Short grass and metal debris over medium stiff to stiff, damp to moist, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-1@1.5’ MC=41%
2.0-12.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	S-2@9.5’ MC=66% S-3@12.0’ MC=62%
	Test pit terminated at 12.5 feet on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-35
Approximate ground surface elevation: 449 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Metal debris over loose, damp, dark brown, SILT with trace fine sand and occasional pockets of gravel and wrecking yard debris. (Topsoil/FILL) Moderate fine and medium roots to 1.0 feet.	S-1@0.5’
1.0-3.5	Medium stiff to stiff, damp to moist, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
3.5-10.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	
	Test pit terminated at 10.5 feet on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-36
Approximate ground surface elevation: 440 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Blackberry vines and metal debris over soft to medium stiff, damp to moist, brown, SILT with trace fine sand and wrecking yard debris (Topsoil/FILL) Moderate fine and medium roots to 1.0 feet. Pocket penetrometer at 1.0 feet = 1.5 tsf.	S-1@1.0’ MC=29%
1.0-5.0	Medium stiff to stiff, damp to moist, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Pocket penetrometer at 2.0 feet = 1.5 tsf. Pocket penetrometer at 2.5 feet = 2.5 tsf.	S-2@2.0’ MC=29%
5.0-11.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-3@10.5’ MC=50%
	Test pit terminated at 11.0 feet on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-37
Approximate ground surface elevation: 431 Feet

Depth (feet)	Material Description	Sample No.
0.0-5.0	Blackberry vines over soft to medium stiff, damp to moist, brown, SILT with significant large pieces of concrete and asphalt debris. (FILL) Moderate fine and medium roots to 1.4 feet.	S-1@1.0' MC=19%
5.0-8.0	Medium stiff to stiff, damp to moist, orange-brown grading to reddish-orange, sandy SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2@7.0' MC=35%
8.0-12.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-3@10.0' MC=50%
	Test pit terminated at 12.5 feet on a boulder on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-38
Approximate ground surface elevation: 431 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Blackberry vines and short grass over medium dense, moist to wet, brown, silty sandy GRAVEL with significant asphalt debris (FILL) Moderate fine and medium roots to 0.8 feet.	S-1@0.5'
1.0-5.5	Soft to medium stiff, damp, orange-brown SILT with significant large pieces of asphalt and concrete debris. (FILL)	S-2@2.0'
	Digging refusal at 5.5 feet due on concrete debris on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-39
Approximate ground surface elevation: 430 Feet

Depth (feet)	Material Description	Sample No.
0.0-3.5	Duff and asphalt debris over soft to medium stiff, damp to moist, orange-brown, SILT with some sand and occasional asphalt debris and 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. (FILL)	S-1@1.0' MC=46%
3.5-7.5	Soft to medium stiff, moist, brown, SILT with organics, and occasional wood and metal debris. (FILL)	S-2@4.0' MC=26% S-3@7.0' MC=28%
7.5-10.5	Medium stiff to stiff, damp to moist, orange-brown, sandy SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
10.5-13.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, rounded, basaltic andesite cobbles and boulders.	S-4@11.5' MC=42%
	Test pit terminated at 13.0 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-40
Approximate ground surface elevation: 440 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.9	Duff over soft, damp, brown, SILT with trace fine sand. (Topsoil) Sparse fine roots to 1.0 feet and sparse medium roots to 1.9 feet.	S-1@1.0' MC=23%
1.9-3.0	Medium stiff, damp, orange-brown, sandy SILT with trace clay and trace to some 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, rounded, basaltic andesite boulders. Pocket penetrometer at 2.0 feet >4.5 tsf.	S-2@2.5' MC=21%
3.0-10.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp to moist, reddish orange-brown silt with trace clay. Occasional gray, moderately weathered, rounded, basaltic andesite cobbles and boulders.	S-3@5.5' MC=21%
	Test pit completed at 10.0 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-41
Approximate ground surface elevation: 441 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.5	Duff over soft, damp to moist, brown, SILT with trace fine sand and occasional gravel. (Topsoil) Moderate fine to medium roots to 1.2 feet and sparse large roots to 1.5 feet.	S-1@0.5-2.0' S-1A@0.5-2.5'
1.5-2.5	Soft grading to stiff, damp, orange-brown, SILT with trace clay and trace to some 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, rounded, basaltic andesite boulders.	S-2@2.5' MC=26%
2.5-6.5	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp to moist, reddish orange-brown silt with trace clay. Occasional gray, moderately weathered, rounded, basaltic andesite cobbles and boulders.	S-3@5.5'
	Digging refusal at 10.0 feet on a boulder on 11/3/01. No groundwater seepage observed. No caving observed. Samples S-1 and S-1A were shelby tube samples.	

Test Pit TP-42
Approximate ground surface elevation: 432 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Soft to medium stiff, wet, brown grading to orange-brown, SILT with some sand, organic debris and roots to 3". (Topsoil)	
1.0-4.0	Soft grading to stiff, damp, orange-brown, SILT with trace clay and trace to some 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, rounded, basaltic andesite boulders.	
4.0-6.5	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp to moist, reddish orange-brown silt with trace clay. Occasional gray, moderately weathered, rounded, basaltic andesite cobbles and boulders to 3 feet in diameter.	
	Test pit completed at 6.5 feet on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-43
Approximate ground surface elevation: 426 Feet

Depth (feet)	Material Description	Sample No.
0.0-3.5	Medium stiff, moist to wet, orange-brown, sandy SILT with some gravel, clay, and debris consisting of concrete, asphalt, crushed rock, and wire. (Fill)	S-1@1'
3.5-7.8	Soft to medium stiff, wet, dark gray-brown, SILT with some clay, sand and gravel. Occasional clasts of concrete, asphalt, brick and trace organic material. (Fill)	S-2@5'
7.8-8.0	Pine needles and thin branches to 1-inch in diameter. (Fill)	
8.0-11.0	Large andesitic boulder encountered at east end of test pit. Boulder appeared to be in a matrix of stiff to medium stiff, gray-brown SILT. (Fill)	
	Test pit completed at 11.0 feet on 3/4/02. Very slight seepage observed at 9 feet at time of exploration. No caving observed.	

Test Pit TP-44
Approximate ground surface elevation: 421.5 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.3	Grass sod.	
0.3-6.0	Soft to medium stiff, wet, orange-brown, sandy SILT with some clay and gravels. Occasional clasts of asphalt and concrete to 2 feet in diameter. 2-½ foot diameter andestitic boulder encountered at 1.5 feet. (Fill)	S-1@2'
6.0-8.0	Soft grading to stiff, wet, orange-brown, SILT with some clay and trace to some gray, sub-rounded clasts of severely weathered basaltic ardisite.	
8.0-11.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular to sub-rounded, poorly sorted basaltic andesite clasts in a matrix of medium stiff to stiff, moist, orange-brown, sandy SILT with trace clay.	
	Test pit completed at 11.0 feet on 3/4/02. No groundwater observed at time of exploration. No caving observed.	

Test Pit TP-45
Approximate ground surface elevation: 433.5 Feet

Depth (feet)	Material Description	Sample No.
0.0-2.5	Soft grading to stiff, moist, orange-brown, SILT with trace to some clay, sand, and 3 inch minus fragments of severely weathered basaltic andesite.	S-1@1'
2.5-6.0	Very dense, damp, gray, moderately weathered andesitic boulders to 3 feet in diameter in a matrix of medium stiff to stiff, moist to wet, orange-brown, SILT with trace clay to silty SAND with trace clay. Boulders sub-angular to rounded.	
	Test pit completed at 6.0 feet with refusal on 6-foot diameter andesitic boulder. No groundwater observed at time of exploration. No caving observed.	

Test Pit TP-46
Approximate ground surface elevation: 438 Feet

Depth (feet)	Material Description	Sample No.
0.0-6.0	Concrete and asphalt debris with matrix of sandy GRAVEL with some silt (dirty crushed rock). Approximately 40% asphalt and 20% concrete based on visual estimation. (Fill)	
6.0-7.0	Soft to medium stiff, moist, orange-brown, SILT with some sand and clay.	
	Test pit completed at 7 feet on 3/4/02. No groundwater seepage observed at time of exploration. No caving observed.	

Test Pit TP-47
Approximate ground surface elevation: 435 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.2	Grass sod.	
0.2-3.0	Asphalt debris in matrix of sandy gravel with some silt (crushed rock). Approximately 40-50% asphalt based on visual estimation. (Fill)	S-1@1'
3.0-6.0	Medium stiff, moist, orange-brown, sandy SILT with some gravel and trace clay. (Fill)	
6.0-8.5	Soft grading to stiff, moist, orange-brown, SILT with trace to some clay, sand, and 3 inch minus fragments of severely weathered basaltic andesite.	S-2@4'
8.5-11.0	Very dense, damp, gray, moderately weathered andesitic boulders to 3 feet in diameter in a matrix of medium stiff to stiff, moist to wet, orange-brown, SILT with trace clay to silty SAND with trace clay. Boulders sub-angular to rounded.	
	Test pit completed at 11.0 feet on 3/4/02. No groundwater seepage observed at time of exploration. No caving observed.	

Test Pit TP-48
Approximate ground surface elevation: 433 Feet

Depth (feet)	Material Description	Sample No.
0.0-5.5	Stiff to medium stiff, moist to wet, orange-brown, SILT with some sand and trace clay and occasional clasts of asphalt and concrete. (Fill)	
5.5-10.0	Randomly oriented rebar reinforced concrete debris from 6 to 8 inches thick and up to 4 feet across. Approximately 5% of debris consisted of rebar, asphalt, and wire. (Fill)	
	Test pit completed at 10.0 feet on 3/4/02 due to refusal on large concrete debris. No groundwater seepage observed at time of exploration. No caving observed.	

Test Pit TP-1A
Approximate ground surface elevation: 430 Feet

Depth (feet)	Material Description	Sample No.
0.0-6.0	Duff and asphalt debris over very soft to medium stiff, moist, reddish-brown, SILT with some sand and occasional asphalt debris and 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. (FILL)	S-1 @ 0.5' S-2 @ 2'
6.0-9.0	Soft to medium stiff, moist, gray SILT with organic and metal debris and occasional cobbles of of severely to highly weathered, highly fractured, basaltic andesite. (FILL)	S-3 @ 8'
9.0-12.0	Medium stiff, moist, orange-red-brown SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-4 @ 9.5'
	Test pit terminated at 12.0 feet on 03/01/2002. Slight groundwater seepage observed at 9.0 feet, perched on native soils. No caving observed.	

Test Pit TP-2A
Approximate ground surface elevation: 430 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.8	Duff over 7-inches of asphalt over 3-inches of 3/8-inch minus crushed rock base.	S-1 @ 1'
0.8-8.0	Soft to medium stiff, damp, reddish-brown SILT with trace clay with occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. (FILL)	S-2 @ 8'
8.0-9.0	Soft, damp to moist, light gray to dark gray, SILT with trace clay and wood, metal, glass, and rubber debris. (FILL)	
9.0-11.0	Medium stiff, moist, orange-red-brown SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
	Test pit terminated at 11.0 feet on 03/01/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-3A

Approximate ground surface elevation: 430 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.3	Metal debris over soft, damp to moist, gray SILT with trace clay and occasional fine rootlets. Slight to moderate odor of oil impact. (FILL)	
0.3-7.5	Soft to medium stiff, damp, reddish-brown SILT with trace clay with occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. (FILL)	S-1 @ 0.5' S-2 @ 2'
7.5-8.0	Soft, damp to moist, orange-brown silt with trace clay and fine rootlets. (Relict topsoil horizon)	
8.0-12.0	Medium stiff, moist, orange-red-brown SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	
	Test pit terminated at 12.0 feet on 03/01/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-4A

Approximate ground surface elevation: 430 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.5	Metal debris over 5/8-inch minus crushed rock base. Very strong odor of oil impact. Visible free product (appears to be crankcase oil) in crushed rock. (FILL)	S-1 @ 1'
1.5-8.0	Soft to medium stiff, damp, reddish-brown SILT with trace clay with occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. (FILL)	S-2 @ 3' S-3 @ 7'
8.0-10.0	Medium stiff, moist, orange-red-brown SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
	Test pit terminated at 12.0 feet on 03/01/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-5A

Approximate ground surface elevation: 430 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Metal debris and grass over very soft, damp, gray SILT with trace clay and gravel. (FILL)	S-1 @ 1'
1.0-8.5	Soft to medium stiff, damp, reddish-brown SILT with trace clay with occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. (FILL)	S-2 @ 8'
8.5-9.0	Loose, damp, brown-gray SILT with trace clay, occasional gravel and fine rootlets. (Relict topsoil horizon.)	
9.0-11.0	Medium stiff, damp, orange-red-brown SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	
	Test pit terminated at 11.0 feet on 03/01/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-6A

Approximate ground surface elevation: 431 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Blackberry vines and short grass over soft, damp, dark gray SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. (FILL)	
1.0-6.0	Soft to medium stiff, damp, red-brown SILT with occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite and large pieces of asphalt and concrete debris. (FILL)	S-1@2.0'
6.0-6.5	Medium dense, damp, gray sandy SILT with some gravel. (FILL)	
	Digging refusal at 6.5 feet due on concrete debris on 03/01/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-7A

Approximate ground surface elevation: 430 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.4	8-inches of asphalt over 8-inches of 3/8-inch minus crushed rock base. Very strong odors of gasoline and weathered gasoline. Gasoline dissolving asphalt.	
1.4-2.5	Soft, moist, red-brown SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite and gravel. (FILL)	S-1 @ 1.5'
2.5-5.0	Soft to medium stiff, moist, red-brown SILT with trace clay and occasional 3-inch minus, gray angular fragments of severely to highly weathered, highly fractured basaltic andesite.	S-2 @ 3.5'
5.0-9.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	S-3 @ 6' S-4 @ 6.5'
	Test pit terminated at 9.0 feet on 03/01/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-8A

Approximate ground surface elevation: 430 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Soft, damp to moist, dark brown SILT with trace clay and occasional gravel.	
1.0-3.5	Soft to medium stiff, damp, red-brown SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite and gravel.	S-1 @ 3'
3.5-7.5	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay	S-2 @ 6.5'
	Test pit terminated at 7.5 feet on 03/01/2002. Moderate groundwater seepage observed at 6.5 feet. Slight caving observed below 6.5 feet.	

Test Pit TP-9A

Approximate ground surface elevation: 440 Feet

Depth (feet)	Material Description	Sample No.
0.0-3.5	Medium dense, damp, dark gray silty sandy GRAVEL with occasional cobbles. (FILL)	S-1 @ 1.5'
3.5-5.5	Soft to medium stiff, damp to moist, orange-red-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2 @ 3.5'
5.5-9.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	S-3 @ 9.5'
	Test pit terminated at 9.5 feet on 03/01/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-10A

Approximate ground surface elevation: 440 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.5	Loose to medium dense, damp, gray-brown SILT with trace clay and trace fine sand and occasional fine highly weathered, highly fractured basaltic andesite gravel.	S-1 @ 1'
1.5-4.5	Soft to medium stiff, damp, orange-red-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2 @ 2'
4.5-6.5	Medium stiff to stiff, damp, red-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
6.5-7.0	Medium dense to very dense, gray, highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	S-3 @ 7'
	Test pit terminated at 7.0 feet on 03/01/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-11A

Approximate ground surface elevation: 448 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.8	Sparse grass and metal debris over 5/8-inch minus crushed rock base. (FILL)	
0.8-2.0	Soft to medium stiff, damp, gray, SILT with trace clay and occasional metal, rubber, and glass debris. Slight odor of weathered gasoline and slight staining observed. (FILL)	S-1 @ 1.5'
2.0-4.5	Soft to medium stiff, damp, red-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-2 @ 3'
4.5-11.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay.	S-3 @ 5.5' S-4 @ 11'

Test pit terminated at 11.0 feet on 03/02/2002.
No groundwater seepage observed.
No caving observed.

Test Pit TP-12A

Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Grass and blackberry vines over soft, damp, dark brown, SILT with trace fine sand, trace clay and occasional gray, highly weathered, round, basaltic andesite gravel.	
1.0-4.0	Medium stiff to stiff, damp to moist, reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
4.0-10.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, wet grading to damp, yellow silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-1 @ 4'

Test pit terminated at 10.0 feet on 03/02/2002
Very slight groundwater seepage observed at 4 feet.
No caving observed.

Test Pit TP-13A

Approximate ground surface elevation: 449 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Metal debris over loose, damp, dark brown, SILT with trace fine sand and occasional pockets of gravel and debris. (Topsoil/FILL)	
1.0-4.0	Medium stiff to stiff, damp to moist, reddish-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-1@1'
4.0-9.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	S-2 @ 4.5' S-3 @ 9'

Test pit terminated at 9.5 feet on 03/02/2002.
No groundwater seepage observed.
No caving observed.

Test Pit TP-14A

Approximate ground surface elevation: 449 Feet

Depth (feet)	Material Description	Sample No.
0.0-2.0	Loose, damp, gray, SILT with trace clay and occasional pockets of 5/8-inch minus gravel and debris. Slight odor of oil impact to upper foot of soils, slight staining in upper foot of soils. (FILL)	S-1@1'
2.0-4.5	Soft to medium stiff, damp to moist, reddish-orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2 @ 2.5'

Test pit terminated at 4.5 feet on 03/02/2002.
No groundwater seepage observed.
No caving observed.

Test Pit TP-15A

Approximate ground surface elevation: 451 Feet

Depth (feet)	Material Description	Sample No.
0.0-4.5	5/8-inch minus crushed rock base over soft to medium stiff, damp, gray brown, SILT with trace sand and occasional gravel and asphalt debris. (FILL)	S-1 @ 2'
4.5-7.5	Soft to medium stiff, damp, reddish-brown, sandy SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2 @ 5'
7.5-9.5	Medium dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-3 @ 8.5'
9.5-11.5	Dense to very dense, gray, highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-4 @ 11.5'
	Test pit terminated at 11.5 feet on 03/02/2002 No groundwater seepage observed. No caving observed. Cesspool cistern discovered at 1.5 to 5 feet. Test pit relocated to north of cistern, adjacent.	

Test Pit TP-16A

Approximate ground surface elevation: 451 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.5	Soft, damp, dark brown, SILT with trace fine sand and occasional pockets of gravel. (Topsoil/FILL)	
0.5-2.5	Soft, damp, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-1 @ 2'
2.5-9.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-2 @ 5' S-3 @ 8.5'
	Test pit terminated at 9.5 feet on 03/02/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-17A
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-4.0	4-inches of asphalt over soft, damp, orange-brown grading to reddish-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-1 @ 1' S-2 @ 3'
4.0-10.0	Medium dense grading to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay to silty SAND.	S-3 @5.5' S-4 @ 9'

Test pit terminated at 10.0 feet on 03/02/2002.
No groundwater seepage observed.
No caving observed.

Test Pit TP-18A
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-6.0	Broken asphalt over soft grading to medium stiff, damp, orange-brown grading to reddish-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-1 @ 3'
6.0-10.0	Medium dense grading to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay to silty SAND.	S-2 @ 6' S-3 @ 10'

Test pit terminated at 10.0 feet on 03/02/2002.
No groundwater seepage observed.
No caving observed.

Test Pit TP-19A

Approximate ground surface elevation: 451 Feet

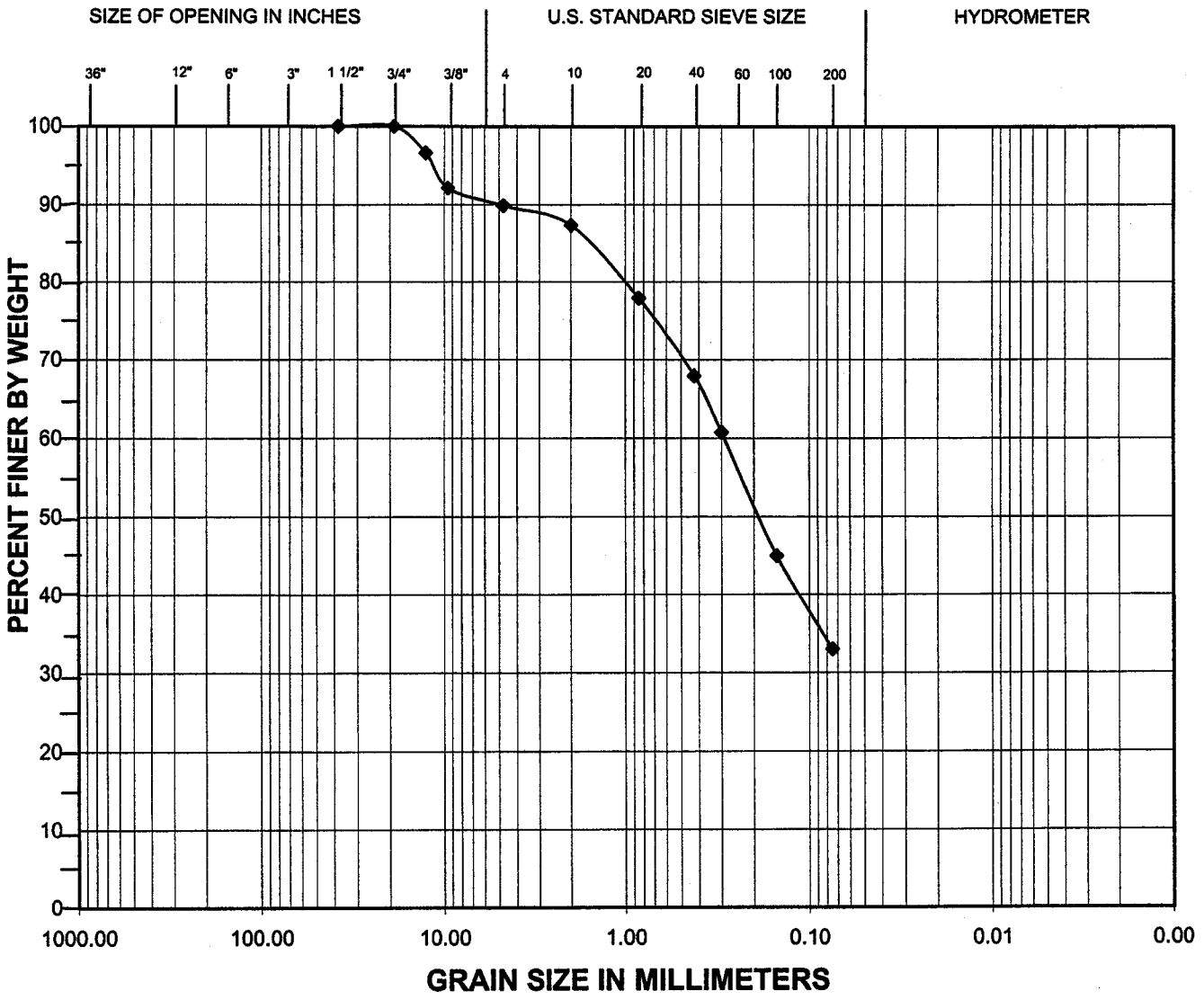
Depth (feet)	Material Description	Sample No.
0.0-1.5	2-inches of 5/8-inch minus crushed rock over soft, damp to moist, dark brown-gray, SILT with trace clay, occasional gravel and occasional metal debris. (FILL)	S-1 @ 1'
1.5-5.0	Medium stiff to stiff, moist, orange-brown, sandy SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2 @ 3'
5.0-8.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-3 @ 7'
	Test pit terminated at 8.0 feet on 03/02/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-20A

Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-3.5	Gravel over soft to medium stiff, damp, reddish-brown, SILT with gravel and trace clay and occasional asphalt debris. Occasional gray, moderately weathered, round, basaltic andesite boulders. (FILL).	S-1 @ 2'
3.5-4.0	Soft to medium stiff, damp, brown, SILT with trace clay and fine rootlets. (Relict topsoil horizon.)	
4.0-9.0	Medium stiff, damp, orange-brown grading to reddish-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2 @ 4' S-3 @ 7'
9.0-10.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp to wet, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-4 @ 9.5'
	Test pit terminated at 10.0 feet on 03/02/2002. Moderate groundwater seepage observed at 9.5 feet. No caving observed.	

GRAIN SIZE DISTRIBUTION ASTM D422



		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

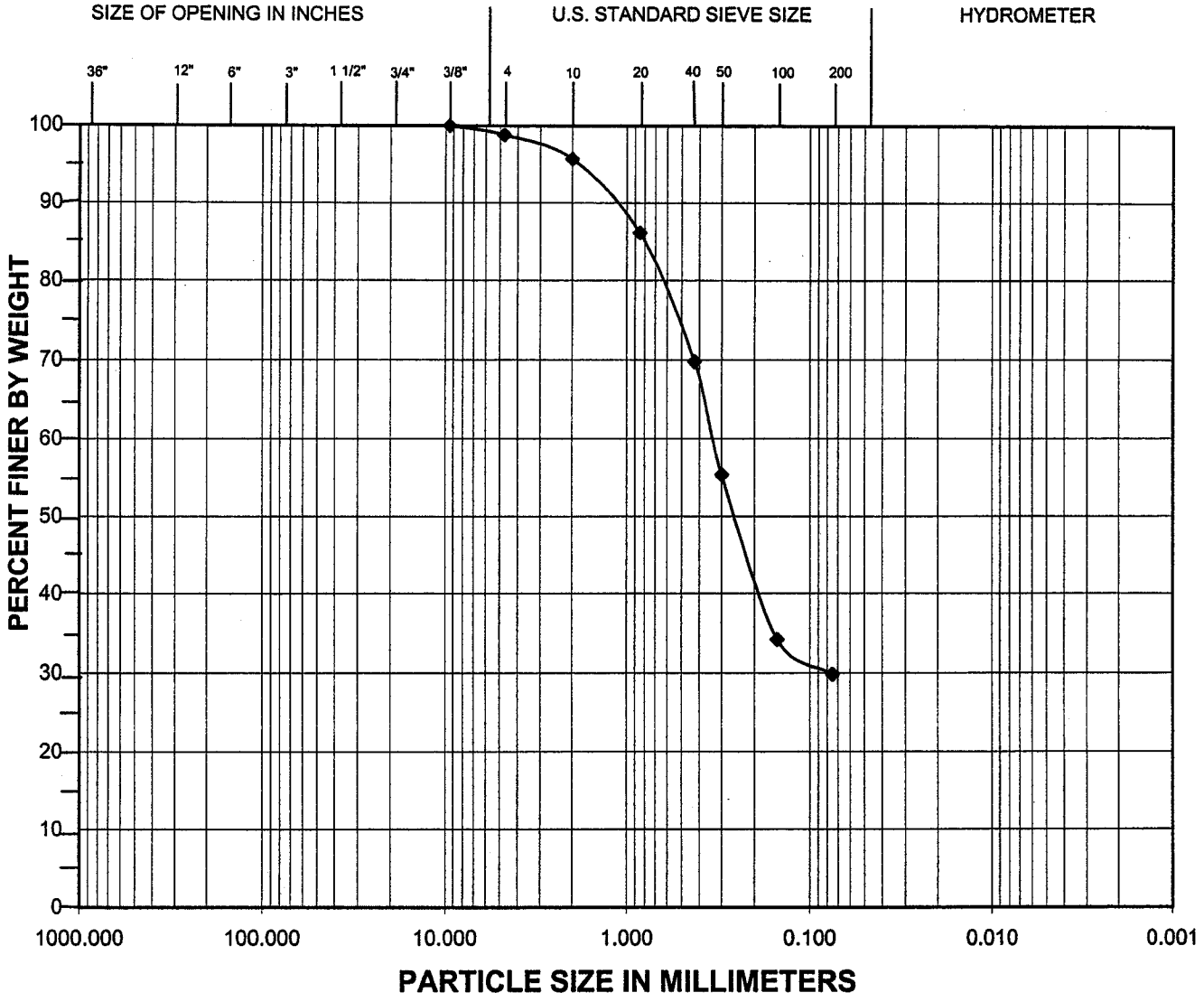
Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
B-4	S-4	10'	49	33	silty SAND w/ some gravel

ZIPPER ZEMAN ASSOCIATES, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTING	PROJECT NO: J-1200 DATE OF TESTING: 11/7/01	PROJECT NAME: Oregon City Retail

GRAIN SIZE ANALYSIS

Test Results Summary

ASTM D1140, D422



		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Comments:

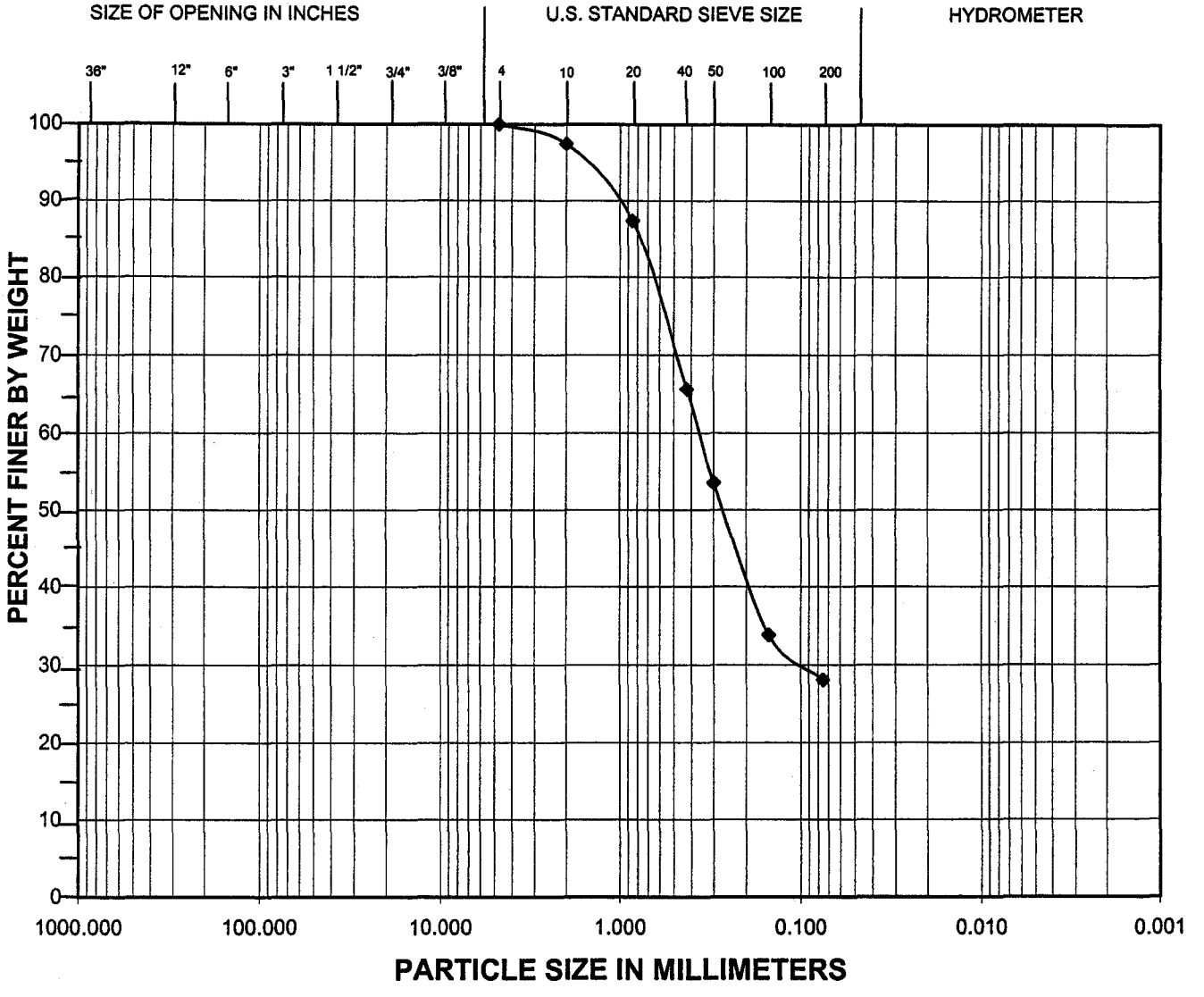
Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
B-12	S-4	10.0	59	29.8	silty SAND with trace gravel

Zipper Zeman Associates, Inc. Geotechnical and Environmental Consulting	PROJECT NO: J-1200 DATE OF TESTING: 5/17/02	PROJECT NAME: Oregon City Retail

GRAIN SIZE ANALYSIS

Test Results Summary

ASTM D1140, D422



		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Comments:

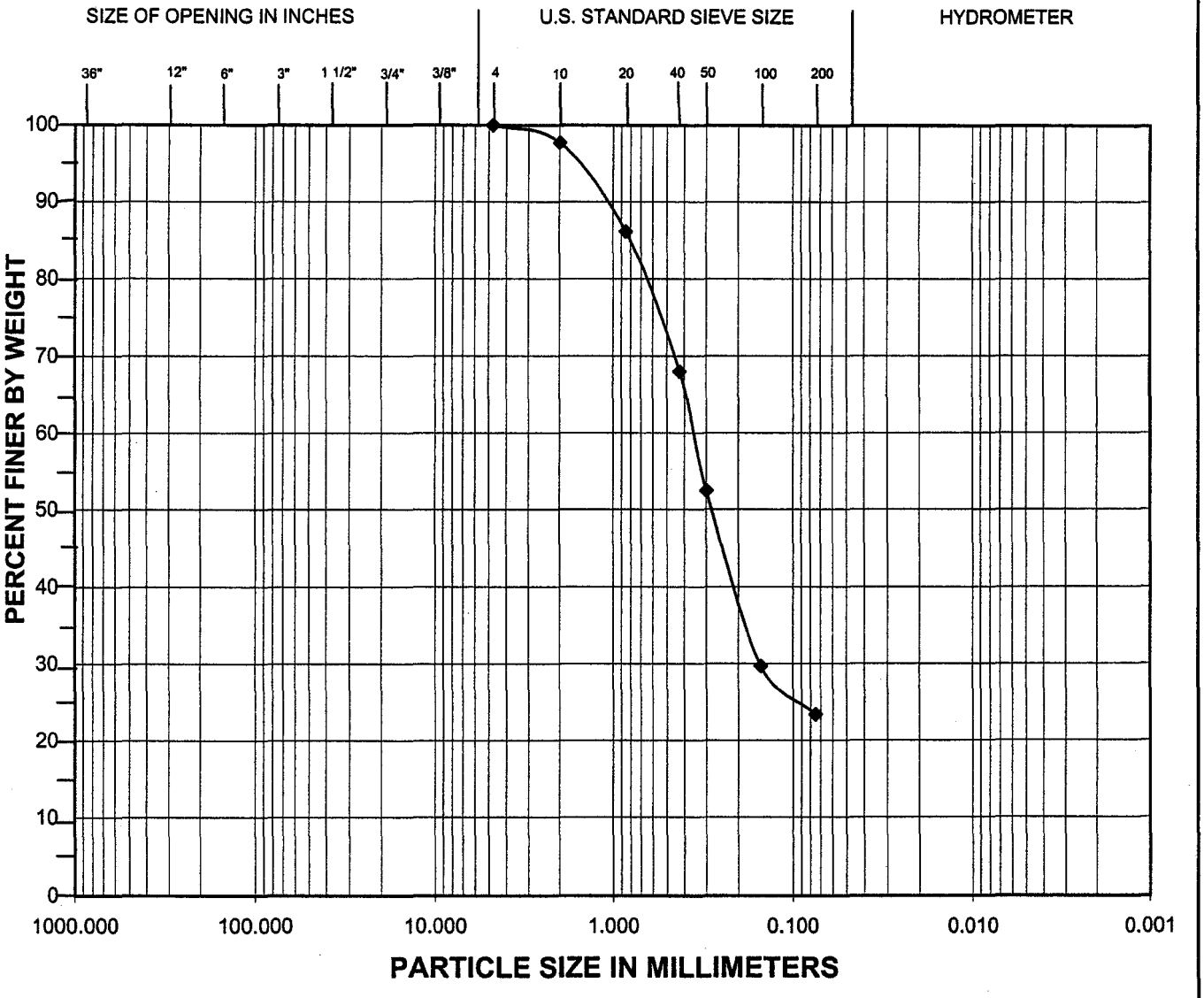
Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
B-13	S-3	7.5	63	28.1	silty SAND

Zipper Zeman Associates, Inc. Geotechnical and Environmental Consulting	PROJECT NO: J-1200 DATE OF TESTING: 5/15/02	PROJECT NAME: Oregon City Retail

GRAIN SIZE ANALYSIS

Test Results Summary

ASTM D1140, D422



		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Comments:

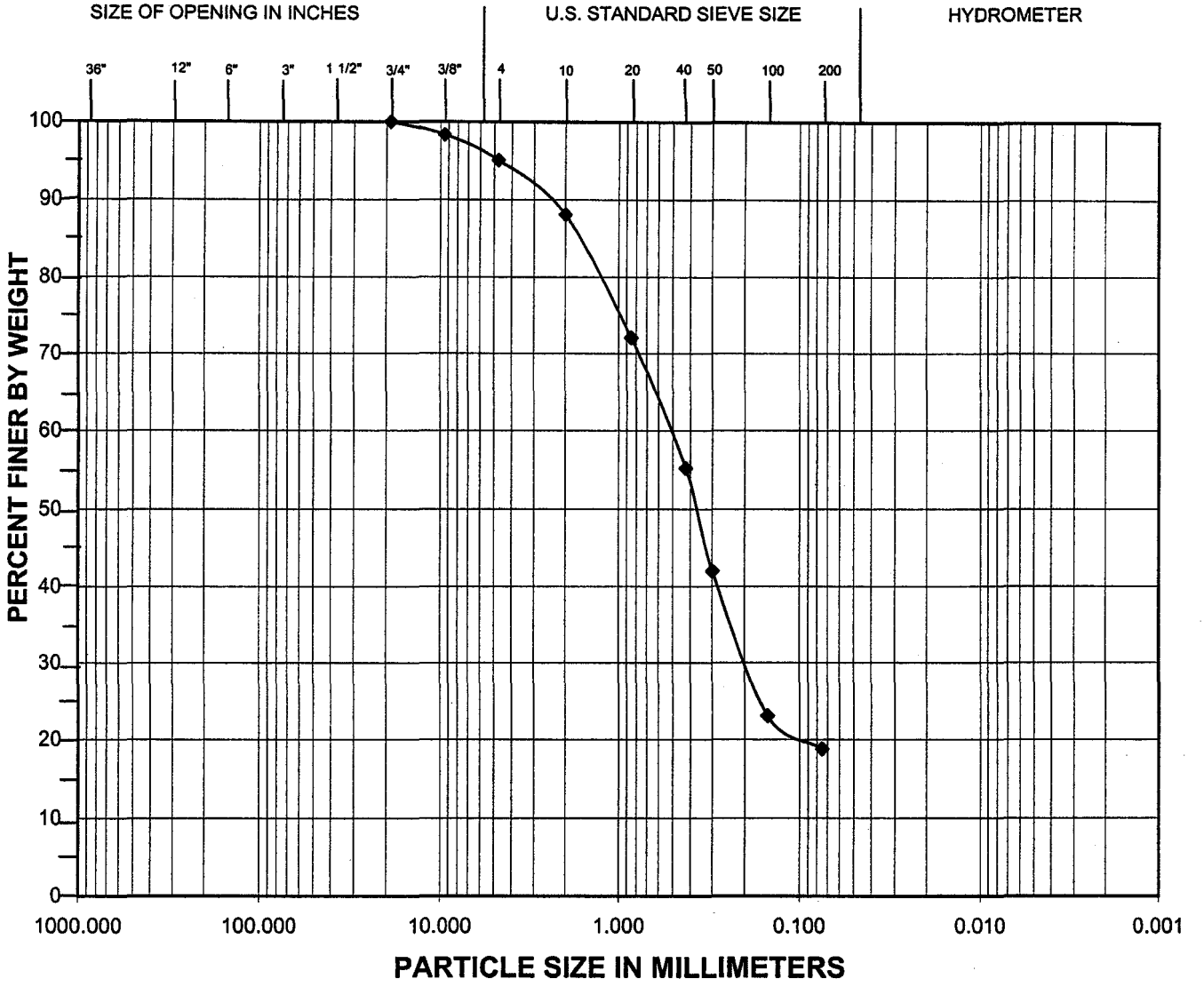
Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
B-15	S-2	5.0	54	23.3	silty SAND

Zipper Zeman Associates, Inc. Geotechnical and Environmental Consulting	PROJECT NO: J-1200 DATE OF TESTING: 5/15/02	PROJECT NAME: Oregon City Retail

GRAIN SIZE ANALYSIS

Test Results Summary

ASTM D1140, D422



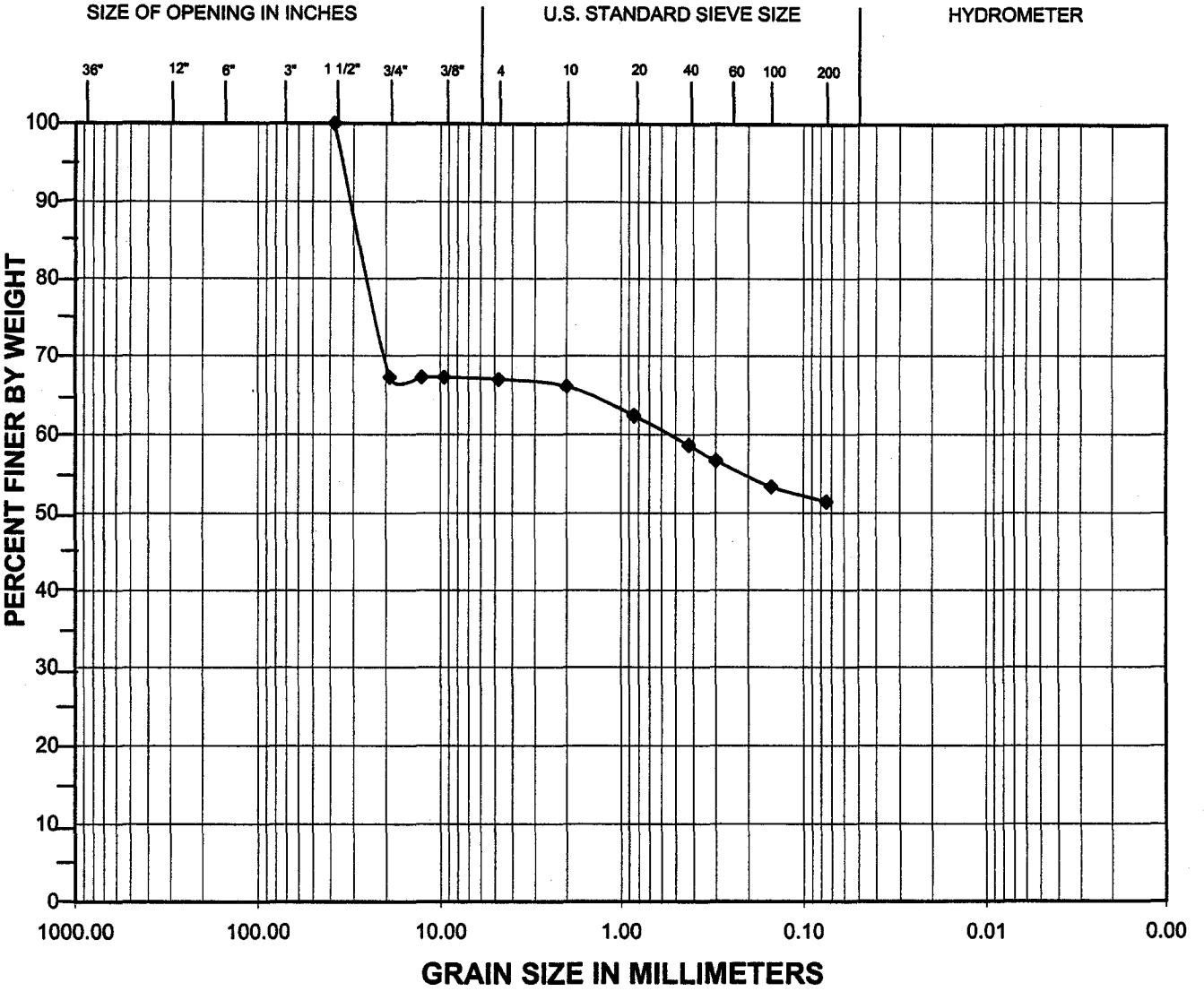
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Comments:

Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
B-20	S-2	5.0	38	18.8	silty SAND with trace to some gravel

Zipper Zeman Associates, Inc. Geotechnical and Environmental Consulting	PROJECT NO: J-1200 DATE OF TESTING: 5/17/02	PROJECT NAME: Oregon City Retail

GRAIN SIZE DISTRIBUTION ASTM D422

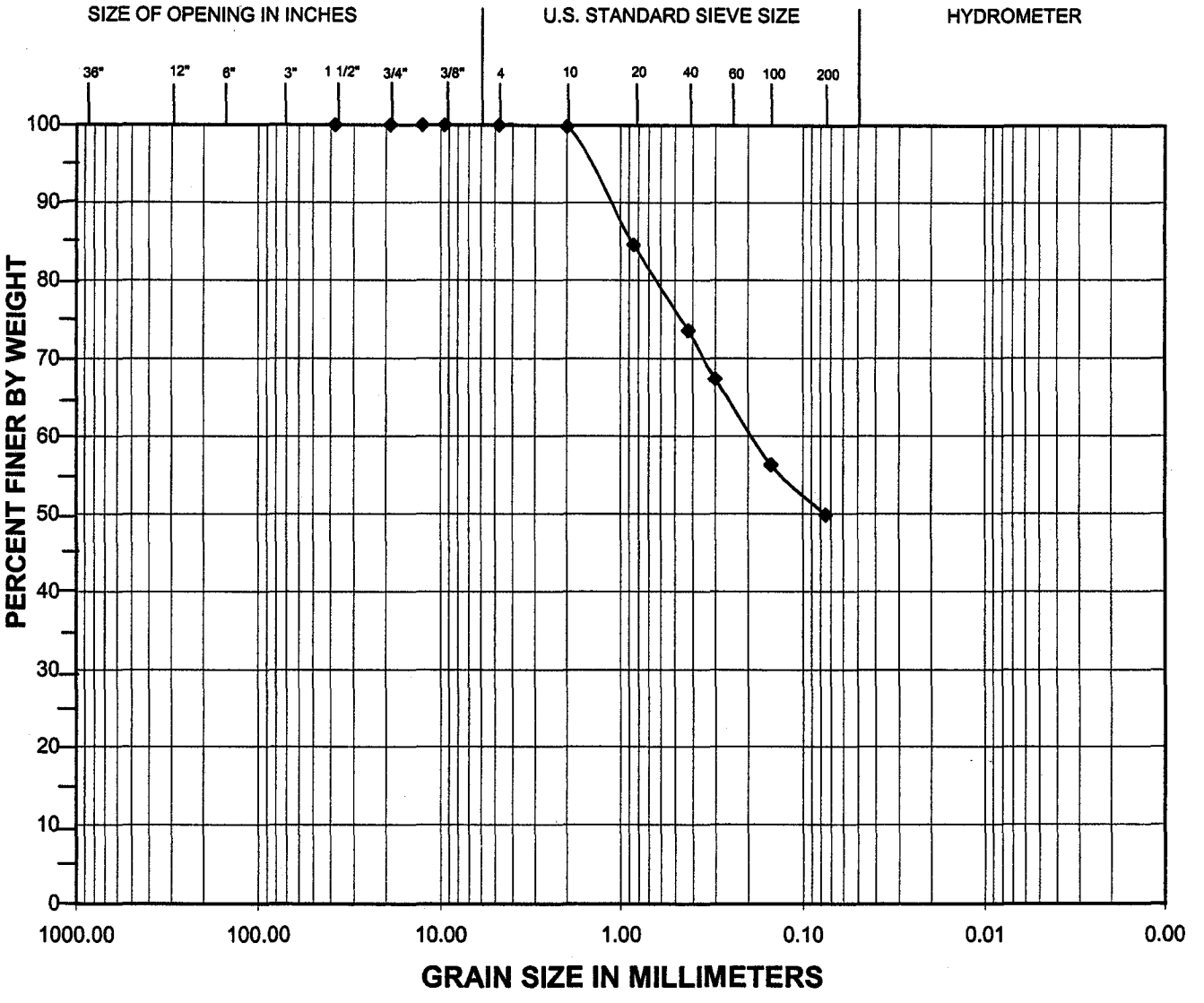


		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
TP-1	S-2	2'	16	51	sandy, gravelly,SILT

ZIPPER ZEMAN ASSOCIATES, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTING	PROJECT NO: J-1200 DATE OF TESTING: 11/7/01	PROJECT NAME: Organ City Retail

GRAIN SIZE DISTRIBUTION ASTM D422

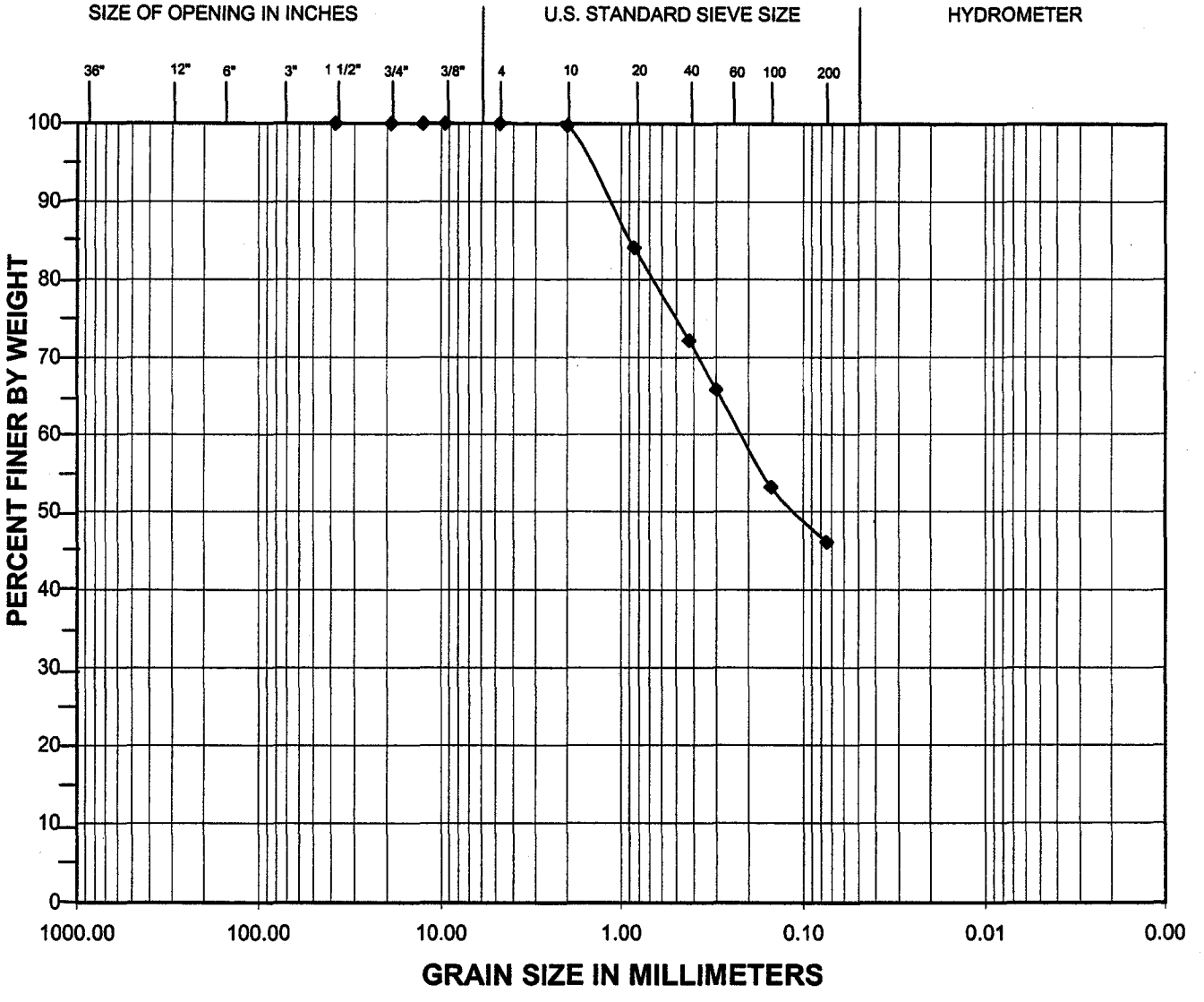


		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
TP-2	S-2	3.5'	31	49.8	silty SAND

ZIPPER ZEMAN ASSOCIATES, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTING	PROJECT NO: J-1200 DATE OF TESTING: 11/8/01	PROJECT NAME: Oregon City Retail

GRAIN SIZE DISTRIBUTION ASTM D422

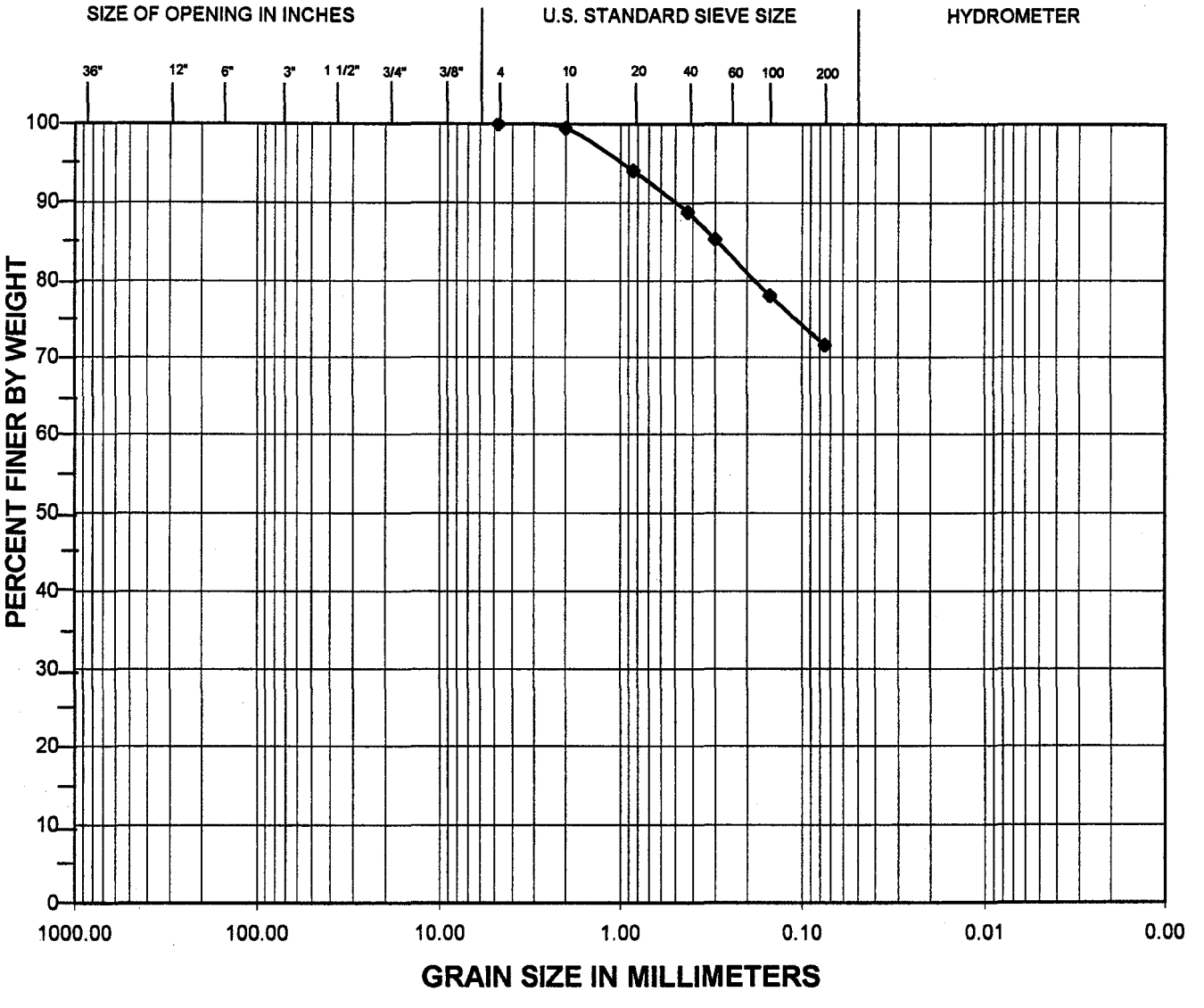


		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
TP-26	S-4	10.5'	60	46.1	silty SAND

ZIPPER ZEMAN ASSOCIATES, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTING	PROJECT NO: J-1200 DATE OF TESTING: 11/8/01	PROJECT NAME: Oregon City Retail

GRAIN SIZE DISTRIBUTION ASTM D422

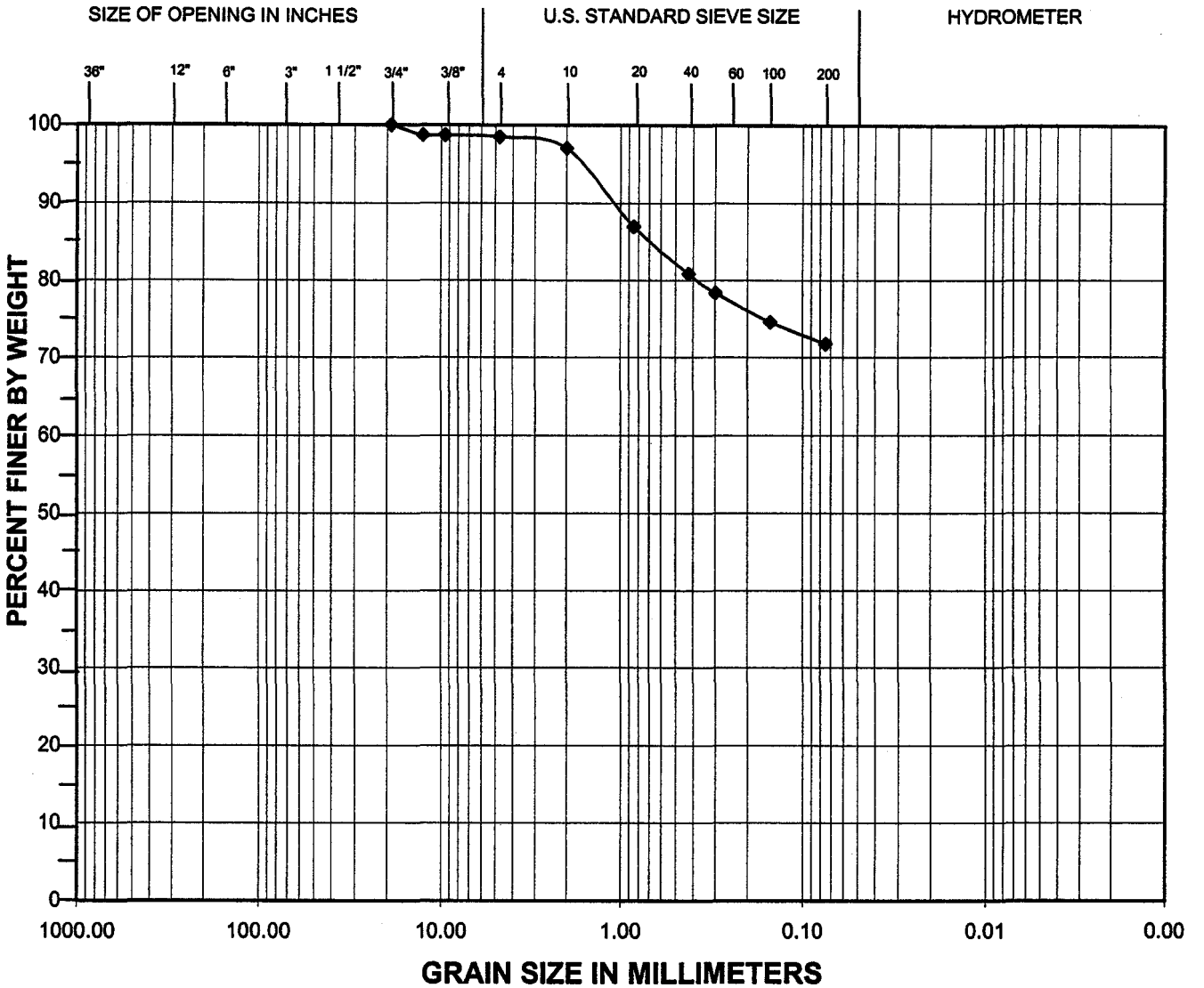


		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
TP-32	S-4	7.5'	27	72	sandy SILT

ZIPPER ZEMAN ASSOCIATES, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTING	PROJECT NO: J-1200 DATE OF TESTING: 11/07/2001	PROJECT NAME: Oregon City Retail

GRAIN SIZE DISTRIBUTION ASTM D422

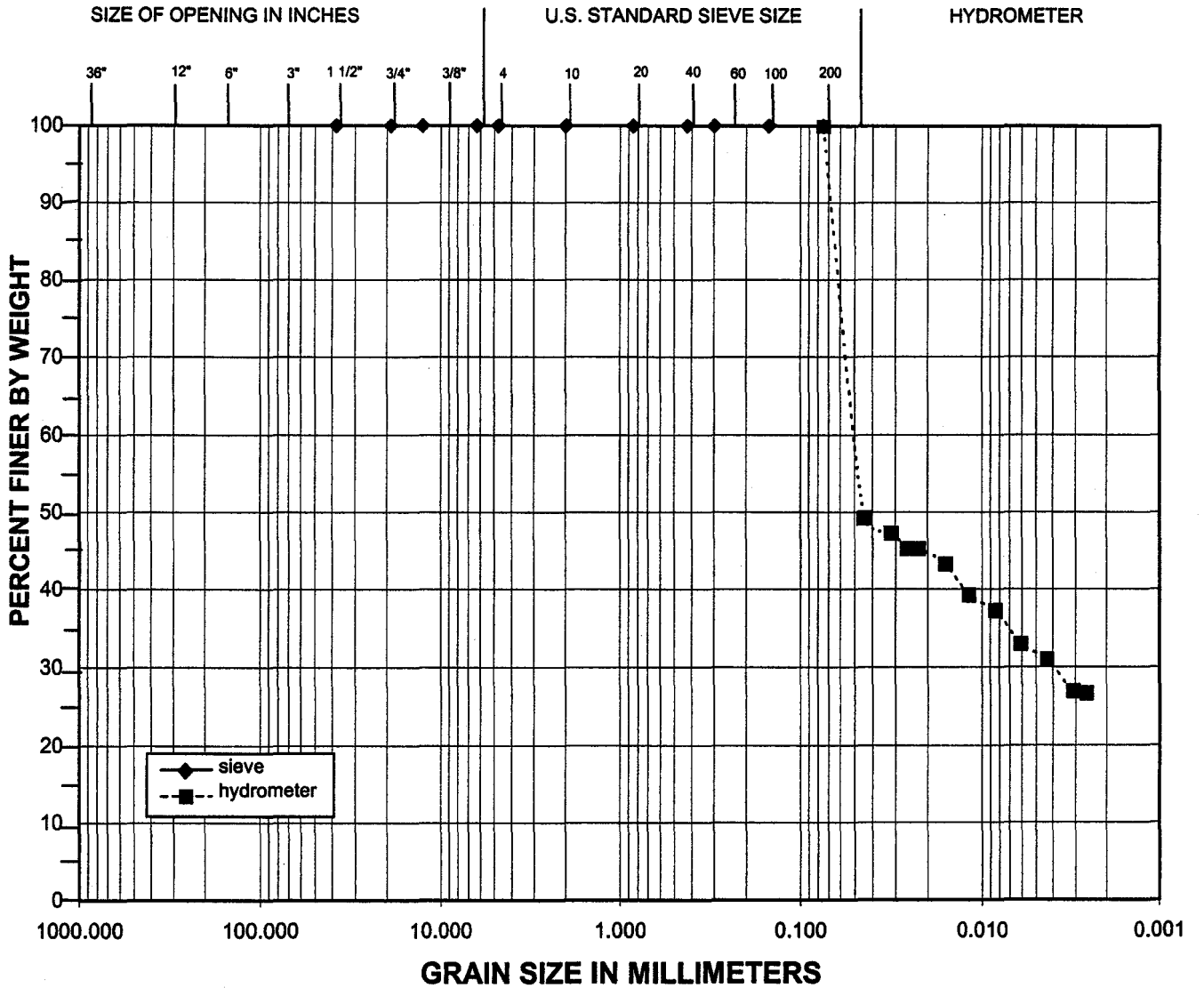


		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
TP-40	S-2	2.5'	21	72	sandy, SILT w/ trace gravel

ZIPPER ZEMAN ASSOCIATES, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTING	PROJECT NO: J-1200 DATE OF TESTING: 11/7/01	PROJECT NAME: Oregon City Retail

GRAIN SIZE DISTRIBUTION ASTM D 422

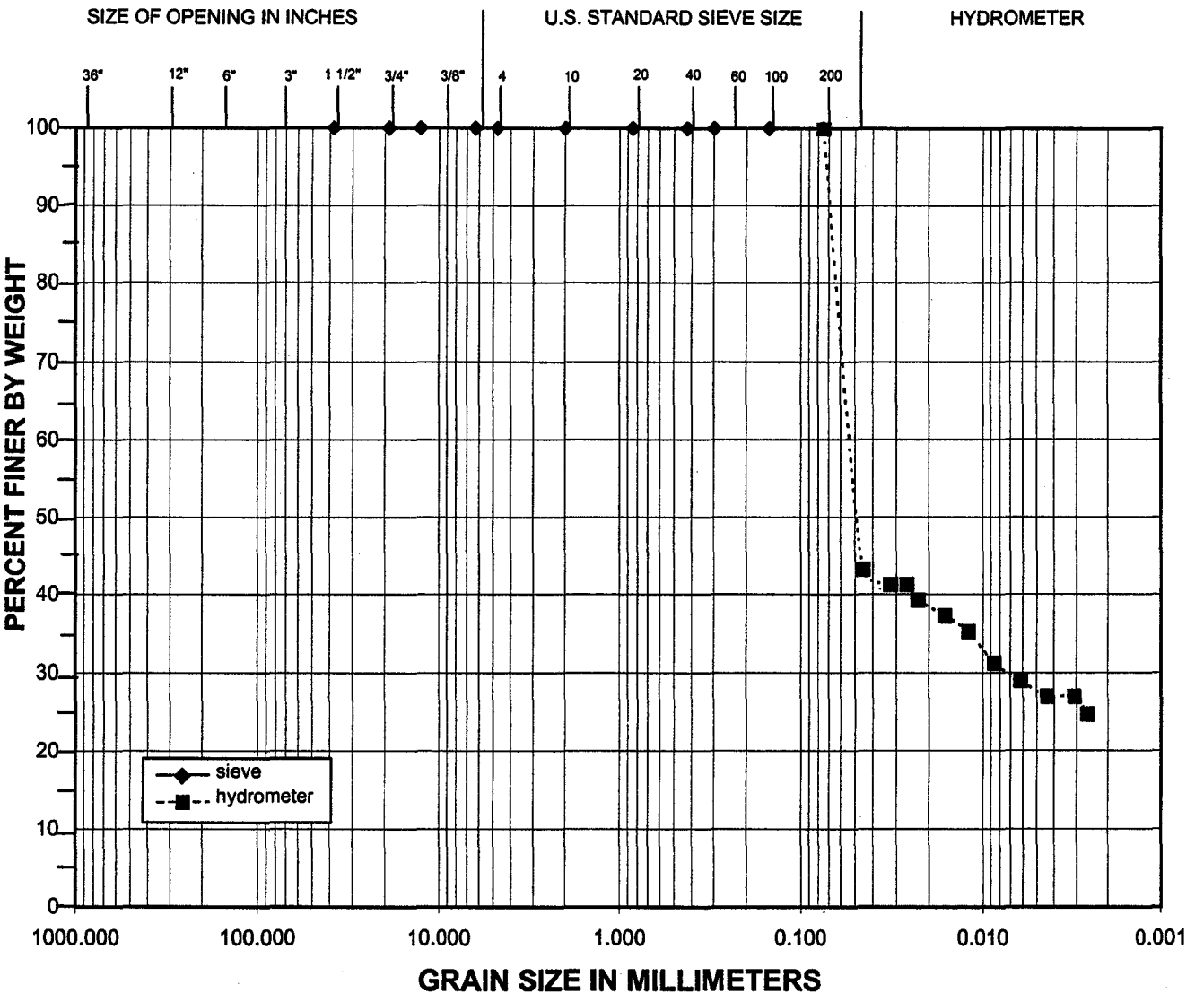


		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
B-1	S-2	5'	48	100	clayey, SILT

ZIPPER ZEMAN ASSOCIATES, INC GEOTECHNICAL AND ENVIRONMENTAL CONSULTING	PROJECT NO: J-1200 DATE OF TESTING: 11/9/01	PROJECT NAME: Oregon City Retail

GRAIN SIZE DISTRIBUTION ASTM D 422



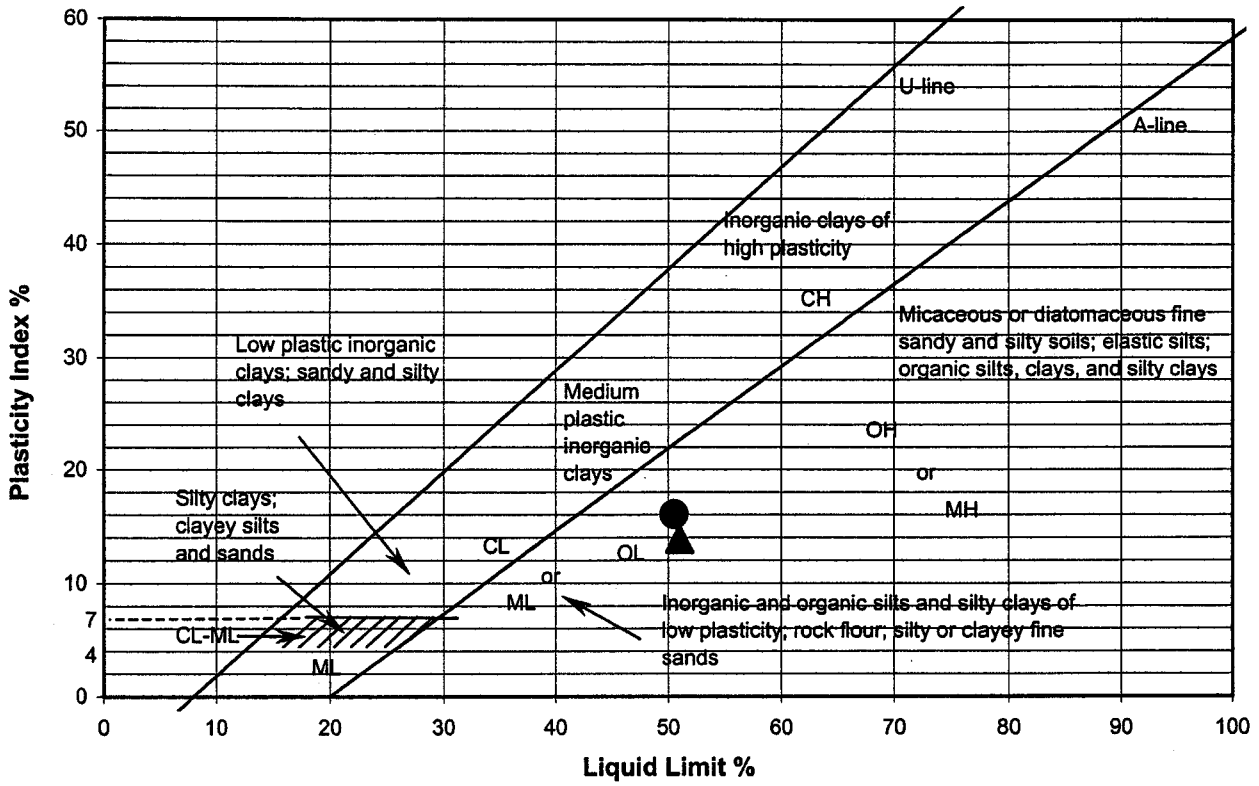
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
TP-39	S-1	1'	46	100	SILT With some clay

ZIPPER ZEMAN ASSOCIATES, INC GEOTECHNICAL AND ENVIRONMENTAL CONSULTING	PROJECT NO: J-1200 DATE OF TESTING: 11/9/01	PROJECT NAME: Oregon City Retail

PLASTICITY CHART

ASTM D 4318



Symbol	Boring	Sample	USCS Description	Received M.C. (%)	Liquid Limit	Plastic Limit	Plasticity Index	Comments
●	B-17	S-4	ML	35	51	34	16	
▲	B-19	S-1	ML	15	51	37	14	
■								
◆								

Remarks:

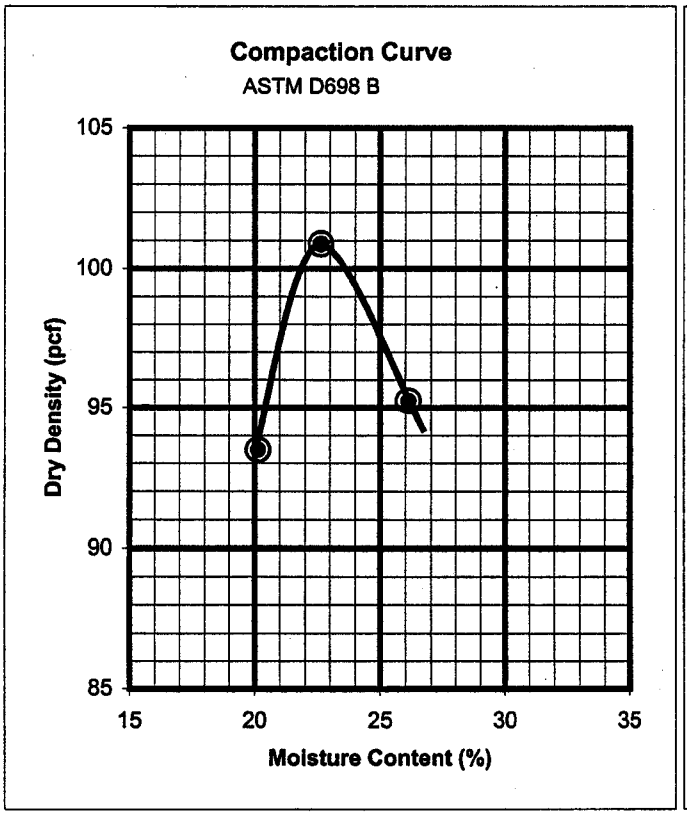
Zipper Zeman Associates, Inc. Geotechnical and Environmental Consulting	PROJECT NO: J-1200 DATE OF TESTING: 5/17/02	PROJECT NAME: Oregon City Retail

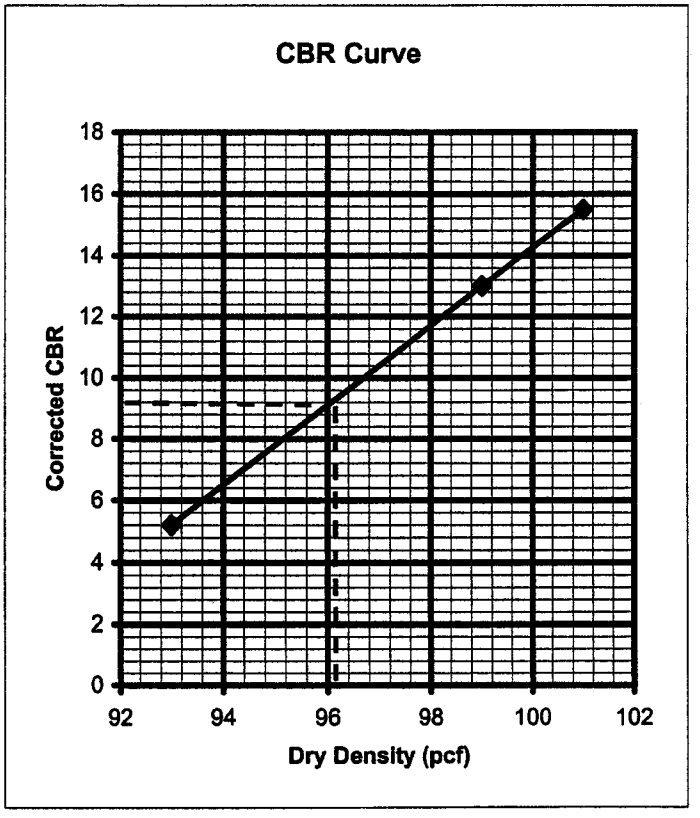
CALIFORNIA BEARING RATIO ASTM D 1883

Exploration: TP-16
Sample No.: Grab
Depth: 1.5 feet

Soil Description: SILT
Tested By: PZ/JY

	18 Blows/Lift		10 Blows/Lift		25 Blows/Lift	
Condition of Sample:	soaked		soaked		soaked	
Dry Density Before Soaking:	99	pcf	93	pcf	101	pcf
Dry Density After Soaking:	96	pcf	90	pcf	99	pcf
Moisture Content:						
Before Compaction:	20.5	%	20.5	%	20.5	%
After Compaction:	20.5	%	20.5	%	20.6	%
Top 1-in Layer After Soaking:	27.7	%	29.7	%	25.1	%
Average After Soaking:	27.5	%				
Swell:	-0.3	%	0.5	%	0.2	%
Surcharge Amount:	90.2	psf	90.2	psf	90.2	psf





Max. Dry Density = 101 pcf
Optimum Moisture = 22.5 %

CBR at 95% of Max. Dry Density = 9

ZIPPER ZEMAN ASSOCIATES, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTING	PROJECT NO: J-1200 DATE OF TESTING: 11/6/01	PROJECT NAME: Oregon City Retail

DIRECT SHEAR TEST RESULTS
ASTM D-3080

SAMPLE LOCATION	DEPTH (ft)	CLASSIFICATION	FRICTION ANGLE (degrees)	APPARENT COHESION (psf)	DRY DENSITY (pcf)	MOISTURE CONTENT (%)
B-15	2.5-3.0	(CL) reddish-brown, lean clay (remolded)	18	990	90.5	32
B-15	7.5-15.0	Reddish-brown, silty sand (remolded)	33	380	66.3	43.5

UNCONFINED COMPRESSION TEST RESULTS
ASTM D-2938

SAMPLE LOCATION	DEPTH (ft)	MOISTURE CONTENT (%)	COMPRESSIVE STRENGTH (psi)
B-2, RUN-1	19.0-19.8	3	8,800

SOIL CHEMICAL ANALYSIS RESULTS

SAMPLE LOCATION	DEPTH (ft)	pH	RESISTIVITY (ohm-cm)	SULFATES (ppm)
B-7, S-3	7	5.9	14,000	<10
TP-9, S-2	2½	5.8	11,000	10
TP-25, S-2	5½	6.1	10,000	37

ORGANIC CONTENT BY LOSS ON IGNITION AASHTO T-267

TEST PIT AND SAMPLE NUMBER	DEPTH (ft)	ORGANIC CONTENT (%)
TP-7, S-1	6	12
TP-7, S-2	24	8
TP-13, S-1	4	10
TP-40, S-1	12	9

SUPPORTING INFORMATION

Contents:

General Notes
Unified Soil Classification System
Rock Properties

Note: All attachments are one page unless noted above.

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS
Oregon City Development ■ Oregon City, OR
Terracon Project No. 82215043

Terracon GeoReport

SAMPLING	WATER LEVEL	FIELD TESTS
Rock Core  Grab Sample  Standard Penetration Test	**Water Initially Encountered** **Water Level After a Specified Period of Time** **Water Level After a Specified Period of Time** **Cave In Encountered** Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.	**N** Standard Penetration Test Resistance (Blows/Ft.) **(HP)** Hand Penetrometer **(T)** Torvane **(DCP)** Dynamic Cone Penetrometer **UC** Unconfined Compressive Strength **(PID)** Photo-Ionization Detector **(OVA)** Organic Vapor Analyzer

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification as noted on the soil boring logs is based Unified Soil Classification System. Where sufficient laboratory data exist to classify the soils consistent with ASTM D2487 "Classification of Soils for Engineering Purposes" this procedure is used. ASTM D2488 "Description and Identification of Soils (Visual-Manual Procedure)" is also used to classify the soils, particularly where insufficient laboratory data exist to classify the soils in accordance with ASTM D2487. In addition to USCS classification, coarse grained soils are classified on the basis of their in-place relative density, and fine-grained soils are classified on the basis of their consistency. See "Strength Terms" table below for details. The ASTM standards noted above are for reference to methodology in general. In some cases, variations to methods are applied as a result of local practice or professional judgment.

LOCATION AND ELEVATION NOTES

Exploration point locations as shown on the Exploration Plan and as noted on the soil boring logs in the form of Latitude and Longitude are approximate. See Exploration and Testing Procedures in the report for the methods used to locate the exploration points for this project. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance		CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance		
Descriptive Term (Density)	**Standard Penetration or N-Value Blows/Ft.**	**Descriptive Term (Consistency)**	**Unconfined Compressive Strength Qu, (tsf)**	**Standard Penetration or N-Value Blows/Ft.**
Very Loose	0 - 3	Very Soft	less than 0.25	0 - 1
Loose	4 - 9	Soft	0.25 to 0.50	2 - 4
Medium Dense	10 - 29	Medium Stiff	0.50 to 1.00	4 - 8
Dense	30 - 50	Stiff	1.00 to 2.00	8 - 15
Very Dense	> 50	Very Stiff	2.00 to 4.00	15 - 30
		Hard	> 4.00	> 30

RELEVANCE OF SOIL BORING LOG

The soil boring logs contained within this document are intended for application to the project as described in this document. Use of these soil boring logs for any other purpose may not be appropriate.

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse-Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	Cu ≥ 4 and 1 ≤ Cc ≤ 3 [E]		GW	Well-graded gravel [F]
			Cu < 4 and/or [Cc<1 or Cc>3.0] [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F, G, H]
			Fines classify as CL or CH		GC	Clayey gravel [F, G, H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	Cu ≥ 6 and 1 ≤ Cc ≤ 3 [E]		SW	Well-graded sand [I]
			Cu < 6 and/or [Cc<1 or Cc>3.0] [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G, H, I]
			Fines classify as CL or CH		SC	Clayey sand [G, H, I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A"		CL	Lean clay [K, L, M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K, L, M]
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay [K, L, M, N]
			Liquid limit - not dried			Organic silt [K, L, M, O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line		CH	Fat clay [K, L, M]
			PI plots below "A" line		MH	Elastic Silt [K, L, M]
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay [K, L, M, P]
			Liquid limit - not dried			Organic silt [K, L, M, Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve.

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay.

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.

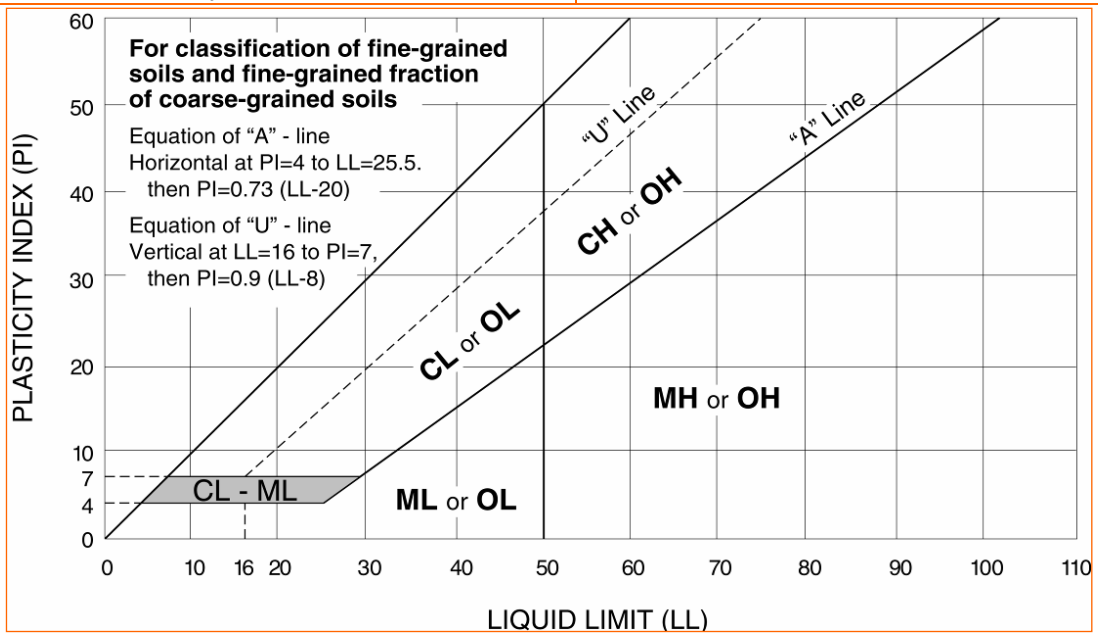
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.



WEATHERING	
Term	**Description**
Unweathered	No visible sign of rock material weathering, perhaps slight discoloration on major discontinuity surfaces.
Slightly weathered	Discoloration indicates weathering of rock material and discontinuity surfaces. All the rock material may be discolored by weathering and may be somewhat weaker externally than in its fresh condition.
Moderately weathered	Less than half of the rock material is decomposed and/or disintegrated to a soil. Fresh or discolored rock is present either as a continuous framework or as corestones.
Highly weathered	More than half of the rock material is decomposed and/or disintegrated to a soil. Fresh or discolored rock is present either as a discontinuous framework or as corestones.
Completely weathered	All rock material is decomposed and/or disintegrated to soil. The original mass structure is still largely intact.
Residual soil	All rock material is converted to soil. The mass structure and material fabric are destroyed. There is a large change in volume, but the soil has not been significantly transported.

STRENGTH OR HARDNESS		
Description	**Field Identification**	**Uniaxial Compressive Strength, psi (MPa)**
Extremely weak	Indented by thumbnail	40-150 (0.3-1)
Very weak	Crumbles under firm blows with point of geological hammer, can be peeled by a pocket knife	150-700 (1-5)
Weak rock	Can be peeled by a pocket knife with difficulty, shallow indentations made by firm blow with point of geological hammer	700-4,000 (5-30)
Medium strong	Cannot be scraped or peeled with a pocket knife, specimen can be fractured with single firm blow of geological hammer	4,000-7,000 (30-50)
Strong rock	Specimen requires more than one blow of geological hammer to fracture it	7,000-15,000 (50-100)
Very strong	Specimen requires many blows of geological hammer to fracture it	15,000-36,000 (100-250)
Extremely strong	Specimen can only be chipped with geological hammer	>36,000 (>250)

DISCONTINUITY DESCRIPTION			
Fracture Spacing (Joints, Faults, Other Fractures)		**Bedding Spacing (May Include Foliation or Banding)**	
Description	**Spacing**	**Description**	**Spacing**
Extremely close	< ¾ in (<19 mm)	**Laminated**	< ½ in (<12 mm)
Very close	¾ in – 2-1/2 in (19 - 60 mm)	**Very thin**	½ in – 2 in (12 – 50 mm)
Close	2-1/2 in – 8 in (60 – 200 mm)	**Thin**	2 in – 1 ft. (50 – 300 mm)
Moderate	8 in – 2 ft. (200 – 600 mm)	**Medium**	1 ft. – 3 ft. (300 – 900 mm)
Wide	2 ft. – 6 ft. (600 mm – 2.0 m)	**Thick**	3 ft. – 10 ft. (900 mm – 3 m)
Very Wide	6 ft. – 20 ft. (2.0 – 6 m)	**Massive**	> 10 ft. (3 m)

Discontinuity Orientation (Angle): Measure the angle of discontinuity relative to a plane perpendicular to the longitudinal axis of the core. (For most cases, the core axis is vertical; therefore, the plane perpendicular to the core axis is horizontal.) For example, a horizontal bedding plane would have a 0-degree angle.

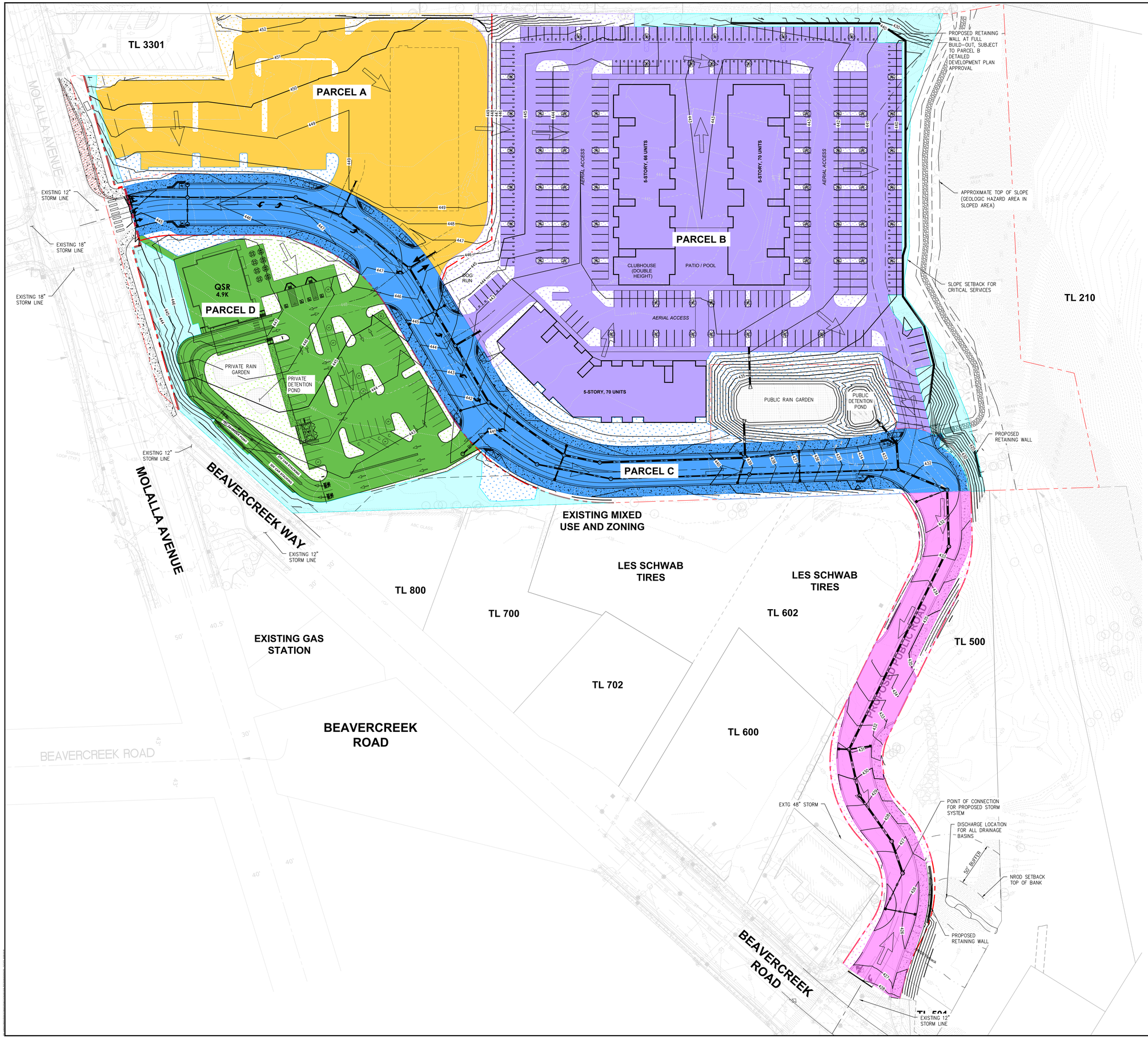
ROCK QUALITY DESIGNATION (RQD) [1]	
Description	**RQD Value (%)**
Very Poor	0 - 25
Poor	25 – 50
Fair	50 – 75
Good	75 – 90
Excellent	90 - 100

1. The combined length of all sound and intact core segments equal to or greater than 4 inches in length, expressed as a percentage of the total core run length.

Reference: U.S. Department of Transportation, Federal Highway Administration, Publication No FHWA-NHI-10-034, December 2009 Technical Manual for Design and Construction of Road Tunnels – Civil Elements

APPENDIX B

DRAINAGE BASIN MAP



LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture, and Geology, D.P.C.
10135 SE Sunnyside Road Suite 200
Clackamas, OR 97015
T: 503.659.9500 www.langan.com

CLIENT/OWNER

CYPRESS EQUITIES

PROJECT NAME

OREGON CITY MIXED USE DETAILED DEVELOPMENT PLAN

LANGAN PROJECT NUMBER: 794-002-701

PROJECT ADDRESS

1367 MOLALLA AVENUE
OREGON CITY, OR 97045

STAMP

REVISIONS

REV	ISSUED FOR:	DATE
0	DDP SUBMITTAL	11/14/2025
1	DDP SUBMITTAL	12/09/2025
2	DDP SUBMITTAL	03/02/2026

811

SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

DRAINAGE BASIN MAP

SHEET NUMBER

DB-1.0

APPENDIX C

HYDROCAD REPORT

Summary for Pond 10P: Public Detention Pond 100 yr Overflow

Inflow Area = 8.420 ac, 88.07% Impervious, Inflow Depth > 3.66" for 100-yr 24-hr event
Inflow = 4.67 cfs @ 8.27 hrs, Volume= 2.568 af
Outflow = 4.67 cfs @ 8.28 hrs, Volume= 2.568 af, Atten= 0%, Lag= 1.1 min
Primary = 4.67 cfs @ 8.28 hrs, Volume= 2.568 af

Routing by Stor-Ind method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 428.52' @ 8.28 hrs Surf.Area= 945 sf Storage= 1,006 cf

Plug-Flow detention time= 10.2 min calculated for 2.565 af (100% of inflow)
Center-of-Mass det. time= 10.2 min (760.1 - 749.9)

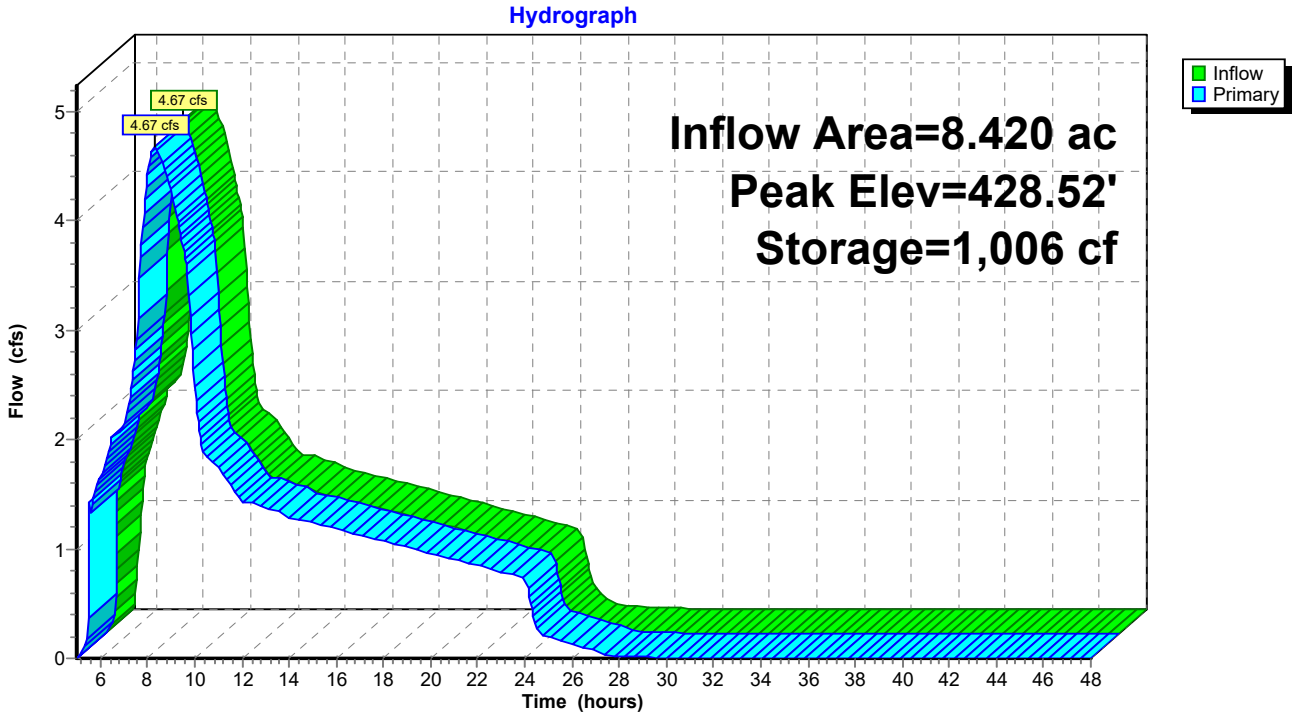
Volume	Invert	Avail.Storage	Storage Description
#1	426.25'	10,030 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
426.25	1,756	0.0	0	0
426.75	1,756	40.0	351	351
427.00	1,756	30.0	132	483
428.50	937	25.0	505	988
430.50	1,756	100.0	2,693	3,681
433.00	3,323	100.0	6,349	10,030

Device	Routing	Invert	Outlet Devices
#1	Primary	426.25'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 426.25' / 426.20' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	425.25'	**2.5" Horiz. Lower Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	427.95'	**9.0" Horiz. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	428.25'	**6.3' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=4.71 cfs @ 8.28 hrs HW=428.52' (Free Discharge)
└**1=Culvert** (Passes 4.71 cfs of 5.03 cfs potential flow)
  ├**2=Lower Orifice** (Orifice Controls 0.25 cfs @ 7.25 fps)
  ├**3=Upper Orifice** (Orifice Controls 1.60 cfs @ 3.63 fps)
  └**4=Sharp-Crested Rectangular Weir** (Weir Controls 2.85 cfs @ 1.70 fps)

Pond 10P: Public Detention Pond 100 yr Overflow



APPENDIX D

WES BMP SIZING TOOL REPORT

WES BMP Sizing Report

Project Information

Project Name	Oregon City Commercial Masterplan
Project Type	Commercial
Location	Mollala Ave and Beavercreek Rd, Oregon City
Stormwater Management Area	0
Project Applicant	Cypress Acquisitions LLC
Jurisdiction	CCSD1NCSA

Drainage Management Area

Name	Area (sq-ft)	Pre-Project Cover	Post-Project Cover	DMA Soil Type	BMP
PUP-1	6,085	Forested	LandscapeCsoil	C	Public Rain Garden
PUI-1	31,087	Forested	ConventionalConcrete	C	Public Rain Garden
PRI-2	180,369	Forested	ConventionalConcrete	C	Public Rain Garden
PRP-2	20,996	Forested	LandscapeCsoil	C	Public Rain Garden
PRI-1	72,516	Forested	ConventionalConcrete	C	Public Rain Garden
PRP-1	6,366	Forested	LandscapeCsoil	C	Public Rain Garden
PUI-2	70,148	Forested	ConventionalConcrete	C	Public Rain Garden
PUP-2	16,380	Forested	LandscapeCsoil	C	Public Rain Garden
PRI-3	52,512	Forested	ConventionalConcrete	C	Private Rain Garden
PRP-3	13,774	Forested	LandscapeCsoil	C	Private Rain Garden

LID Facility Sizing Details

LID ID	Design Criteria	BMP Type	Facility Soil Type	Minimum Area (sq-ft)	Planned Areas (sq-ft)	Orifice Diameter (in)
Public Rain Garden	WaterQuality	Rain Garden - Filtration	Lined	5,685.5	6,000.0	3.1
Private Rain Garden	WaterQuality	Rain Garden - Filtration	Lined	891.0	1,700.0	1.2

Pond Sizing Details

Pond ID	Design Criteria(1)	Facility Soil Type	Max Depth (ft)(2)	Top Area (sq-ft)	Side Slope (1:H)	Facility Vol. (cu-ft)(3)	Water Storage Vol. (cu-ft)(4)	Adequate Size?
Public Detention Pond	FCWQT	Lined	4.00	1,450.0	3	2,911.8	1,904.8	Yes
Private Detention Pond	FCWQT	Lined	4.00	700.0	3	1,027.7	743.0	Yes

1. FCWQT = Flow control and water quality treatment, WQT = Water quality treatment only

2. Depth is measured from the bottom of the facility and includes the three feet of media (drain rock, separation layer and growing media).

3. Maximum volume of the facility. Includes the volume occupied by the media at the bottom of the facility.

4. Maximum water storage volume of the facility. Includes water storage in the three feet of soil media assuming a 40 percent porosity.

Simple Pond Geometry Configuration

Pond ID: Public Detention Pond
Design: FlowControlAndTreatment

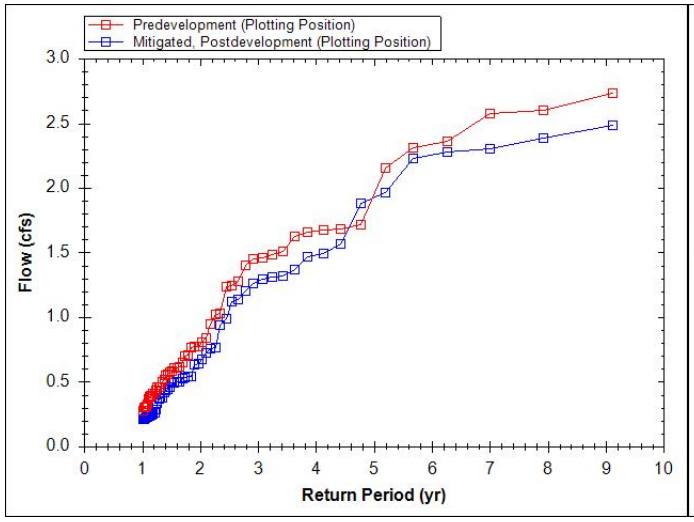
Shape Curve

Depth (ft)	Area (sq ft)
4.0	1,450.0

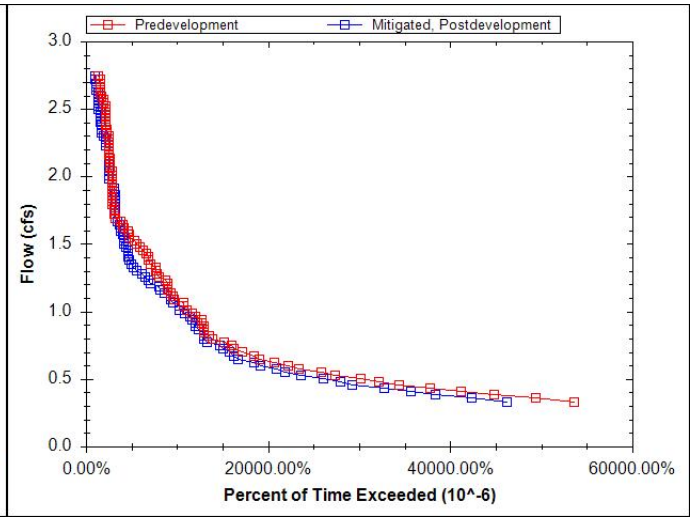
Outlet Structure Details

Lower Orifice Invert (ft)	0.0
Lower Orifice Dia (in)	2.5
Upper Orifice Invert(ft)	2.7
Upper Orifice Dia (in)	9.0
Overflow Weir Invert(ft)	3.0
Overflow Weir Length (ft)	6.3

Flow Frequency Chart



Flow Duration Chart



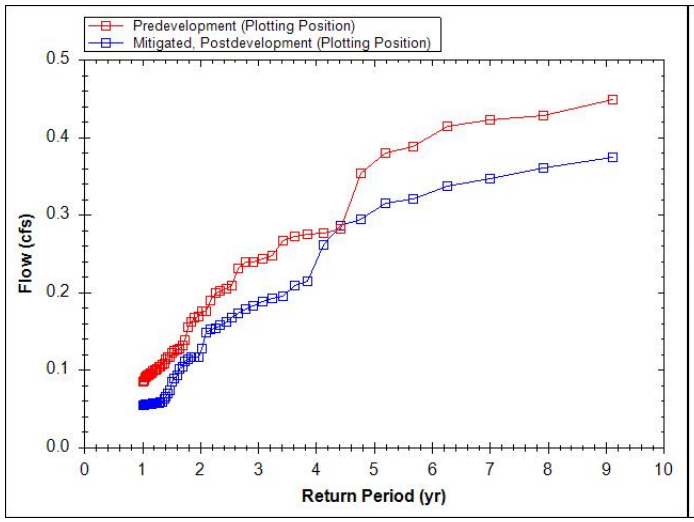
Custom Pond Geometry Configuration

Pond ID: Private Detention Pond
Design: FlowControlAndTreatment

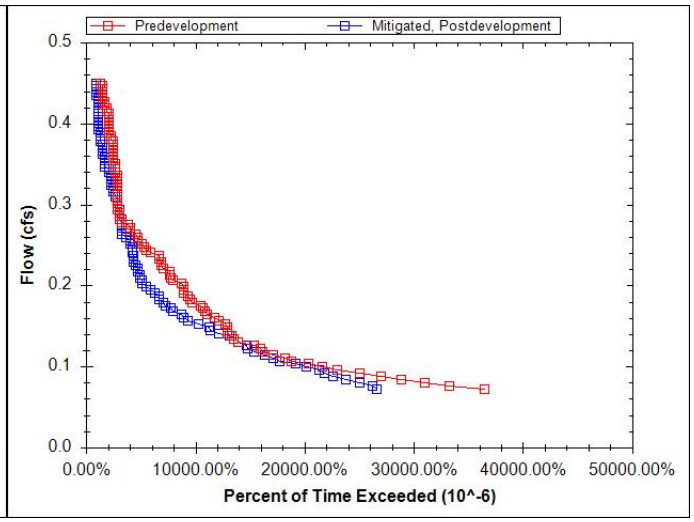
Shape Curve

Depth (ft)	Area (sq ft)	Discharge (cfs)
NaN	700.0	NaN
NaN	NaN	NaN

Flow Frequency Chart



Flow Duration Chart



APPENDIX A
Pre-Application Notes

OREGON CITY
Community Development – Planning
695 Warner Parrott Road | Oregon City OR 97045
Ph (503) 722-3789 | Fax (503) 722-3880

Pre-Application Conference Notes
PA-25-00016 – April 22, 2025
Draft Notes Sent: April 24, 2025
Final Notes Sent: May 1, 2025

These non-binding pre-application conference notes reflect the applicant's submission to the City along with the discussion at the meeting. The applicant has one week from the receipt of the notes to notify City staff of any perceived mistake or omission in the notes; staff will then review and respond to the inquiry, and the inquiry will be added to the City's file. If no notification is received within 7 business days, the notes will be considered final and will not be modified. See additional disclaimers at the end of this document.

Proposed Project: Development of two drive-throughs and a multi-family residential lot.

General Information:
1367 Molalla Ave, Oregon City, OR 97045
Clackamas County Map 3-2E-05DB, Tax Lots 3200, 3201, 3300, and 3400
Clackamas County Map 3-2E-05D, Tax Lots 500, 501, and 602

- Zoning: MUC-2 Mixed Use Corridor
- Geologic Hazards Overlay District: Portions of Tax lot 3200, 3400, 500 and 501
- Natural Resources Overlay District: Tax lot 500 and 501

Review Process:

- Applications Anticipated
  - Site Plan and Design Review (*OCMC 17.62*)
  - Conditional Use Permit for Drive-Through facilities in an MUC Zone (*OCMC 17.29.030.A, OCMC 17.56*)
  - Planning Commission Parking Adjustment to Exceed Maximum Parking Spaces permitted (*OCMC 17.52.015*)
  - Modification of setback for building street frontage (*OCMC 17.62.055.D – Siting of Structures*)
  - Planning Commission Variance for Drive-Aisle Location OCMC 17.62.050. B1 and C.1. * Note – Planning staff does not support a variance from this standard.
  - Planning Commission variance for MUC-2 front yard setback and corner side yard setback, unless one additional pedestrian amenities is provided per additional five feet of setback (*OCMC 17.29.060.G.1 and G.3)*.

This application is a **Type III** decision process involving a site plan and design review application. Pursuant with *OCMC Section 17.50.050*, a pre-application conference is valid for a period of six months. The applicant has **180 days** from the date of submittal of a land use application to have a complete application.

Upon a complete application submittal, the applicant is entitled to a decision from the city of approval, approval with conditions, or denial within **120 days** by state law. Type III decisions require a minimum of one public hearing before the Planning Commission and involve the greatest amount of discretion and evaluation of subjective approval standards yet are not required to be heard by the City Commission except upon appeal.

Site Plan and Design Review:

Staff Comments to consider:

1. Intent of the MUC Zone District. Development on this site should conform as much as possible to the intent of the zoning:
   OCMC 17.29.010 – [Mixed Use Corridor] Designated
   The mixed-use corridor (MUC) district is designed to apply along selected sections of transportation corridors... Land uses are characterized by high-volume establishments such as retail, service, office, multi-family residential, lodging, recreation and meeting facilities, or a similar use as defined by the community development director. A mix of high-density residential, office, and small-scale retail uses are encouraged in this district. Moderate density (MUC-1) and high density (MUC-2) options are available within the MUC zoning district.

2. Multi-family residential is a permitted use in the MUC-2 zoning district, subject to Site Plan and Design Review standards.
   OCMC 17.29.020.M – Permitted uses

3. Conditional Use. According to MUC-2 Zoning Conditional Uses, a Drive-through facility requires a **Conditional Use Permit process** (see below).
   OCMC 17.29.030 - Conditional Uses – MUC-1 and MUC-2 zones.
   The following uses are permitted in this district when authorized and in accordance with the process and standards contained in OCMC 17.56:
   A. Drive-through facilities;

4. Building Heights and Elevations. The site plan does not mention building heights and no elevation plans have been submitted; therefore, its compliance with the following code cannot be determined at this time:
   OCMC 17.29.060 – Dimensional Standards – MUC-2.
   B. Minimum building height: Twenty-five feet or two stories except for accessory structures or buildings under one thousand square feet.

   Further minor pre-application conferences will be required for review of building elevations and designs prior to site plan and design review application.

5. The site plan proposes a building location that does not appear to comply with the Dimensional Standards of the Zone. (Parcel B – Multi Family residential cannot be determined since the structure is not shown in the site plan.)
   OCMC 17.29.060 – Dimensional Standards – MUC-2.
   G. Maximum Allowed Setbacks.
   1. Front Yard: five feet. (Parcel A & Parcel D)
   3. Corner Side Yard abutting street: Twenty feet (Parcel A)

   The structure on Parcel A appears to be 69 feet from the front property line along Molalla Ave and 36 feet from the corner side yard property line along the private street. The structure on Parcel D appears to be 61 feet from the front property line. Setbacks may be increased through the Type II process

pursuant to OCMC 17.62.055.D (Siting of Structures) through the provision of one additional pedestrian element for each additional five feet of setback. If no building position adjustments are made, or additional pedestrian elements provided, approval of this site plan would have to go through the **Type III Variance process (**see below).

6. The applicant's submittal does not include documents that show a landscaping plan. Until that aspect is submitted, its compliance with the following code cannot be determined.
OCMC 17.29.060 – Dimensional Standards – MUC-2.
I. Minimum landscaping requirement (including parking lot): Ten percent.

7. The site plan proposes a parking lot with more than the maximum number of automobile spaces allowed by its land use type:
OCMC 17.52.020 – Number of automobile spaces required.
A. The number of parking spaces shall comply with the minimum and maximum standards listed in Table 17.52.020. The parking requirements are based on spaces per one thousand square feet net leasable area unless otherwise stated.
B. ***Table 17.52.020***

Land Use	*Parking Requirements*	
	Minimum	*Maximum*
Retail store, shopping center, restaurants	*4.10*	*5.00*
Multi-family residential	1.00 per unit	2.5 per unit

The building's listed square footage on Parcel D totals 3,800 square feet and would therefore be allowed a maximum number of 19 spaces at the site. The current site plan shows 95 spaces. Parcel A totals 2,100 square feet and would therefore be allowed a maximum of 11 spaces. Parcel B (multi-family) maximum spaces cannot be determined as no plans have been submitted. If no parking lot adjustments are made, approval of this site plan would be subject to the **Type III Planning Commission Adjustment of Parking Standards** process (see below).

Climate Friendly and Equitable Communities
The City is in the process of implementing state-mandated parking code reforms called Climate-Friendly and Equitable Communities (CFEC) (PDF). Among other requirements, the City cannot require any minimum parking within ½ mile of frequent transit corridors. They reduce minimum parking requirements for certain new developments. The following rules went into effect Statewide on January 1, 2023 and will be fully adopted locally before June 30, 2025. Additionally, these requirements require:

- EV Charging Capability for 40% of new parking lot spaces for Multi-Family Development
- EV Charging Capability for 20% of new parking lot spaces for Commercial Development
- 40% tree canopy coverage of parking lots at maturity
- Incentives for solar, wind power within parking lots.

While the minimum parking requirements may have been reduced, all maximum parking space limits will remain.

8. The Development should conform to the bicycle parking standards in OCMC 17.52.040 Bicycle parking standards.

Table A Required Bicycle Parking Spaces
Where two options for a requirement are provided, the option resulting in more bicycle parking applies. Where a calculation results in a fraction, the result is rounded up to the nearest whole number.

Use	Minimum Bicycle Parking	Minimum Bicycle Parking — Covered — The following percentage of bicycle parking is required to be covered
Multi-family (five or more units)	1 per 10 units (minimum of 2)	50% (minimum of 1)
Eating and drinking establishment	1 per 20 auto spaces (minimum of 2)	0%

Based on the maximum parking space requirement above, Parcel A and Parcel D would require 2 bicycle parking spaces and Parcel B is undetermined as no plans were submitted.

9. Development should conform to Parking Lot Landscaping Requirements. Since no landscaping plan was submitted with the Pre-Application Submittal, its compliance with ***OCMC 17.52.060 – Parking Lot Landscaping***, is unclear.
   See OCMC 17.52.060 – Parking Lot Landscaping (relevant sections) for relevant development standards.

10. General Standards. The site plan proposes parking areas that do not appear to comply with the vehicular access and connectivity standards:
    OCMC 17.62.050.B.1 Vehicular Access and Connectivity.
    1. Parking areas shall be located behind the building façade that is closest to the street, below buildings, or on one or both sides of buildings.

    The site plan shows parking areas in front of the building. The applicant may apply for a **Type III Variance** (see below).

11. General Standards. The site plan does not appear to comply with pedestrian pathway standards.
    OCMC 17.62.050.C.1 A well-marked, continuous and protected on-site pedestrian circulation system meeting the following standards shall be provided.
    1. Pathways between all building entrances and the street are required. Pathways between the street and buildings fronting on the street shall be direct and not cross a drive aisle. Exceptions may be allowed by the director where steep slopes, a physically constrained site, or protected natural resources prevent a direct connection or where an indirect route would enhance the design and/or use of a common open space.

    The site plan does not indicate that there will be a pedestrian circulation system with direct pathways that ***does not cross the drive aisle***. The applicant may apply for a **Type III Variance** (see below)

12. Development should conform to the Site Plan & Design Review Purpose for its development type:
    OCMC 17.62.055 – Institutional, office, multi-family, retail, and commercial building standards.
    Purpose. The primary objective of the regulations contained in this section is to provide a range of design choices that promote creative, functional, and cohesive development that is compatible with surrounding areas. Buildings approved in compliance with these standards are intended to serve multiple tenants over the life of the building and are not intended for a one-time occupant. The standards encourage people to spend time in the area, which also provides safety though informal surveillance. Finally, this section is intended to promote the design of an urban environment that is built to human scale by creating buildings and streets that are attractive to pedestrians, create a sense of enclosure, provide activity and interest at the intersection of the public and private spaces, while also accommodating vehicular movement.

13. Siting of Structures. The site plan proposes a building location that does not appear to comply with the Siting of Structures aspect of the City's retail/commercial building standards:

OCMC 17.62.055 – Institutional, office, multi-family, retail, and commercial building standards.

D. Siting of Structures. On sites with one hundred feet or more of frontage at least sixty percent of the site frontage width shall be occupied by buildings placed within five feet of the property line.

The applicant may apply for a Type II Modification of this standard per OCMC 17.62.015, provided the alternative meets the intent of the standards. If a Type II Modification that better meets the design standard is not approved, the applicant may apply for a **Type III Variance** (see below).

The multi-family use on Parcel B will require a separate pre-application. Compliance with applicable standards cannot be determined.

14. Building Orientation. The site plan proposes a building orientation that makes its compliance with the Building Orientation aspect of the City's retail/commercial building standards, unclear:

OCMC 17.62.055 – Institutional, office, multi-family, retail, and commercial building standards.

E. Building Orientation. All buildings along the street frontage shall face the front most architecturally significant facade toward the street and have a functional primary entrance facing the street. Primary building entrances shall be clearly defined and recessed or framed by a sheltering element such as an awning, arcade or portico in order to provide shelter from the summer sun and winter weather.

Without elevation drawings for the site, it is unclear where the front most architecturally significant façade faces. Planning can't determine compliance with the code. According to the current site plan, the functional primary entrance of the building on Parcel A appears to face the parking lot to the east of the building and the entrance on Parcel D appears to face the parking lot at the north end of the building. The primary entrances must face the street.

15. Entryways. The Applicant's submittal does not contain elevation drawings. Therefore, its compliance with the Entryways aspect of the City's retail/commercial building standards is unclear:

OCMC 17.62.055 – Institutional, office, multi-family, retail, and commercial building standards.

F. Entryways. Entrances shall include a doorway and a minimum of four of the following elements:

1. Display windows; recesses or projections; peaked roof or raised parapet over the door; canopy of at least five feet in depth; porch; distinct materials; architectural details such as tile work and moldings; pedestrian amenities such as benches, planters or planter boxes; landscape treatments integrating arbors, low walls, trellis work; or similar elements. Trellises, canopies and fabric awnings may project up to five feet into front setbacks and public rights-of-way, provided that the base is not less than eight feet at the lowest point and no higher than ten feet above the sidewalk.

16. Design Elements. The Applicant's submittal does not contain elevation drawings. Therefore, its compliance with the Design Elements aspect of the City's retail/commercial building standards is unclear:

OCMC 17.62.055 – Institutional, office, multi-family, retail, and commercial building standards.

I. Building Design Elements.

1. All front and side facades shall provide a design element or architectural feature that add interest and detail such that there are no blank walls of thirty feet in length or more, measured horizontally. Features that can meet this requirement include:

a. Change in building material or texture;

b. Window or door;

c. Balcony; or

d. Pillar or post.

2. Street facing facades shall include additional design features. For every thirty feet of façade length, three of the following elements are required:

a. Decorative materials on more than ten percent of the total wall area (e.g., brick or stonework, shingles, wainscoting, ornamentation, and similar features);

b. Decorative cornice and/or roof line (e.g., for flat roofs);

c. Roof gable;

d. Recessed entry;

e. Covered canopy entry;

f. Cupola or tower;

g. Dormer;

h. Balcony;

i. Pillars or posts;

j. Repeating pattern of building materials;

k. A change in plane of at least two feet in width and six inches in depth;

l. Bay or oriel window; or

m. An alternative feature providing visual relief and detail as approved by the community development director.

3. Building Detail Variation. Architectural features shall be varied on different buildings within the same development. At least two of the required features on each street-facing elevation shall be distinct from the street-facing elevations of other buildings within the same development.

17. Windows. The Applicant's submittal does not contain elevation drawings. Therefore, its complance with the Windows aspect of the City's retail/commercial building standards is unclear:

OCMC 17.62.055 – Institutional, office, multi-family, retail, and commercial building standards.

J. Windows.

1. The minimum windows requirements are set forth in Table 17.62.055.J. Windows are measured in lineal fashion between 3.5 feet and six feet from the ground. For example, a one hundred-foot long building elevation would be required to have at least sixty feet (sixty percent of one hundred feet) of windows in length between the height of 3.5 feet and six feet from the ground.

Table 17.62.055.J
Minimum Windows

Use	*Ground Floor: Front and Street Facing Facades*	*Upper Floor(s): Front and Street Facing Facades*	*Ground Floor: Side(s) Facades*	*Upper Floor(s): Side(s) Facades*
Non-Multi-Family (or Portions of Buildings Thereof)	*60%*	*10%*	*30%*	*10%*
Multi-Family (or Portions of Buildings Thereof)	*15%*	*15%*	*10%*	*10%*

2. Reflective, glazed, mirrored or tinted glass is limited to ten percent of the lineal footage of windows on the street facing facade. Highly reflective or glare-producing glass with a reflective factor of one-quarter or greater is prohibited on all building facades. Any glazing materials shall have a maximum fifteen percent outside visual light reflectivity value. No exception shall be made for reflective glass styles that appear transparent when internally illuminated.
3. Side walls that face walkways may include false windows and door openings only when actual doors and windows are not feasible because of the nature of the use of the interior use of the building. False windows located within twenty feet of a right-of-way shall be utilized as display windows with a minimum display depth of thirty-six inches.

18. Roof Treatments. The Applicant's submittal does not contain elevation drawings. Therefore, its compliance with the Roof Treatments aspect of the City's retail/commercial building standards is unclear:
OCMC 17.62.055 – Institutional, office, multi-family, retail, and commercial building standards.
K. Roof Treatments. The maximum length of any continuous roofline on a street-facing façade shall be seventy-five feet without a cross gable or change in height of at least two feet.

19. Drive-through facilities. The submitted site plan does not appear to comply with Drive-through facilities standards. Approval of a drive-through located in front of the building would have to go through the **Type III Variance process** (see below).
OCMC 17.62.055 – Institutional, office, multi-family, retail, and commercial building standards.
L. Drive-through facilities shall:
1. Be located at the side or rear of the building.
2. Be designed to maximize queue storage on-site.

20. Transit Streets. The Applicant's submittal does not contain elevation drawings. Therefore, its compliance with the Special Development standards along transit streets aspect of the City's retail/commercial building standards is unclear:
OCMC 17.62.055 – Institutional, office, multi-family, retail, and commercial building standards.
M. Special development standards along transit streets.
1. Purpose. This section is intended to provide direct and convenient pedestrian access to retail, office and institutional buildings from public sidewalks and transit facilities and to promote pedestrian and transit travel to commercial and institutional facilities.
2. Applicability. Except as otherwise provide in this section, the requirements of this section shall apply to the construction of new retail, office and institutional buildings which front on a transit street.
3. Development Standards.
a. All buildings shall have at least one main building entrance oriented towards the transit street. A main building entrance is oriented toward a transit street if it is directly located on the transit street, or if it is linked to the transit street by an on-site pedestrian walkway that does not cross off-street parking or maneuvering areas.

Molalla Ave is a transit street, with bus stops near the subject site. According to the current site plan, the functional primary entrance on Parcel A appears to face the parking lot east of the building and Parcel D appears to face the parking lot north of the building. Therefore, elevation drawings would need to show compliance with 17.62.055.M.3.a, and by orienting the main building entrances toward Molalla Ave.

21. Multi-Family Open Space. The development should conform to multi-family usable open space requirements. No plans have been submitted; therefore, its compliance with open space requirements is unclear.

OCMC 17.62.057 – Multi-family open space requirements.

A. Intent. Creating areas of usable open space that are easily accessed by residents provides focal points for community recreation and interaction and adds to the overall quality of life for residents. Given the environmental and recreational benefits of common open space, it should be integrated purposefully into the overall design of a development and not merely be residual areas left over after buildings and parking lots are sited.

B. Open Space Required. All new multi-family developments in all zones shall provide usable open space.

1. In residential zones, each development shall provide a minimum of one hundred square feet of open space per dwelling unit.

2. In nonresidential, commercial and mixed-use zones, each development shall provide a minimum of fifty square feet of open space per dwelling unit.

3. Required setback areas shall not count toward the open space requirement unless setback areas are incorporated into spaces that meet all other requirements of this section.

4. Required open space areas may be counted towards both the open space requirements and the minimum landscaping requirements in OCMC 17.62.050.A, if the spaces meet the requirements of both sections.

C. Usable Open Space Types.

1.Common open spaces shall be accessible to all residents of the development and include landscaped courtyards, decks, gardens with pathways, children's play areas, common rooftop decks and terraces, and other multipurpose recreational or green spaces. Common open spaces may be used to meet one hundred percent of the usable open space requirement. Design standards:

a. Minimum dimensions for common open space shall be twelve feet with a minimum size of two hundred square feet for developments with twenty units or less, and twenty feet with a minimum size of four hundred square feet for developments with twenty-one or more units.

b. Common open space shall feature a mix of natural and recreational amenities to make the area more functional and enjoyable for a range of users. Sites with twenty units or less shall provide a minimum of two of the following amenities, and sites with twenty-one units or more shall provide a minimum of three of the following amenities and an additional amenity for every twenty units over forty, rounded up.

1. Landscaping areas.

2. Community gardening areas.

3. Large trees expected to reach over eighteen inches dbh at maturity.

4. Seating.

5. Pedestrian-scaled lighting.

6. Hard-surfaced pedestrian paths in addition to those required for internal pedestrian circulation.

7. Paved courtyard or plaza.

8. Gazebos or other decorative shelters.

9. Play structures for children.

10. Sports courts.

11. An alternative amenity as approved by the community development director.

c. Common open space shall be separated from ground level windows, streets, service areas and parking lots with landscaping, low-level fencing, and/or other

treatments as approved by the city that enhance safety and privacy for both the common open space and dwelling units.

d. Common open space shall be accessible from the dwelling units and, as appropriate, from public streets and sidewalks. The space shall be oriented to encourage activity from local residents.

2. Private open space that is not open to all residents includes balconies, patios, and other outdoor multi-purpose recreational or green spaces. It may be used to meet up to fifty percent of the usable open space requirement.

a. Minimum dimensions for private open space shall be five feet with a minimum size of forty square feet.

3. Indoor recreational space may be used to meet up to twenty-five percent of the usable open space requirement provided the space is:

a. Accessible to all dwelling units.

b. Designed for and includes equipment for a recreational use (e.g., exercise, group functions, etc.).

Conditional Use Permit:

A Conditional Use Permit is required to approve the development of drive-through facilities in the subject site's Mixed-Use Corridor 2 (MUC-2) zoning pursuant to *OCMC 17.29.030.A*.

Conditional Use applications are processed as **Type III Land Use Applications**. Once an application is submitted, it is reviewed for completeness purposes within 30 days. Upon a complete application submittal, the applicant is entitled to notification from the City for a decision of approval, approval with conditions, or denial, within 120 days of deeming the application complete, by state law. Type III decisions include a staff recommendation and a decision by the Planning Commission, with appeal on the record to the City Commission, and then onto LUBA.

Conditional Use Permits and Processes are governed by *OCMC 17.56 – Conditional Uses*, and the Applicant shall provide all applicable information required in its **Permit – Authorization – Standards – Conditions** (*OCMC 17.56.010*) and **Permit – Application** (*OCMC 17.56.020*) sections:
Submitted plans should conform to the standards noted in *OCMC 17.56.010,* as well as the Code's **Criteria and standards for conditional uses** (*OCMC 17.56.040*).

OCMC 17.56.010 - Permit—Authorization—Standards—Conditions.
A. Conditional uses, because of their public convenience and necessity and their effect upon the neighborhood shall be permitted only upon the approval of the planning commission or city commission after due notice and public hearing, according to procedure as provided in OCMC 17.50. The applicant shall provide evidence substantiating that all the requirements of this title relative to the proposed use are satisfied, and demonstrate that the proposed use also satisfies the following criteria:
1. The use is listed as a conditional use in the underlying district;
2. The characteristics of the site are suitable for the proposed use considering size, shape, location, topography, existence of improvements and natural features;
3. Development shall demonstrate compliance with OCMC 16.12;
4. The proposed use will not alter the character of the surrounding area in a manner which substantially limits, impairs or precludes the use of surrounding properties for the primary uses listed in the underlying district;
5. The proposal satisfies the goals and policies of the city comprehensive plan which apply to the proposed use.

B. Permits for conditional uses shall stipulate restrictions or conditions which may include, but are not limited to, a definite time limit to meet such conditions, provisions for a front, side or rear yard greater than the minimum dimensional standards of the zoning ordinance, suitable landscaping, off-street parking, and any other reasonable restriction, condition or safeguard that would uphold the spirit and intent of the zoning ordinance, and mitigate adverse effect upon the neighborhood properties by reason of the use, extension, construction or alteration allowed as set forth in the findings of the planning commission.
C. Any conditional use shall meet the dimensional standards of the zone in which it is to be located pursuant to subsection B of this section unless otherwise indicated, as well as the minimum conditions listed below.
D. In the case of a use existing prior to the effective date of the ordinance codified in this title and classified in this title as a conditional use, any change of use expansion of lot area or expansion of structure shall conform with the requirements for conditional use.
E. The planning commission may specifically permit, upon approval of a conditional use, further expansion to a specified maximum designated by the planning commission without the need to return for additional review.

OCMC 17.56.040 – Criteria and standards for conditional uses

In addition to the standards listed herein in OCMC 17.56.010, which are to be considered in the approval of all conditional uses and the standards of the zone in which the conditional use is located, the following additional standards shall be applicable:

> ***A. Building Openings.*** *The city may limit or prohibit building openings within fifty feet of residential property in a residential zone if the openings will cause glare, excessive noise or excessive traffic which would adversely affect adjacent residential property as set forth in the findings of the planning commission.*
>
> ***B. Additional Street Right-of-Way.*** *The dedication of additional right-of-way may be required where the city plan indicates need for increased width and where the street is inadequate for its use; or where the nature of the proposed development warrants increased street width.*

Variances:

Based on the Applicant's site plan submission, the proposal appears to require two variances. They relate to:

1. Variance from drive-through facility standards in *OCMC 17.62.055.L* that require the drive aisle to be located at the side or rear of the building and be designed to maximize queue storage on-site. The current site plan indicates the drive aisles are along the street frontages. Along with a variance from General Standard OCMC 17.62.050.C.1. *Pathways between the street and buildings fronting on the street shall be direct and not cross a drive aisle.*
2. Variance from General Standard OCMC 17.62.050.B.1. *Parking areas shall be located behind the building façade that is closest to the street, below buildings, or on one or both sides of buildings.*

Staff cannot recommend approval of variances 1, and 2 since they do not appear to meet the intent of the site plan and design standards, although the applicant may still apply for them. The nature and extent of these Variances are beyond the scope of what can be considered a Minor Variance (*OCMC 17.60.020.D and OCMC 17.60.020.E*) and are therefore both Major Variances and subject to a Type III Variance process. As a result, according to procedures set forth in *OCMC 17.60.030*, the planning commission may authorize variances. In granting a variance, the planning commission may attach conditions to protect the best interests of the surrounding property or neighborhood and otherwise achieve the purposes of this title. No variances shall be granted to allow the use of property for a purpose not authorized within the zone in which the proposed use would be located (*OCMC 17.60.010*).

The procedures for the Variance process are outlined in the Code as follows:

Variances may be granted on the following grounds, pursuant to the Applicant's establishment that these grounds are satisfied through their submissions:

OCMC 17.60.030 – Variances – Grounds

A. That the variance from the requirements is not likely to cause substantial damage to adjacent properties by reducing light, air, safe access or other desirable or necessary qualities otherwise protected by this title;

B. That the request is the minimum variance that would alleviate the hardship;

C. Granting the variance will equal or exceed the purpose of the regulation to be modified.

D. Any impacts resulting from the adjustment are mitigated;

E. No practical alternatives have been identified which would accomplish the same purpose and not require a variance; and

F. The variance conforms to the comprehensive plan and the intent of the ordinance being varied.

Since elevation drawings were not provided for review, additional Variances may be required if future elevation drawings do not conform to the codes outlined above.

Planning Commission Adjustment of Parking Standards:

- A Planning Commission adjustment of parking standards is required if the applicant is requesting more than the maximum number of permitted parking stalls.
- Approval Criteria for Parking Adjustments
    - Documentation: The applicant shall document that the individual project will require an amount of parking that is different from that required after all applicable reductions have been taken.
        - The documentation should demonstrate that alternative measures, such as transportation demand management strategies that have been explored as an alternative to requesting additional parking (transit, carpooling, incentives for employees or customers to utilize alternative transportation modes). The applicant may contact Trimet for more information on their commuter benefit and/or transit pass program at RhodesDo@trimet.org.
    - Parking analysis for surrounding uses and on-street parking availability: The applicant must show that there is a continued fifteen percent parking vacancy in the area adjacent to the use during peak parking periods and that the applicant has permission to occupy this area to serve the use pursuant to the procedures set forth by the community development director.
        - For the purposes of demonstrating the availability of on street parking as defined in [Section] 17.52.020.B.3., the applicant shall undertake a parking study during time periods specified by the community development director. The time periods shall include those during which the highest parking demand is anticipated by the proposed use. Multiple observations during multiple days shall be required. Distances are to be calculated as traversed by a pedestrian that utilizes sidewalks and legal crosswalks or an alternative manner as accepted by the community development director.
            - Minimum of five days (weekends and weekdays)
            - Two hour increments during hours of operation
        - The onsite parking requirements may be reduced based on the parking vacancy identified in the parking study.
    - Function and Use of Site: The applicant shall demonstrate that modifying the amount of required parking spaces will not significantly impact the use or function of the site and/or adjacent sites.
    - Compatibility: The proposal is compatible with the character, scale and existing or planned uses of the surrounding neighborhood.

- Safety: The proposal does not significantly impact the safety of adjacent properties and rights-of-way.
- Services: The proposal will not create a significant impact to public services, including fire and emergency services.

Transportation Impacts:
The applicant will need to have a traffic engineer conduct a transportation study in conformance with the City's Guidelines for Transportation Impact Analyses available on the Oregon City website. See DKS notes for more details.

Tree Protection/Mitigation and Street Trees
Tree removal during the land development process is subject to compliance with tree protection and mitigation standards.

- Street trees are subject to OCMC Chapter 12.08. A street tree plan demonstrating compliance with OCMC 12.08 is required
- The applicant's submittal should identify species and size of all existing trees greater than 6" DBH onsite.
- Tree removal is subject to OCMC Chapter 17.41
- Tree protection standards can be found in OCMC Section 17.41.130

A mitigation plan prepared by a qualified professional is required in accordance with OCMC Chapter 17.41.

Alternative option: **Master Plans and Planned Unit Developments**
OCMC 17.65.010 – Purpose and Intent - It is the intent of this chapter to foster the growth of major institutions, phased residential, commercial or mixed-use development, and other large-scale development, while identifying and mitigating the impacts of such growth on surrounding properties and public infrastructure. The city recognizes the valuable housing options, services and/or employment opportunities that these developments bring to Oregon City residents. The master plan or planned unit development process is intended to facilitate an efficient and flexible review process for major developments, support innovative and creative land development, and to provide long-term assurance to plan for and execute developments in a phased manner. To facilitate this, the master plan process is structured to allow an applicant to address larger development issues, such as adequacy of infrastructure and transportation capacity, and reserve capacity of the infrastructure and transportation system before expenditure of final design costs. The master plan or planned unit development process is further intended to promote efficiency in land development, maintenance, street systems and utility networks while providing site layouts that integrate usable and attractive open spaces, site circulation, and the general wellbeing of site users. For the purposes of this chapter planned unit developments are considered the same as master plans.

OCMC 17.65.030 – Applicability of the master plan or planned unit development regulations.

D. Voluntarily. An applicant may voluntarily submit a master plan or planned unit development as part of a land use review, including for residential projects.

Master planning is a Type III land use application, and it allows an applicant both flexibility and predictability to do various things, including:

- Vest the current version of the development code at the time of application.
- Phase development of large sites with multiple tenants up to 20 years.
- Propose mitigation and infrastructure for land use impacts in phases over the term of the master plan.
- Request adjustments to development standards, similar to a variance
- The applicant may wish to further discuss the master plan review process with Planning staff at a separate meeting which we can set up via Zoom.

Other notes:
A neighborhood association meeting is required for Type III applications. The proposed development is within the Hillendale Neighborhood Association.

Please include the Citizen Involvement Chiefs Liaison, Josh Kayser, in any Neighborhood Association meeting requests, notifications or correspondence. Josh can be reached at ncecowboy1@gmail.com. Land Use Chair, William Gifford can be reached at william@smallflags.com.

Your application was transmitted to the State Historic Preservation Office (SHPO) and affected tribes for review. Comments received will be provided to the applicant.

Renderings are highly encouraged when applications will be reviewed by the Planning Commission.

We encourage a diversity of tree species throughout your development.

The 2025 Planning applications and fees include:

- **Site Plan and Design Review:**

Construction Cost	Application Fee
Less than $500,000	$2,855 plus 0.007 x project cost
$500,000 to $3,000,000	$4,743 plus 0.005 x project cost
Over $3,000,000	$16,082 plus 0.003 x project cost
Maximum fee	$75,337

- **Conditional Use Permit:** $5,218
- **Type III Parking Adjustment:** $1,322
- **Type III Variance**, Building Lot Frontage: $3,443
- **Type III Variance**, Front Yard/Corner Lot Side Setback: $3,443
- **Incomplete Applications**: No charge for first incomplete submittal, $381 for each incomplete submittal thereafter
- **Re-Notice Application**: $794

Please review the 2025 fee schedule.

Applications, Checklists, and Links

- Type III Review Process
- Variance Application
- Conditional Use Permit Application
- Conditional Use Checklist
- Land Use Application
- Site Plan and Design Review Construction Cost Form
- Site Plan and Design Review Checklist
- Oregon City Adopted Tree List
- Oregon City Municipal Code

Planning Division
Melissa Lopez, Assistant Planner with the Oregon City Planning Division, reviewed your pre-application submittal for the Planning Division. Jude may be reached at 503.496.1543 or mlopez@orcity.org.

Development Services Division (Utilities/Public Improvements/SDC's etc):

Erik Nichols, Projects Engineer with the Oregon City Development Services Division reviewed your pre-application submittal for the Development Services Division. Josh may be reached at 503.204.4631 or enichols@orcity.org.

Building Division:
Your application was transmitted to our Building Official. You may contact Jim Sayers, Building Official, at 503.496.1517 or jsayers@orcity.org if you have any building related questions.

Clackamas County Fire:
Your application was transmitted to Mike Boumann, Lieutenant Deputy Fire Marshal of Clackamas County Fire District #1. Notes were submitted for this application. You may contact Mr. Boumann at 503.742.2660 or at mike.boumann@ClackamasFire.com .

Oregon City Municipal Code Criteria:
The following chapters of the Oregon City Municipal Code (OCMC) may be applicable to this proposal:
OCMC 12.04 – Streets, Sidewalks and Public Places
OCMC 12.08 – Public and Street Trees
OCMC 13.12 – Stormwater Management
OCMC 15.48 – Grading, Filling and Excavating
OCMC 17.29 – "MUC" Mixed Use Corridor District
OCMC 17.41 – Tree Protection Standards
OCMC 17.47 – Erosion and Sediment Control
OCMC 17.50 – Administrative Processes
OCMC 17.52 – Off-Street Parking and Loading
OCMC 17.56 – Conditional Use
OCMC 17.60 – Variance Procedures & Criteria
OCMC 17.62 – Site Plan and Design Review
OCMC 17.65 – Master Plans and Planned Unit Developments

Public Disclosure:
The purpose of a pre-application meeting is to introduce the impacts, limitations, requirements, approval standards, fees and other information that may affect the proposal (City Code 17.50.050). Omissions or failures by staff to identify all relevant applicable land use requirements or how they might affect a proposal may occur, either as a result of a limited pre-application submittal or the consideration of discretionary criteria.

All pre-application conference related communications, including these notes, are informational only. They do not substitute for a public hearing and no land use decision is rendered at this phase. Notwithstanding any representations by City staff at a preapplication conference, staff is not authorized to waive any requirements of the Oregon City Municipal Code, and any omission or failure by staff to recite to an applicant all relevant applicable land use requirements shall not constitute a waiver by the City of any standard or requirement.

Pre-application conferences are required by Section 17.50.050 of the City Code, as follows:

A. *Preapplication Conference. Prior to submitting an application for any form of permit, the applicant shall schedule and attend a preapplication conference with City staff to discuss the proposal. To schedule a preapplication conference, the applicant shall contact the Planning Division, submit the required materials, and pay the appropriate conference fee. At a minimum, an applicant should submit a short narrative describing the proposal and a proposed site plan, drawn to a scale acceptable to the City, which identifies the proposed land uses, traffic circulation, and public rights-of-way and all other*

required plans. The purpose of the preapplication conference is to provide an opportunity for staff to provide the applicant with information on the likely impacts, limitations, requirements, approval standards, fees and other information that may affect the proposal. The Planning Division shall provide the applicant(s) with the identity and contact persons for all affected neighborhood associations as well as a written summary of the preapplication conference. Notwithstanding any representations by City staff at a preapplication conference, staff is not authorized to waive any requirements of this code, and any omission or failure by staff to recite to an applicant all relevant applicable land use requirements shall not constitute a waiver by the City of any standard or requirement.

B. *A preapplication conference shall be valid for a period of six months from the date it is held. If no application is filed within six months of the conference or meeting, the applicant must schedule and attend another conference before the City will accept a permit application. The community development director may waive the preapplication requirement if, in the Director's opinion, the development does not warrant this step. In no case shall a preapplication conference be valid for more than one year.*

OREGON CITY

Public Works – Development Services

13895 Fir Street| Oregon City OR 97045
Ph (503) 657-0891

DEVELOPMENT SERVICES
PRE-APPLICATION MEETING NOTES

Planning Project Number:	PA 25-016
Address:	1367 Molalla Ave
Map Number(s):	3-2E-05DB
Tax Lot(s):	3200, 3201, 3300, and 3400
Project Name:	Multi Lot development with Fast Food
Meeting Date:	April 21, 2025
Reviewer(s):	Erik Nichols | enichols@orcity.org | 971-204-4631

Public Disclosure:
The information provided shows the possible impacts, limitations, requirements, approval standards, fees and other information that may affect the proposal (City Code 17.50.050). Omissions or failures by staff to recite all relevant applicable land use requirements to an applicant may occur, either as a result of a limited pre-application submittal or staff's interpretation of the codes at that time.

All pre-application conference related communications, including these notes, are informational only. They do not substitute for a public hearing and no land use decision is rendered at the pre-application conference. Notwithstanding any representations by City staff at a preapplication conference, staff is not authorized to waive any requirements of the Oregon City Municipal Code, and any omission or failure by staff to recite all relevant or applicable land use requirements shall not constitute a waiver by the City of any standard or requirement.

The Development Process: https://www.orcity.org/1105/Land-Use



Land Use	Permitting	Construction
Pre-Application	**Application**	**Bonding**
Completeness	**City Review**	**Shop Drawing Approval**
Public Notice/Comment	**Consultant Revision**	**Onsite Specific PreCon Mtgs**
Staff Report	**Continued back and forth**	**Onsite Specific Inspections**
Issuance	**Issuance**	**Testing**
Appeal	**Pre-Construction Meeting**	**Closeout**

General Comments

1. A complete land use application will typically include a preliminary stormwater report and preliminary construction plans showing all required improvements (E.G., roads, sidewalks, sewer, water, stormwater facilities, grading, and erosion control). The application should also include a

narrative responding to all sections of the Oregon City Municipal Code (OCMC) applicable to the proposed development. See provided checklists at https://www.orcity.org/1065/Engineering-Development-Services-Checkli

2. The City will issue a Staff Report in response to the contents of the application package provided by the applicant. Once a Staff Report is issued, staff strongly encourages a pre-design meeting with the project engineer to discuss plan requirements, conditions of approval, and process.

3. Conditions of approval contained in the Staff Report will dictate what is needed after the land use decision is issued (providing the appropriate documents E.G., construction plans, reports, etc.).

4. All applicable System Development Charges (SDC) shall be due and payable upon building permit issuance unless deferment is requested, and a financing agreement is executed. The applicant will need to complete a SDC request form, found on the City's website. https://www.orcity.org/868/System-Development-Charges-SDCs

   SDC credits, reductions, and reimbursements are solely determined by the Director of Public Works and shall follow the process listed in City Code 13.20.040 and 13.20.050.

5. The applicant may be required to sign a Non-Remonstrance Agreement for the purpose of making sanitary sewer, storm sewer, water or street improvements in the future that benefit the property and assessing the cost to benefited properties.

6. The contractor for the applicant will be required to attend a pre-construction meeting prior to any work beginning onsite.

7. All public improvements must be bonded with a 120% performance guarantee prior to the beginning of construction. Public improvements are defined as public utility extensions and roadway improvements within existing right-of-way. Public improvements may also be on private property in certain circumstances. This bond is released at the end of the construction period assuming everything is constructed as agreed upon.

8. All newly constructed public improvements shall be maintained for a two-year period following their acceptance of construction with a 15% maintenance guarantee. Newly constructed public improvements consist of those improvements within existing right of way and those that were constructed on private land to be deeded for City ownership following approval of a plat. This bond is released at the end of the maintenance period (typically 2 years).

9. PLEASE NOTE: A property is NOT allowed to plat until all public improvements have been completed to the satisfaction of the City.

10. PLEASE NOTE: A project will NOT be recommended for occupancy by Public Works to the Building Division until all public improvements are accepted by the Public Works Department.

11. PLEASE NOTE: Once the land use decision is made, permits need to be sought to be able to start construction. This process may take many months after the land use decision is made. The applicant will need to submit separately to Public Works/Engineering and Building.

12. PLEASE NOTE: **All** permits from Public Works, including an erosion control permit, must be obtained prior to any work beginning on the site and in the right-of-way (ROW).

Streets

1. Molalla Avenue is functionally classified as a "Major Arterial" road and the development property is zoned "MUC-2". The following tables show the existing road section and the maximum street section required by city code for this type of road.

Existing Street Section on the development's side of centerline on Molalla Ave

Road Classification	Zoning	R.O.W. width	Road Width	Public Access	Sidewalk	Landscape Strip & Curb	Bike Lane	Street parking	Travel Lanes	Median
Major Arterial	Mixed Use	45'	28'	1'	5'	0.5'	0'	None	(2) 11'	7.5'

Maximum Street Section city code may require on the development's side of centerline on Molalla

Road Classification	Zoning	R.O.W. width	Road Width	Public Access	Sidewalk	Landscape Strip & Curb	Bike Lane	Street parking	Travel Lanes	½ of a Median
Major Arterial/Molalla Ave Corridor	Mixed Use	51	22'	0.5'	10'	0.5' (5'x5' tree wells within sidewalk)	5'	8'	(2) 11'	6'

10' req'd

pkg not req'd

2. The proposal provided with the pre-application submittal has not conceptually provided the required street improvements.

3. Improvements along the frontage shall be in conformance to the Molalla Avenue Boulevard and Bikeway Improvement Plan. The improvements from the development's side to the road's centerline shall include 45 ft. of ROW, half of the 12 ft. median/turn lane, (2) 11 ft. travel lanes, 5 ft. bike lane, and a 10 ft. sidewalk. An 8 ft. parking aisle will not be required along the Molalla Ave frontage.

4. The development also fronts along Beavercreek Way which is classified as a "local" street. No frontage improvements are expected to be required on this street.

5. Additional information and coordination will be necessary for the Beavercreek Road secondary access route (i.e. easements, property ownership, utility use, etc.). The developer shall coordinate their road design with the City's Beavercreek Road Access Management Plan.



6. A traffic report will be necessary for this development to determine the impact on Molalla Ave and Beavercreek Road. Traffic signal modification will be necessary at these access points.

7. The development proposes to install a local road from Molalla Avenue to the southeast corner of the property. The City's local road standard dimensions for mixed use are noted below (OCMC 16.12.016):

Maximum Street Section city code may require on the development's side of centerline on Molalla

Road Classification	Zoning	R.O.W. width	Road Width	Public Access	Sidewalk	Landscape Strip & Curb	Bike Lane	Street parking	Travel Lanes	½ of a Median
Local	Mixed Use	62'	40'	0.5'	10.5 ft. sidewalk including 5ft x 5ft Tree wells	NA	8'	(2) 12'	NA	Local

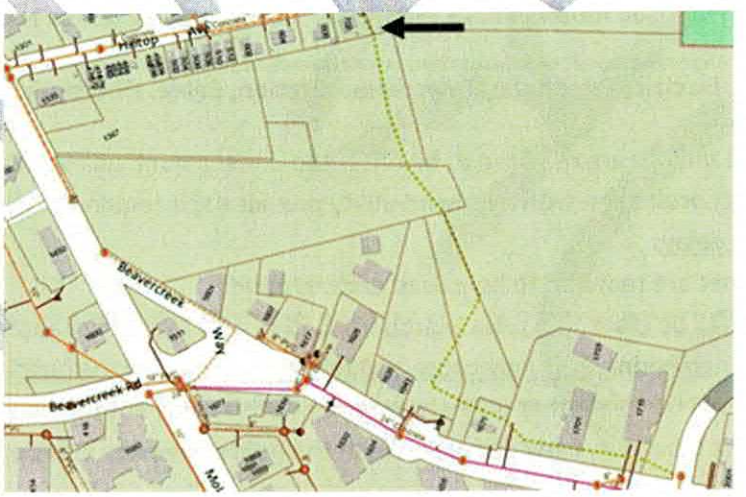
8. It should be noted that street parking is identified in the City's Code as part of the mixed use local road cross-section. These parking spaces within the development may count towards the site's parking counts.

9. The secondary access that is within the neighboring property easement would require the same right-of-way dimensions (62 ft) as the local road connection (Mixed Use Local Road) but would not be required to provide space for parking. A modification request to the City's code would be needed during the land use application process. The existing commercial/industrial developments around the access would most likely not require additional or overflow parking that is typically seen in a more residential environment or areas where parking is limited. This would reduce the pavement cross-section within the easement.

10. A portion of the local road running through the property (roughly parallel to Molalla Avenue) is shown to provide 54 ft. of right of way which is less than the 62 ft. standard for a local road within a mixed use area. The Applicant has proposed to remove parking from one side of the standard street cross section in this area. This would be acceptable, however deviation from the City's standard requires a modification request to the City's code (See item 17 below).

11. The Beavercreek-Hilltop shared use path (Transportation System Plan, Project S28) is identified to be constructed in this area. Coordination with the City will be needed during the Site Plan Review process to identify how S28 will be incorporated into the site. Shared use paths are intended for regional connectivity within the City for bicyclists and pedestrians to easily move through the City and not to be used in place of a local sidewalk.

TSP Project S28



12. Tree plantings along the frontage shall be in conformance with the Molalla Ave Boulevard and Bikeway Improvement Plan. Trees shall be planted at intervals of 25-35 feet and at 30 ft away from intersections to maintain sight distance.

13. Fire truck turn-around must meet the requirements of and be approved by Clackamas County Fire District No.1.

14. The development will be required to provide a 10-foot-wide Public Utility Easement (PUE) along all property lines fronting existing or proposed ROW.

15. Street lighting will be in conformance to the Molalla Ave Boulevard and Bikeway Improvements Plan. Special lighting requirements will be required. The applicant shall submit a photometric plan and include additional streetlights, as required, or show that the existing streetlighting meets standards from the Illuminating Engineering Society of North America (IESNA) ANSI RP-8-14 Roadway Lighting book. The materials for new streetlights must be from the latest PGE approved material list. For energizing of streetlights and to obtain the latest PGE approved material list, contact the following PGE Outdoor Lighting Services Department Design Project Manager.

    Jeff Wiese
    (503) 742-8363
    Jeff.wiese@pgn.com

16. **Any deviations from standards required within Table 16.12.016 of the Oregon City Municipal Code, such as elimination of typical street components, or reduction to the size of these components (drive lanes, sidewalks, bike lanes, landscaping, ROW dedication, etc.), requires a written request through the modification process outlined in Section 16.12.013 of the Oregon City Municipal Code. Proposed modifications may require additional evidence and analysis for review.**

Private Utilities (Gas, Electric, Telephone, Telecommunication, Cable, Fiberoptic, Etc.)

1. Existing overhead utilities are required to be relocated underground unless deemed infeasible by utility providers (coordination with overhead utility provider(s) is required). This may be costly and create significant delays.
2. All new service lines are required to be placed underground.
3. All new utilities shall be placed on private property within a 10 foot utility easement or other area as agreed upon by Engineering. This may cause a shift in the location of the building footprint.
4. The applicant should be aware that utility coordination with these entities can be costly and substantially affect timelines. Early discussion with the utility company is imperative for a timely project. The City does not provide coordination with these utilities. Staff may provide suggestions or guidance for utility locations such as relocation of poles, but the design is ultimately up to the applicant's consultant and the private utility. However, the city must approve the design.

Stormwater

1. The Oregon City Stormwater and Grading Design Standards can be found online at: https://www.orcity.org/1227/Stormwater-Grading-Design-Standards

2. Projects within the General Thresholds (Section 1.2.1) of the Stormwater and Grading Design Standard are subject to the requirements of the City's Stormwater and Grading Design Standards. The project, as described in the Pre-Application submittal, appears to trigger Part A (see below) of the General Thresholds.
   A. Development activities that result in 5,000 square feet of new or replaced impervious surface, cumulative over a 5-year period.

   New or replaced impervious surface, includes surfaces associated with required frontage improvements.

3. Where compliance with the Stormwater and Grading Design Standards is required, applicants must submit a completed Site Assessment and Planning Checklist (and other items as described in Section 9.1.1 of the Stormwater and Grading Design Standards) as part of the land use application review process. At a minimum, to receive Completeness Approval, the applicant should submit a preliminary stormwater report addressing the following items from Section 9.1.1 of the City's Stormwater and Grading Design Standards.
   A. Stormwater management strategy
   B. A site plan showing an adequately sized stormwater facility based on Stormwater Best Management Practices (BMP) Sizing Tool or sized using the Engineered Method (as defined by City's Stormwater and Grading Design Standards).
   C. A geotechnical report or a Natural Resource Conservation Service (NRCS) soils report documenting onsite infiltration and soil conditions in support of a proposed stormwater management strategy.
   D. Downstream analysis which extends to the distance where the project site contributes less than 15 percent of the cumulative tributary drainage area or 1,500 feet downstream of the approved point of discharge, whichever is greater, as required by Chapter 5 of the Stormwater and Grading Design Standards.

4. The proposal provided with the pre-application submittal has not conceptually provided the required stormwater improvements. The number of lots may need to be reduced. The size of the development may need to be reduced to accommodate stormwater requirements.

5. The nearest downstream public stormwater facility is an inlet located along Molalla Ave in front of the proposed development. This structure directs flows through a 12-inch main.

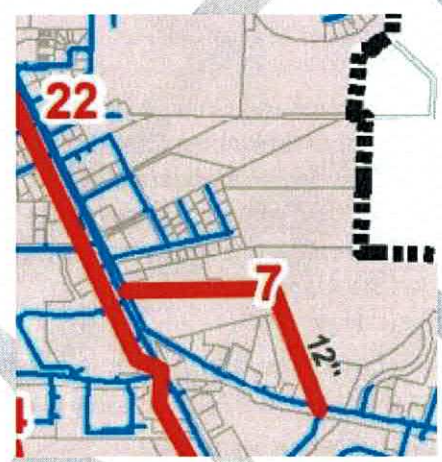
6. The development may be required to extend a 12" stormwater line to the frontage of the proposed development for conveyance of stormwater to the nearest public stormwater system.

7. The Applicant will need to provide proposed irrigation improvements during the site plan review process.

Water

1. There is an existing 16-inch steel water main that runs on the easterly side of Molalla Ave and an 8"cast iron main located on the westerly side Molalla Ave.

2. 2. The City's Water Master Plan identifies two CIP projects located within the limits of the proposed development



City is building this

a. CIP Project #22 in the City's Water Master Plan identifies a new 18"/24" transmission main within Molalla Ave to increase transmission to the Henrici Reservoir. This project is currently under construction by the City.

b. CIP Project #7 in the City's Water Master Plan identifies a 12" water main running through the proposed development to loop water between Molalla Ave and Beavercreek Road.

Coordination with the City will be needed on how the proposed development will impact these CIP projects and how the development will obtain water to their site. Public utility easements will be required. The City may require the Applicant to incorporate portions Project #7 as part of the development's design. Depending on the scheduling of the development and the construction of the CIP projects, a fee-in-lieu proportionate to the length of water main within the property or along the site's frontage may be required.

3. There is an existing fire hydrant located on Molalla Ave off of the existing 8" CI. Additional hydrants may be required within the development.

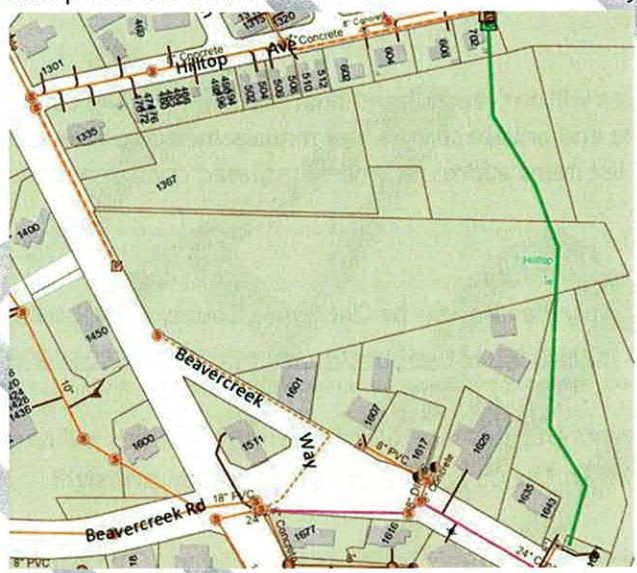
4. New fire hydrants shall be located per the requirements and direction of Clackamas Fire District No. 1.

5. The proposal provided with the pre-application submittal has not conceptually provided the required water infrastructure improvements.

Sanitary Sewer

1. A sanitary sewer force main exists within Molalla Ave along the sites frontage, and discharges to the 15" gravity system and manhole to the north on Hilltop Ave.

2. They City's Sewer Master Plan identifies an 8" gravity sewer main running within the proposed development between Hilltop Ave and Beavercreek Road as a future CIP Project.



As with the CIP water main projects above, coordination with the City will be needed on how the development will impact this future project. A Public Utility Easement will be required.

3. The Applicant will be required to provide sewer utility information on how the development will connect to the City's sewer collection system.

4. The proposal provided with the pre-application submittal has not conceptually provided the required sanitary sewer infrastructure improvements.

Transportation

1. The applicant will need to have a traffic engineer to provide a Transportation Impact Analysis (TIA) in conformance with the City's Guidelines for Transportation Impact Analyses available on the Oregon City website. https://www.orcity.org/1164/Guidelines-for-Transportation-Impact-Ana

The analysis may show offsite improvements such as turn lanes or intersection improvements could be required causing significant delays and increasing costs.

2. Based on the information provided by the applicant, it appears the trip generation level triggers the need to submit a Transportation Impact Study (TIS). For questions regarding the TIA please contact the following:

   Reah Flisakowski, PE
   Direct: 503-972-1203
   Email: rlf@dksassociates.com

*Please note the cost for the City Traffic Engineering consultant's review during the land use process will be charged at or near the time of Land Use Decision. This fee is not reimbursable if land use is denied or if the application does not proceed forward to permit.

Occupancy

8. Development Services will not recommend final occupancy of the building until construction of public improvements and private stormwater management facilities is completed with all construction punch list items addressed and all required documents are provided.

Other

1. Access and Water Supply Plan Review by Clackamas County Fire District No.1 is required. Following instruction found at https://clackamasfire.com/access-and-water-supply-plan-review-submittal/.

2. All public improvements and stormwater management facilities will need inspection by the applicant's civil engineer. The City only provides inspection oversight.

3. Portions of the project resides within Geologic Hazard areas. The applicant will be required to address Chapter 17.44 of the Oregon City Municipal Code (OCMC). The City's geotechnical consultant will review the development for compliance with Chapter 17.44 of the OCMC and review fees shall be borne by the developer. More information can be found at: https://www.orcity.org/1097/Learn-About-the-Geologic-Hazards-Overlay

   The city's Geotechnical Report Review Checklist can be found at the following link: https://www.orcity.org/1065/Engineering-Development-Services-Checkli

Below are notes for the site from the City's geotechnical consultant:

The site is greater than one acre; therefore, a preliminary hydrology report per Section 17.44.50 (11) will be required.

The development standards for sites within a geologic hazard area are outlined in Section 17.44.60 and include requirements related to a number of elements of development, the most notable (but not comprehensive list of) elements for this site include:

- *17.44.060.A Disturbance of existing conditions,*
- *17.44.060.C and D, Design to minimize the volume of cuts and fills, and requirements pertaining to cuts and fills,*
- *17.44.060.F Design of retaining walls,*
- *17.44.060.H and I, Development density per these sections where mapped landslides, slopes over 25 percent, and their buffer zones occur within the parcels, and*
- *17.44.060.L., demonstrate development as proposed will adequately mitigate for potential landslide hazards at the site to prevent future landslides or damage to property and safety.*

Stormwater drainage requirements including a stormwater control plan and limitations on infiltration facilities are detailed in Section 17.44.090.

Contact the City Geotechnical Engineering consultant, Pali Consulting, at tim@pali-consulting.com for all geotechnical engineering coordination.

*Please note the cost for the City Geotechnical Engineering consultant's review during the land use process will be charged at or near the time of Land Use Decision. This fee is not reimbursable if land use is denied or if the application does not proceed forward to permit. The City Geotechnical Engineering consultant's fees during permit review and construction will be charged and due during the permit and inspection phase of the project.

4. The proposed development resides within a high water table area. If the high-water table is part of a larger groundwater system rather than perched water, there may be addition requirements for the design of infiltration stormwater facilities.

FINAL REMINDERS

1. **These notes are the best available based on the submittal and the understanding at the time of pre-application. The notes are NOT a guarantee of requirements.**
2. **Traffic Engineering Fees and Geotechnical Engineering Fees will be due at or near time of Land Use Decision**
3. **The Public Improvements (new roads, road widening, sidewalks, sewer mains, water mains, etc) MUST be completed prior to occupancy.**

4. **Land Use MUST be completed prior to permit. The Land Use Approval is NOT a permit. A separate Building and Engineering Permit Submittal after land use is required when seeking a permit for construction.**
5. **If a project involves a combination of overlay districts, those overlay districts may have requirements different from each other and different from basic zoning. It is recommended significant coordination is completed prior to scheduling any meeting before a public body such as Historic Review Board or Planning Commission.**
6. **SDCs can be a significant cost to the project. It is recommended to seek an estimate prior to proceeding further with an application. There is no cost for an estimate.**
7. **Overhead utility work can cause significant delays to a project. Much of this coordination may need to start 6-12 months prior to construction.**

Supplemental Information:

I. Documentation required before any construction plan review can begin by Public Works (which is after a land use decision has been made):

A. Complete Engineering Plans (Public Improvements, all stormwater facilities, site grading and erosion control)
B. Preliminary Cost Estimate for construction of Public Improvements, all stormwater facilities, site grading and erosion control.
C. Plan Review Fee
D. Complete Storm Water Report and Site Assessment and Planning Checklist
E. Geotechnical Report

II. Documentation required before any construction plan can be deemed approved by Public Works (to be able to start construction or obtain a building permit):

a. Inspection Fee
b. Final Cost Estimate of Public Improvements
c. Approved Engineering Plan stamped and signed by an Oregon Professional Engineer
d. Approved Storm Water Report stamped and signed by an Oregon Professional Engineer
e. DEQ Sanitary Sewer Main Permit
f. NPDES 1200-C Permit
g. 120% Performance Bond
h. Developer/Engineer Agreement
i. Non-Remonstrance Agreement
j. Land Division Compliance Agreement *(for improvements to be provided by home builder such as trees, sidewalks, etc.)*
k. R.O.W. Dedication / Deed of Dedication
l. PGE approved street light plan
m. Fee-in-lieu

n. Indemnity Agreement

III. Documentation required before Public Works will recommend Certificate of Occupancy:

a. Engineer of Record Certificate of Completion
b. Completed Punchlist
c. 15% Warranty Guarantee
d. Recorded Easements
e. Recorded Plat
f. Public storm facilities - 2 Year Maintenance Bond
g. Private storm facilities - Maintenance Covenant and Access Easement

IV. Possible Fees

a. Plan Review Fee
b. Inspection Fee
c. Erosion Control Fee
d. Public Utility Service Permit Fee
e. Public Street Driveway Permit Fee
f. Public Street Sidewalk Permit Fee
g. Grading Permit Fee
h. Geotechnical Review Fee
i. Traffic Engineering Fee
j. City Resolution and Document Processing Fee
k. Document Processing and Recording Fee
l. Plat Fee
m. Engineering Permit Fees and System Development Charges:
https://www.orcity.org/1067/Engineering-Services-Fees
For commercial and multi-family projects an SDC estimate must be requested.

Note: These listed fees were most current at the time of this pre-application meeting. Additional fees may apply beyond the pre-application meeting.

DRAFT

Oregon
Tina Kotek, Governor

Department of Transportation
Transportation Region 1
123 NW Flanders St.
Portland, OR 97209-4012
(503) 731-8200
Fax: (503) 731-8259

May 6, 2025 ODOT # 13637

ODOT Pre-Application Response

Project Name: Oregon City Mixed Use	**Applicant:** Cypress Acquisitions, LLC
Jurisdiction: City of Oregon City	**Jurisdiction Case #:** PA-25-016
Site Address: 1367 Molala Ave	

The site of this proposed land use action is in the vicinity of OR 213 interchange. ODOT has permitting authority for this facility and an interest in ensuring that this proposed land use is compatible with its safe and efficient operation.

All ODOT permits and approvals must reach 100% plans before the District Contact signs off on a local jurisdiction building permit or other necessary requirement before construction. **The applicant should contact the District Contact indicated below to determine permit requirements and to obtain application information**.

These comments, standards, and requirements are current as of the date of this letter. If the project scope and/or timeline is modified, the applicant should contact the ODOT Region 1 Development Review program (ODOT_R1_DevRev@odot.oregon.gov) for an updated letter as updated comments may be necessary.

LAND USE PROPOSAL

ODOT attended a pre-application conference held by City of Oregon City to discuss the proposal of two fast food restaurants with drive throughs and an approximately 250-unit multifamily residential development. The proposal also includes a new road connecting to Molalla Avenue and Beavercreek Road.

COMMENTS/FINDINGS

Traffic Impacts

The intersection of OR 213/Beavercreek Road has an adopted Alternative Mobility Target that changes the standard analysis parameters used and/or the time period to which the targets/standards apply. The intersection is expected to meet the alternative mobility target with the Beavercreek Road Concept Plan.

The 2019 Oregon City Beavercreek Analysis states that “a maximum v/c of 1.00 for the first, second and third hours based on an average annual weekday peak hour” “will remain in place for the 2035 planning horizon of the Oregon City TSP”. The analysis also includes construction of a westbound right-turn, merge lane at the Highway 213 / Beavercreek Road intersection (Highway 213 Corridor Alternative Mobility Targets Study).

In addition, the 2022 Courthouse Traffic Impact Analysis (TIA) identified proportional share contributions for planned improvements at the OR 213/Redland Road intersection.

ODOT understands the City will be requiring a TIA for the proposed developments. Therefore, ODOT recommends that once the trip distribution/TIA identifies the trip contribution for both projects above, proportional shares should be required contributing to both projects. Contact the ODOT Traffic Contact identified below and the local jurisdiction to scope the TIA and confirm travel modeling assumptions.

ODOT RECOMMENDED CONDITIONS OF APPROVAL FOR LOCAL JURISDICTION

Traffic Impacts

☒ The applicant shall submit a Traffic Impact Analysis (TIA) to assess the impacts of the proposed use on the State highway system. The analysis must be conducted and stamped by an Oregon-registered Professional Engineer (P.E.). Contact the ODOT Traffic Contact identified below and the local jurisdiction to scope the TIA and confirm travel modeling assumptions. The recommendation for traffic control devices will require either ODOT Region Traffic Engineer (RTE) or State Traffic-Roadway Engineer (STRE) approval and shall be constructed as necessary to be consistent with the ODOT Traffic Manual.

Note: RTE and STRE approval items may take **6 months or longer** to process.

☒ The applicant shall contribute proportional share contributions for the intersection improvements at OR 213/Beavercreek Road.

ADVISORY INFORMATION

Permits and Agreements to Work in State Highway Right of Way

☒ An ODOT Miscellaneous Permit must be obtained for all work in the State highway right of way. When the total value of improvements within the State highway is estimated to be $100,000 or more, a Cooperative Improvement Agreement (CIA) with ODOT is required. A CIA will address the transfer of the improvements to ODOT and any associated technical and administrative costs for projects that meet this improvement threshold. Agreements shall address the work standards that must be followed, maintenance responsibilities, and compliance with ORS 276.071, which includes State of Oregon prevailing wage requirements.

Note: If a CIA is required, it may take **6 months or longer** to process.

Contact the ODOT Development Review Planner identified below for further coordination or questions regarding ODOT comments and requirements during the land use process.

Please send a copy of the Land Use Notice to: ODOT_R1_DevRev@odot.oregon.gov

Development Review Planner: Melissa Gonzalez	Melissa.GONZALEZ-GABRIEL2@odot.oregon.gov
Traffic Contact: Avi Tayar, P.E.	Abraham.TAYAR@odot.oregon.gov
District Contact: District 2B	d2bup@odot.oregon.gov

APPENDIX B
Incomplete Notice

Community Development - Planning

695 Warner Parrott Road | Oregon City OR 97045

July 24, 2025

Kirk Williams
Cypress Acquisitions LLC
8144 Walnut Hill Lane, Suite 1200
Dallas Texas 75231

Scott Franklin
Navix | Langan
10135 Sunnyside Road, Suite 200
Clackamas, OR 97015

Project:
GLUA-25-00025/1367 Molalla Ave

CU-25-00001, MAS-25-00001, PARK-25-NROD-25-00012, MAS-25-00002

Address/APN
1367 MOLALLA AVE

OREGON CITY OR 97045

3-2E-05DB-03300,3400,3201,3200,602,500,501

Application Submitted: 06/27/2025
Application Incomplete: 07/24/2025

DETERMINATION OF APPLICATION INCOMPLETENESS

GLUA-25-00025 is Incomplete

CU-25-00001, MAS-25-00001, PARK-25-00001, LL-25-00009, NROD-25-00012, MAS-25-00002

The application has been reviewed and determined to be incomplete. The following items are needed to complete the application:

As very little was submitted for this application, please work with staff as you go through these incomplete items to determine the correct level of detail needed for each item.

1. A completed Land Use Application form or forms with all property owner signatures and complete contact information for the applicant, owner(s), and applicant's representative.
2. A complete and Detailed Narrative Description with Code Responses of the proposed development and an explanation addressing all applicable approval criteria. A Narrative template will be emailed to you for both the Type II and Type III applications upon request.

3 Neighborhood Association meeting:

- A sign-in sheet of the meeting attendees
- A Summary of issues discussed
- A letter from the Neighborhood Association or CIC indicating that a meeting was held.
- If the applicant held a separately noticed meeting, the applicant shall submit a copy of the meeting flyer, a sign sheet of attendees and a summary of issues discussed.

4. Pre-Application Conference Notes from Planning and Development Services. (P/DS)
6. A current Preliminary Title Report or Trio for the subject property(ies). (P)
7. Documentation indicating there are no liens favoring the City for the subject site. Contact Ashley Fraijo aflues@orcity.org for confirmation (P)
8. County Assessor's Office Receipt indicating all taxes for the parcels involved are paid in full for the preceding tax year. (P)

Transportation Analysis
For technical questions regarding the TIA please contact: Reah Flisakowski,
Direct: 503-972-1203 Email: rlf@dksassociates.com
https://www.orcity.org/1164/Guidelines-for-Transportation-Impact-Ana

Type III- Master Plan- Conditional Use- Parking Variance
MAS-25-0001_CU-25-001_PARK-25-001
Parking Variance Checklist
Master Plan –(general development plan) Checklist
Conditional Use Checklist

Type II- Detailed Development Plan
MAS-25-002_GEO-25-007_NROD-25-012
Geologic Hazard Checklist *Contact Erik Nichols enichols@orcity.org for questions*
Site Plan and Design Review Checklist
NROD Checklist

Type I LL-25-00009
Lot Line Application packet

Per OCMC 17.50.070 Completeness review and one hundred twenty-day rule.

A. Upon submission, the community development director shall date stamp the application form and verify that the appropriate application fee has been submitted. The community development director will then review the application and all information submitted with it and evaluate whether the application is complete enough to process. Within thirty days of receipt of the application, the community development director shall complete this initial review and issue to the applicant a written statement indicating whether

the application is complete enough to process, and if not, what information must be submitted to make the application complete.

B. ***The applicant has one hundred eighty days from the date the application was made to submit the missing information or, on the one hundred eighty-first-day, the application shall be rejected and all materials (except one copy of the application) and the unused portion of the application fe returned to the applicant****. If the applicant submits the requested information within the one hundred eighty-day period, the community development director shall again verify whether the application, as augmented, is complete. Each such review and verification shall follow the procedure in subsection A. of this section.*

The application will be deemed complete for the purpose of this section upon receipt by the community development director of:

1. All the missing information;

2. Some of the missing information and written notice from the applicant that no other information will be provided; or

3. Written notice from the applicant that none of the missing information will be provided.

For assistance regarding your project please contact me in the Community Development Department. I

Christina Robertson-Gardiner, Sr. Planner
crobertson@orcity.org

APPENDIX C
Neighborhood Meeting

Scott Franklin

From: Sara Peterson <sarapete@gmail.com>
Sent: Tuesday, August 26, 2025 4:10 PM
To: Scott Franklin
Cc: william@smallflags.com; ncecowboy1@gmail.com; danielscott90@gmail.com; Kirk Williams; hschmidt@orcity.org; Christina Robertson-Gardiner
Subject: Re: Proposed Mixed-Use Development near Northeast Corner of Molalla Ave & Beavercreek Rd

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Scott,

Not sure if anyone has addressed this but.... Yes, we can add you to the Oct 7th meeting's agenda to make your presentation and field questions from the neighborhood. We meet in the community Development room at 695 Warner Parrott Road (across the parking lot from the Robert Libke Public Safety building) at 6:30.

Let us know if you have any questions.

Sara

On Tue, Aug 26, 2025 at 10:43 AM Scott Franklin <sfranklin@langan.com> wrote:

> Dear Hillendale Neighborhood Association Leadership –
>
> Cypress Equities would like to discuss their plans for development of the former Walmart property near the northeast corner of Molalla Ave & Beavercreek Rd. I've attached an image showing the site boundary over an aerial photo. Cypress proposes a mixed-use project that includes multi-family use, quick service restaurant, and smaller retail, and requests to be included on your regularly scheduled October 7 quarterly neighborhood meeting. We're finalizing the site layout now and expect to be able to share that with the neighborhood at the meeting. Our team would be prepared to discuss the overall development plan and answer any questions that may come up. Please let me know if there are any issues getting on your October 7 agenda or if you have questions prior to the neighborhood meeting – I can be reached via email or my direct phone line at 971-486-1404.
>
> Thanks,

Scott Franklin
Senior Associate

LANGAN | NAVIX

Direct: 971.486.1404
Mobile: 503.680.0029
File Sharing Link

Phone: 971.486.1400 Fax: 971.486.1401
10135 SE Sunnyside Rd
Suite 200
Clackamas, OR 97015
www.langan.com

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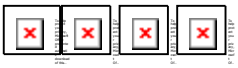

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Hillendale /Tower Vista Neighborhood Associations

PLEASE PRINT LEGIBLY!

Name	Email Address	Neighborhood
KERRY Clark	KerryLClark00@gmail.com	TVNA or (HNA)
Joyce Gifford	Gifford.Joyce@gmail	TVNA or (HNA)
Alexi Duynslager	alexiduyn@gmail.com	TVNA or (HNA)
Sheryl Hall	hall7856@Comcast.Net	(TVNA) or HNA
Sara Peterson	sarapete@gmail.com	TVNA or (HNA)
David + Darlene Mai	dardavmai@msn.com	(TVNA) or HNA
		TVNA or HNA
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		TVNA or HNA

Sign-in sheet for Oct 7, 2025
Hillendale / tower Vista
Neighborhood Meeting

APPENDIX D
Signed Application Form

OREGON CITY
Community Development – Planning
695 Warner Parrott Road | Oregon City OR 97045
Ph (503) 722-3789

LAND USE APPLICATION FORM

Type I (OCMC 17.50.030.A)	Type II (OCMC 17.50.030.B)	Type III / IV (OCMC 17.50.030.C & D.)
☐ Compatibility Review	☐ Master Plan / PUD / GDP or Amendment	☐ Annexation
☐ Willamette River Greenway	☐ Detailed Development Plan (DDP)	☐ Code Interpretation / Similar Use
☐ Communication Facility / Eligible Modification	☐ Floodplain Review	☑ Master Plan / PUD / GDP Amendment
☑ Lot Line Adjustment	☑ Geologic Hazard Overlay	☑ Conditional Use
☐ Non-Conforming Use Review	☐ Minor Partition (<4 lots)	☐ Comprehensive Plan/Legislative Amendment
☐ Natural Resource (NROD) Verification	☐ Minor Site Plan & Design Review	☐ Code ☐ Map
☐ Minor Site Plan & Design Review	☐ Non-Conforming Use Review	☑ Detailed Development Plan DDP
☐ Extension of Approval	☐ Proportional Upgrades	☐ Historic Review Board
☐ Historic Review – Remodel	☐ Site Plan and Design Review / DDP	☐ Demolition
☐ Detailed Dev. Plan (DDP)	☐ Manufactured Home Park	☐ New Construction
☐ LUCS	☐ Compatibility Review	☐ Remodel
	Modifications / Adjustments	☐ Municipal Code Amendment
Expedited Type II (OCMC 17.50.030.B & 16.24)	☐ Residential Design	☑ Parking Adjustment
☐ Middle Housing Land Division	☐ Site Plan & Design Review	☐ Variance
	☐ Public Improvement	☐ Sign Variance
	☐ Tree Mitigation	☑ Natural Resource (NROD) Review
	☐ Subdivision (4+ lots)	☐ Zone Change (Text/Map)
	☐ Administrative (Minor) Variance	☐ Willamette River Greenway
	☐ Natural Resource (NROD) Review	
	☐ Willamette River Greenway	**Legislative Action (OCMC 17.50.170)**
	☐ Phased Subdivision / Site Plan and Design Review Occupancy Plan	☐ Legislative
	☐ Expedited Land Division	

File Number(s): Please see attached	**Application Date:** 6/25/25
Project Name: Hilltop Crossing	
Proposed Land Use or Activity: Commercial and multi-family mixed use	**# of Lots Proposed (If Applicable):** 4
Physical Address(es) of Site: 1367 Molalla Ave, Oregon City, OR 97045	
Clackamas County Map and Tax Lot Number(s): Please see attached	

Applicant(s)

Applicant(s) Signature:	
Applicant(s) Name Printed: Kirk Williams; Cypress Acquisitions, LLC	Date: 6/25/2025
Mailing Address: 8144 Walnut Hill Lane, Suite 1200, Dallas, TX 75231	
Phone: 214.561.8838	Email: Kirk.Williams@CypressEquities.com

Property Owner(s) – If more than 2 owners, add all information to back of page including signatures.

Property Owner #1	
Property Owner#1 Signature:	
Property Owner#1 Name Printed: Please see attached	Date:
Mailing Address:	
Ownership Address:	
Phone:	Email:

Property Owner #2	
Property Owner#2 Signature:	
Property Owner#2 Name Printed: Please see attached	Date:
Mailing Address:	
Ownership Address:	
Phone:	Email:

Revised 02/2025

Representative(s)

Representative(s) Signature:	
Representative(s) Name Printed: Scott Franklin; Navix|Langan	Date: 6/13/25
Mailing Address: 10135 SE Sunnyside Rd, suite 200, Clackamas, OR 97015	
Phone: 971.486.1404	Email: sfranklin@langan.com

All signatures represented must have the full legal capacity and hereby authorize the filing of this application and certify that the information and exhibits herewith are correct and indicate the party's willingness to comply with all code requirements.

Oregon City Commercial/Mixed-Use
Masterplan Land-Use Application

Property File Number(s):

On-Site (per OCWebMaps)

Parcel	File Number	APN
TL 32E05DB03200	2004-091249	3-2E-05DB-03200
TL 32E05DB03201	2004-091249	3-2E-05DB-03201
TL 32E05DB03300	2004-091249	3-2E-05DB-03300
TL 32E05DB03400	2004-091251	3-2E-05DB-03400

Off-Site (per OCWebMaps):

Parcel	File Number	APN
TL 32E05D00500	1995-045260	3-2E-05D-00500
TL 32E05D00501	1995-045260	3-2E-05D-00501
TL 32E05D00602	2011-075510	3-2E-05D-00602

Clackamas County Map and Tax Lot Number(s):

On-Site (per OCWebMaps)

Map	Tax Lot Number
32E05DB	03200
32E05DB	03201
32E05DB	03300
32E05DB	03400

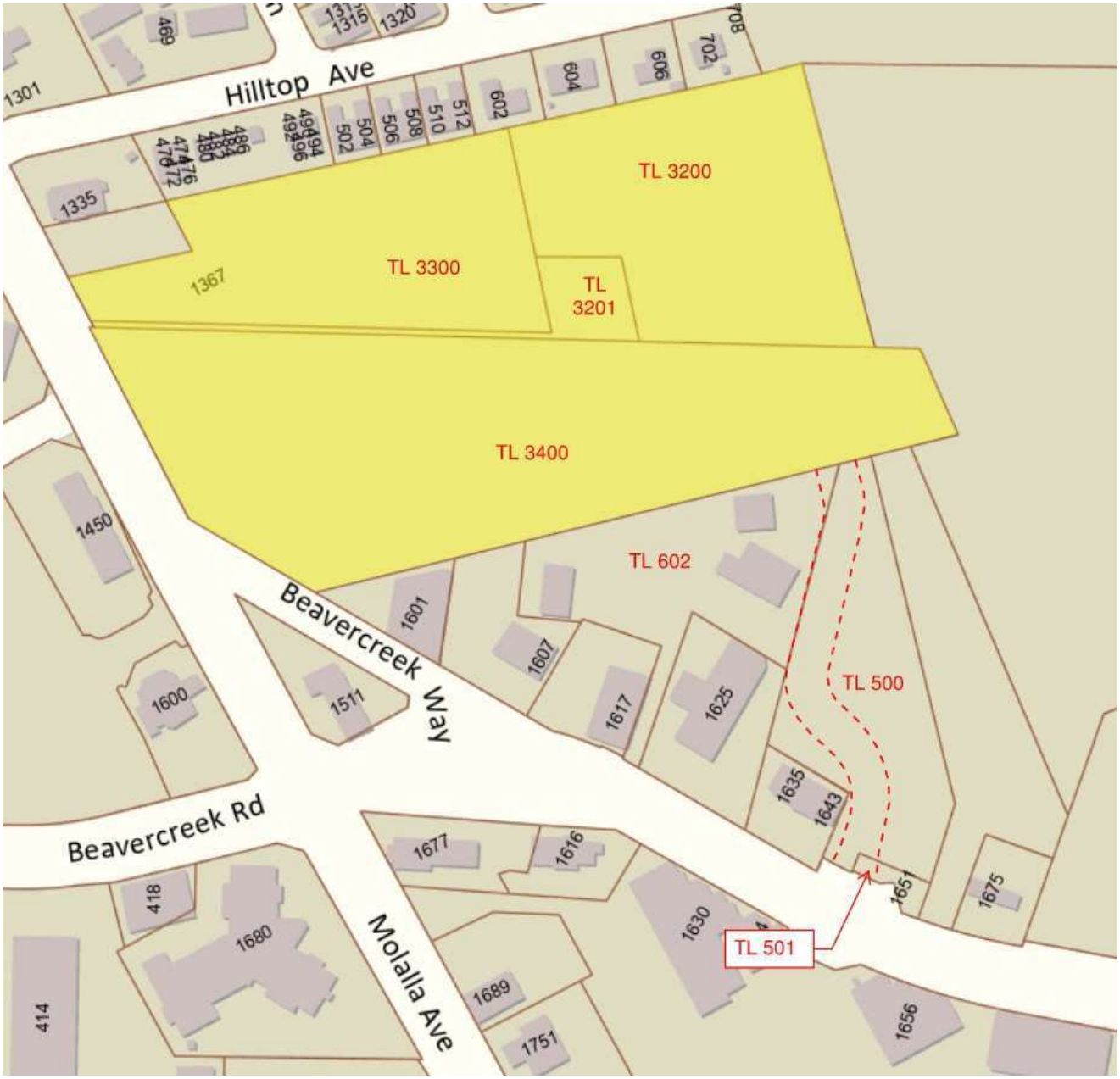
Off-Site (per OCWebMaps):

Parcel	File Number
32E05D	00500
32E05D	00501
32E05D	00602

Docusign Envelope ID: 32885778-4150-4E57-BFBD-848A873155A8

Oregon City Commercial/Mixed-Use
Masterplan Land-Use Application

Property Owners Signatures

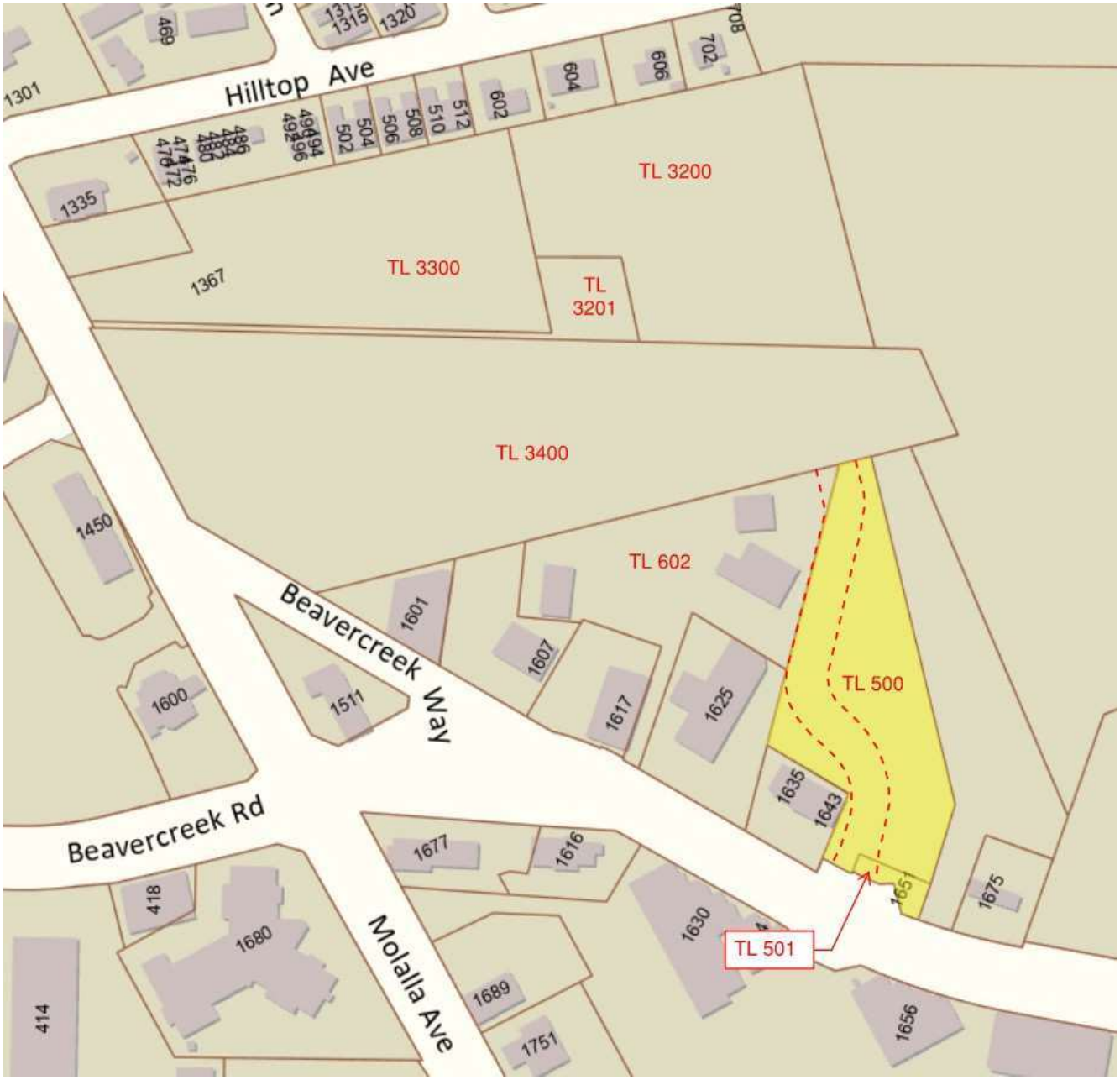


Property Owner #1	
Property Owner#1 Signature: [signature]	Walmart Realty, Sr. Transactions Manager
Property Owner#1 Name Printed: Walmart Inc.	Date: June 24, 2025 | 09:59 CDT
Mailing Address: 2608 SE J St. Bentonville, AR 72716-5510	
Ownership Address: 702 SW 8th St. Bentonville, AR 72716	
Phone: 479.844.1275	Email: alexander.chak@walmart.com

Docusign Envelope ID: 926AACBE-E687-4115-A135-A4C94385D8BC

Oregon City Commercial/Mixed-Use
Masterplan Land-Use Application

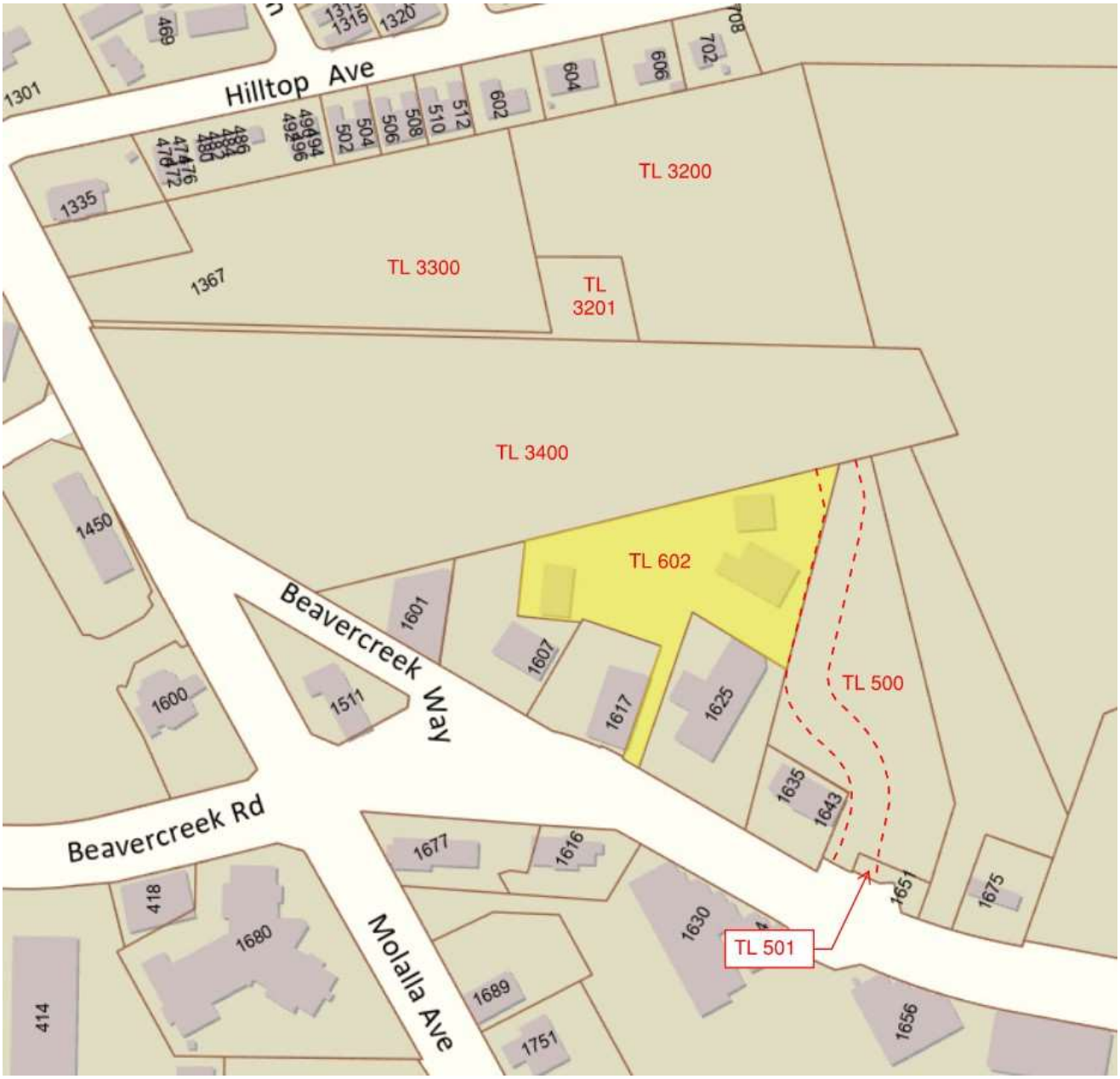
Property Owners Signatures



Property Owner #2	
Property Owner#2 Signature: DocuSigned by: D7F99406E0C04B8...	
Property Owner#2 Name Printed: Rocky Younger	Date: 6/23/2025 June 24, 2025
Mailing Address: PO Box 1337, Oregon City, OR 97045	
Ownership Address: 1653 Beavercreek Rd., Oregon City, OR 97045	
Phone: (503) 656-2010	Email: dalesauto@hotmail.com

Oregon City Commercial/Mixed-Use
Masterplan Land-Use Application

Property Owners Signatures



Property Owner #3		
Property Owner#2 Signature:	Stacia Rodby	
Property Owner#2 Name Printed:	Stacia Rodby, Real Estate Manager	Date: 11/11/25
Mailing Address:	20900 Cooley Rd, Bend, OR 97701	
Ownership Address:	20900 Cooley Rd, Bend, OR 97701	
Phone: 541-416-5390	Email: stacia.rodby@lesschwab.com	

APPENDIX E
General Development Plans

Detailed Development Plans

CYPRESS EQUITIES OREGON CITY MIXED USE MASTERPLAN - GENERAL DEVELOPMENT PLAN

1367 MOLALLA AVENUE
OREGON CITY, OR 97045



VICNITY MAP

NTS



LOCATION MAP

NTS

PROPERTY DESCRIPTION

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON

VERTICAL BENCHMARK

VERTICAL DATUM IS BASED ON THE CITY OF OREGON CITY BENCHMARK, A BRASS DISK LOCATED BY THE FLAG POLE IN FRONT OF THE OREGON CITY POLICE BUILDING, 320 WARNER MILNE ROAD, ELEVATION 447.729' (NGVD 1929) AND BENCHMARK 0030, A BRASS DISK STAMPED "DAVID EVANS AND ASSOCIATES, INC. GPS STA. LIBRARY 1990".
ELEVATION = 452.739'.

SURVEY MONUMENT PROTECTION

EXISTING SURVEY MONUMENT ARE TO BE PROTECTED DURING CONSTRUCTION OR REPLACED IN ACCORDANCE WITH OREGON REVISED STATUTES 209.140 – 209.155.

GENERAL NOTES

1. ALL WORK AND MATERIALS SHALL COMPLY WITH ALL OREGON CITY REGULATIONS AND CODES AND O.S.H.A. STANDARDS, INCLUDING BUT NOT LIMITED TO THE CURRENT OREGON CITY ROAD DESIGN AND CONSTRUCTION STANDARDS, CLEAN WATER SERVICES DESIGN AND CONSTRUCTION STANDARDS, THE OREGON TRANSPORTATION COMMISSION STANDARDS FOR ACCESSIBLE PARKING DATED AUGUST 2018, AND THE APWA STANDARDS WHICH ARE HEREBY REFERENCED AS PART OF THESE PLANS.

2. THE DESIGN SHOWN IS BASED UPON THE ENGINEER'S UNDERSTANDING OF THE EXISTING CONDITIONS. THE PLAN DOES NOT REPRESENT A DETAILED FIELD SURVEY. THE EXISTING CONDITIONS SHOWN ON THIS PLAN SHEET ARE BASED UPON THE ALTA SURVEY PREPARED BY CES | NW, DATED JULY 9, 2012. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING FIELD CONDITIONS PRIOR TO BIDDING THE PROPOSED SITEWORK IMPROVEMENTS. IF CONFLICTS ARE DISCOVERED, THE CONTRACTOR SHALL NOTIFY THE OWNER/DEVELOPER PRIOR TO INSTALLATION OF ANY PORTION OF THE SITEWORK WHICH WOULD BE AFFECTED. IF CONTRACTOR DOES NOT ACCEPT EXISTING SURVEY, INCLUDING TOPOGRAPHY AS SHOWN ON THE PLANS, WITHOUT EXCEPTION, HE SHALL HAVE MADE, AT HIS OWN EXPENSE, A TOPOGRAPHIC SURVEY BY A REGISTERED LAND SURVEYOR AND SUBMIT IT TO THE OWNER FOR REVIEW.

3. CAUTION – NOTICE TO CONTRACTOR
THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 48 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.

4. IN THE EVENT OF CONFLICTS BETWEEN THE VARIOUS PROVISIONS OF THIS PLAN SET, THE MORE STRINGENT PROVISION APPLY.

5. ATTENTION: OREGON LAW REQUIRES YOU TO FOLLOW RULES ADOPTED BY THE OREGON UTILITY NOTIFICATION CENTER. THOSE RULES ARE SET FORTH IN OAR 952–001–0001 (ADOPTION OF MODEL RULES) THROUGH 952–001–0100 (RECORD KEEPING REQUIREMENTS). YOU MAY OBTAIN COPIES OF THE RULES BY CALLING THE CENTER.
NOTES: THE TELEPHONE NUMBER FOR THE OREGON UTILITY NOTIFICATION CENTER IS (503) 232–1987.

6. A ROAD CLOSURE WILL NO BE PERMITTED WITHOUT A SEPARATE ROAD CLOSURE PERMIT THROUGH WASHINGTON COUNTY TRAFFIC ENGINEERING.

7. THE CONTRACTOR, AT THE TIME OF MEETING WITH COUNTY INSPECTION STAFF FOR A PRE–CONSTRUCTION MEETING, SHALL PROVIDE THEIR WORK TRAFFIC CONTROL PLAN.

8. ACCOMMODATE ALL ROAD USERS AT ALL TIMES INCLUDING MOTORISTS, BICYCLISTS, PEDESTRIANS, AND THOSE WITH DISABILITIES OR IMPAIRMENTS. INSTALL AND MAINTAIN ADDITIONAL TEMPORARY SIGNING AND TRAFFIC CONTROL DEVICES FOR THE CONTROL OF NON–MOTORIZED VEHICLES AND PEDESTRIANS WHERE A REASONABLE VOLUME OF THESE USERS ARE EXPECTED AND WHERE WORK IS EXPECTED TO LAST LONGER THAN ONE HOUR. MAINTAIN SAFE ACCESSIBILITY OR PROVIDE SUITABLE ALTERNATE ROUTES IN, THROUGH, OR AROUND WORK AREAS.

9. ESTABLISH AND MAINTAIN WORK ZONE TRAFFIC CONTROL IN COMPLIANCE WITH THE OREGON TEMPORARY TRAFFIC CONTROL HANDBOOK FOR OPERATIONS OF THREE DAYS OR LESS (DECEMBER 2011) ANY TIME VEHICLE OR PEDESTRIAN TRAFFIC IS INFLUENCED BY THE WORK. FOR WORK REQUIRING DEVICES IN PLACE LONGER THAN THREE (3) DAYS, A SITE SPECIFIC TRAFFIC CONTROL PLAN BASED ON THE PRINCIPLES IN PART 6 OF THE MUTCD, THE OREGON SUPPLEMENT AND ODOT'S 2015 STANDARD DRAWINGS TM800 –TM871, IS REQUIRED. ALL TRAFFIC CONTROL DEVICES SHALL MEET OR EXCEED THE NCHRP 350 REQUIREMENTS FOR CRASHWORTHINESS. COMPLETED SIGNAL SHUT DOWN REQUESTS MUST BE RECEIVED BY THE COUNTY A MINIMUM OF 3 WORKING DAYS PRIOR TO ANY PROPOSED SIGNAL SHUT DOWN.

SHEET INDEX

GDP-C0.0	CIVIL COVER SHEET
GDP-C1.0	GENERAL DEVELOPMENT PLAN
GDP-EX-FAR	FLOOR AREA RATIO EXHIBIT

EXISTING CONDITIONS PLANS

ALTA / BOUNDARY SURVEY SHEETS:

1	BOUNDARY SURVEY
2	TITLE EXCEPTIONS
3	TOPOGRAPHIC SURVEY
4	STORM AND SANITARY SEWER
5	TREE SURVEY

OFF-SITE TOPOGRAPHIC SURVEY SHEETS:

1	TOPOGRAPHIC SURVEY
2	TREE SURVEY
3	EASEMENTS

PROJECT CONTACTS

CONSULTANTS

CIVIL ENGINEER:
LANGAN ENGINEERING
10135 SE SUNNYSIDE RD., SUITE 200
CLACKAMAS, OR 97015
(503) 680–0029
CONTACT: SCOTT FRANKLIN, PE

SURVEYOR
CES | NW
15115 SW SEQUOIA PARKWAY, SUITE 150
TIGARD, OR 97224
(503) 684–0652
CONTACT: RYAN GODSEY

LANDSCAPE ARCHITECT
LANGAN ENGINEERING
18575 JAMBOREE ROAD, SUITE 150
IRVINE, CA 92612
(949) 255–8640
CONTACT: ANNA ILAO

CULTURAL RESOURCES
LANGAN ENGINEERING
104 W ANAPAMU STREET, SUITE 204B
SANTA BARBARA, CA 93101
(805) 957–6013
CONTACT: HEATHER MCDANIEL MCDEVITT

WETLANDS
LANGAN ENGINEERING
104 W ANAPAMU STREET, SUITE 204B
SANTA BARBARA, CA 93101
(805) 957–6034
CONTACT: STEVEN NEUMANN

APPLICANT/DEVELOPER

CYPRESS ACQUISITIONS, LLC
8144 WALNUT HILL LANE, SUITE 1200
DALLAS, TX 75231
(214) 561–8838
CONTACT: KIRK WILLIAMS

GOVERNING AGENCY

OREGON CITY PUBLIC WORKS DEPARTMENT
13895 FIR STREET
OREGON CITY, OR 97045
(503) 204–4631
CONTACT: ERIK NICHOLS

TRAFFIC

TRANSPO GROUP
12131 113TH AVENUE NE, SUITE 203
KIRKLAND, WA 98034
(425) 896–5208
CONTACT: MIKE SWENSON PE, PTOE
KASSI LEINGANG PE

Know what's **below.**
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Langan Engineering, Environmental, Surveying, Landscape Architecture, and Geology, D.P.C.
10135 SE Sunnyside Road Suite 200
Clackamas, OR 97015
T: 503.659.9500 www.langan.com

CLIENT/OWNER

CYPRESS EQUITIES

PROJECT NAME

OREGON CITY MIXED USE GENERAL DEVELOPMENT PLAN

LANGAN PROJECT NUMBER: 794-002-701

PROJECT ADDRESS

1367 MOLALLA AVENUE
OREGON CITY, OR 97045

STAMP

REVISIONS

REV	ISSUED FOR:	DATE
0	GDP SUBMITTAL	11/14/2025

SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

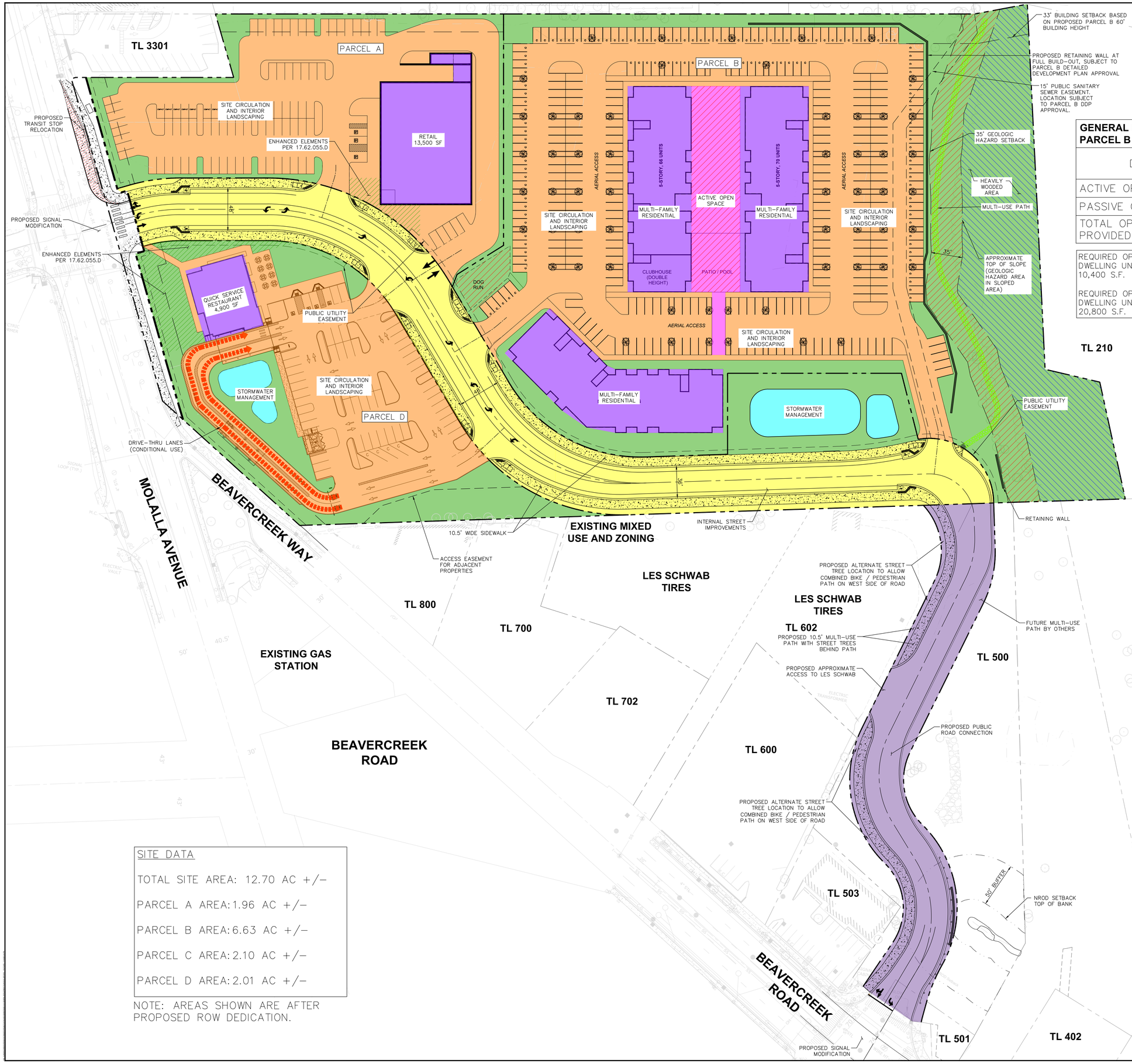
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

CIVIL COVER SHEET

SHEET NUMBER

GDP-C0.0



GENERAL DEVELOPMENT PLAN OPEN SPACE - PARCEL B		
DESCRIPTION	AREA (SF)	HATCH
ACTIVE OPEN SPACE	35,036	
PASSIVE OPEN SPACE	42,572	
TOTAL OPEN SPACE PROVIDED	77,608	

REQUIRED OPEN SPACE PER 17.62.057.B.2 = 50 S.F. / DWELLING UNIT. AT 208 UNITS, REQUIRED OPEN SPACE IS 10,400 S.F.

REQUIRED OPEN SPACE PER 17.65.050.C.8.b = 100 S.F. / DWELLING UNIT. AT 208 UNITS, REQUIRED OPEN SPACE IS 20,800 S.F.

PHASING

PHASE 1 – MOLALLA AVENUE IMPROVEMENTS, PROPOSED PUBLIC ROAD (AND ASSOCIATED UTILITIES AND EXTENDING TO BEAVERCREEK ROAD), OVERALL SITE ROUGH GRADING, AND PROPOSED STORMWATER MANAGEMENT FACILITY. PHASE 1 DETAILED DEVELOPMENT PLAN IS SUBMITTED CONCURRENTLY WITH THIS GENERAL DEVELOPMENT PLAN.

PHASE 2 – PARCEL D SITE AND UTILITY IMPROVEMENTS, INCLUDING THE PARCEL D STORMWATER MANAGEMENT FACILITY.

PHASE 3 – PARCEL B SITE AND UTILITY IMPROVEMENTS, INCLUDING EXTENSION OF SANITARY SEWER TO NORTHEAST CORNER OF SITE.

PHASE 4 – PARCEL A SITE AND UTILITY IMPROVEMENTS.

PHASES 2–4 ARE MARKET DRIVEN AND CAN BE CONSTRUCTED CONCURRENTLY OR SEPARATELY WITH OTHER PHASES.

PARCELS A, B, AND D LAYOUTS ARE SHOWN SCHEMATICALLY. PARCELS A, B, AND D WILL EACH SUBMIT THEIR OWN DETAILED DEVELOPMENT PLAN FOLLOWING GENERAL DEVELOPMENT PLAN APPROVAL.

GENERAL DEVELOPMENT PLAN DECISIONS:

1. OVERALL GENERAL DEVELOPMENT PLAN APPROVAL
2. CONDITIONAL USE APPROVAL FOR PARCEL D DRIVE–THROUGH FACILITY
3. MAXIMUM PARKING ADJUSTMENT

SITE DATA

TOTAL SITE AREA: 12.70 AC +/–

PARCEL A AREA: 1.96 AC +/–

PARCEL B AREA: 6.63 AC +/–

PARCEL C AREA: 2.10 AC +/–

PARCEL D AREA: 2.01 AC +/–

NOTE: AREAS SHOWN ARE AFTER PROPOSED ROW DEDICATION.

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture, and Geology, D.P.C.
10135 SE Sunnyside Road Suite 200
Clackamas, OR 97015
T: 503.659.9500 www.langan.com

CLIENT/OWNER

CYPRESS EQUITIES

PROJECT NAME

OREGON CITY MIXED USE GENERAL DEVELOPMENT PLAN

LANGAN PROJECT NUMBER: 794-002-701

PROJECT ADDRESS

1367 MOLALLA AVENUE
OREGON CITY, OR 97045

STAMP

REVISIONS

REV	ISSUED FOR:	DATE
0	GDP SUBMITTAL	11/14/2025

SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

GENERAL DEVELOPMENT PLAN

SHEET NUMBER

GDP-C1.0

HILLTOP AVENUE

TL 2300

TL 2400
ZONE R-2

TL 2500

TL 2600

TL 2700

TL 2800

TL 2900
ZONE R-10

TL 3000

TL 3100

TL 3301

20' BUILDING SETBACK (BASED ON PROPOSED BUILDING HEIGHT)

33' BUILDING SETBACK (BASED ON PROPOSED BUILDING HEIGHT)

NO-BUILD EASEMENT

PARCEL A
RETAIL
13,500 SF

SANITARY SEWER EASEMENT

PARCEL B
MULTI-FAMILY
RESIDENTIAL
230,800 SF

OPEN SPACE

STEEP SLOPES

PROPOSED PUBLIC RIGHT OF WAY

ROW DEDICATION

TL 210

PARCEL D
QSR
4,900 SF

STORMWATER MANAGEMENT

ACCESS EASEMENT TO ADJACENT PROPERTIES SOUTH OF SUBJECT PROPERTY

MOLALLA AVENUE

BEAVERCREEK WAY

EXISTING MIXED USE AND ZONING

LES SCHWAB TIRES

TL 800

TL 700

LES SCHWAB TIRES

TL 602

TL 500

EXISTING GAS STATION

TL 702

BEAVERCREEK ROAD

TL 600

PROPOSED PUBLIC RIGHT OF WAY

AREA LEGEND

DESCRIPTION	AREA (SF)
TOTAL SITE AREA	560,272
STEEP SLOPES	42,745
GEOLOGIC HAZARD SETBACK	20,111
NO-BUILD EASEMENT	8,245
ROW DEDICATION	6,878
ROW / PUBLIC STORM FACILITY	98,275
SETBACKS / PUE	36,360
SANITARY SEWER EASEMENT	6,729
NET DEVELOPABLE AREA	340,929
BUILDING AREA	249,141
FAR (BLDG/NET)	0.73

NOTE: MINIMUM MULTI-FAMILY TOTAL BUILDING SIZE (INCLUDING ALL STORIES) = 66,844 S.F. IN ORDER TO ACHIEVE MINIMUM 0.25 FAR

0 20 40 80
SCALE: 1 inch = 40 ft.

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture, and Geology, D.P.C.
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SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

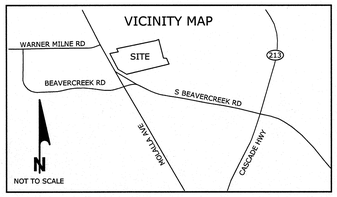
FLOOR AREA RATIO EXHIBIT

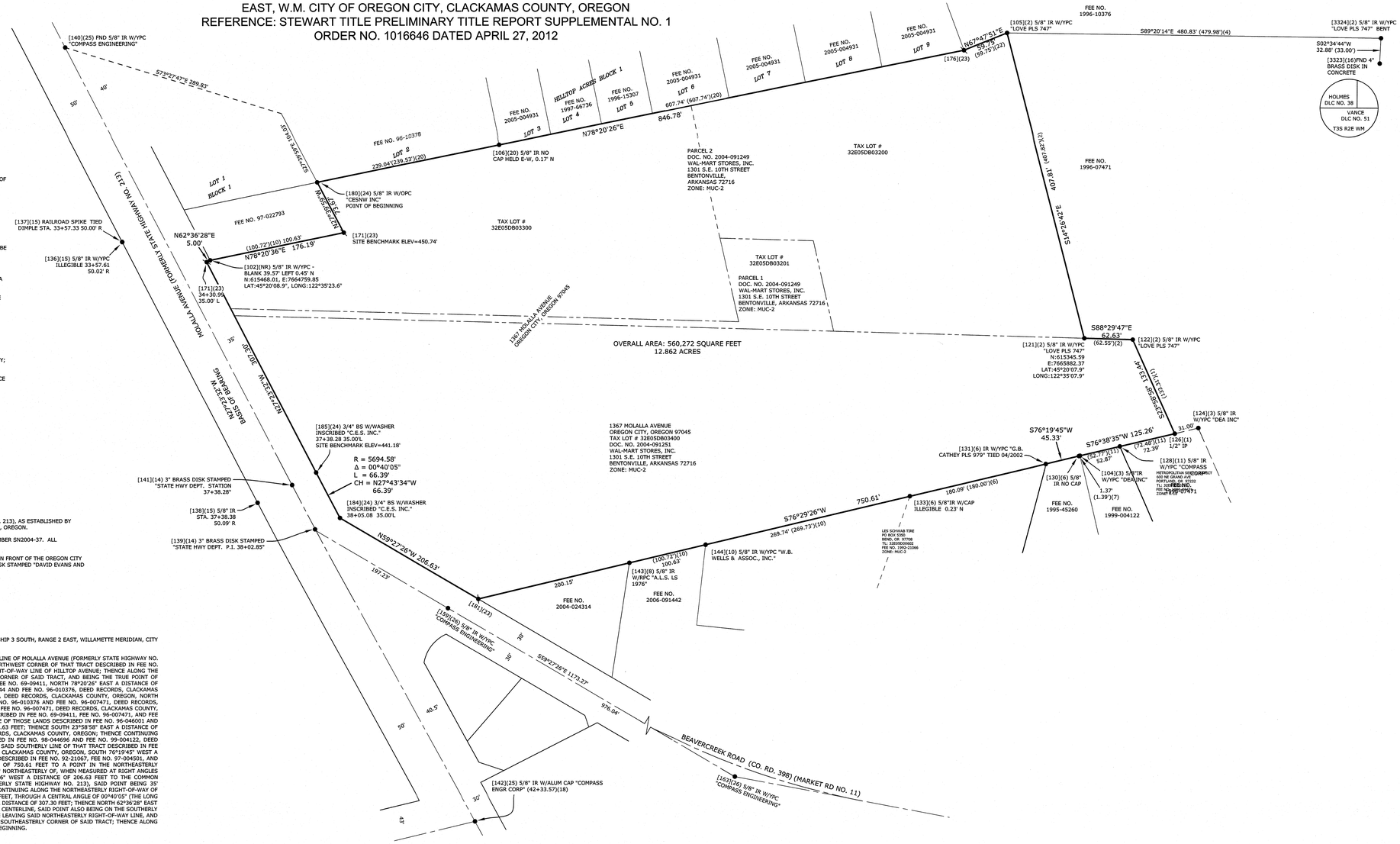
SHEET NUMBER

GDP-EX-FAR

ALTA/ACSM SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON
REFERENCE: STEWART TITLE PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 1
ORDER NO. 1016646 DATED APRIL 27, 2012





CERTIFICATION FOR SURVEY

1. THE SURVEY WAS MADE ON THE GROUND DURING APRIL AND MAY OF 2012, AND CORRECTLY SHOWS THE AREA OF THE SUBJECT PROPERTY, THE LOCATION AND TYPE OF ALL BUILDINGS, STRUCTURES AND OTHER IMPROVEMENTS SITUATED ON THE SUBJECT PROPERTY.

2. EXCEPT AS SHOWN ON THE SURVEY, THERE ARE NO OBSERVABLE, ABOVE GROUND ENCROACHMENTS BY THE IMPROVEMENTS ON THE SUBJECT PROPERTY UPON ADJOINING PROPERTIES, STREETS OR ALLEYS, OR BY THE IMPROVEMENTS ON ADJOINING PROPERTIES, STREETS OR ALLEYS UPON THE SUBJECT PROPERTY.

3. THE LOCATION OF EACH EASEMENT, RIGHT OF WAY, SERVITUDE, AND OTHER MATTER AFFECTING THE SUBJECT PROPERTY AND LISTED IN STEWART TITLE COMPANY, PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 1, ORDER NUMBER 1016646, DATED APRIL 27, 2012, WITH RESPECT TO THE SUBJECT PROPERTY, HAS BEEN SHOWN ON THE SURVEY, TOGETHER WITH THE APPROPRIATE RECORDING REFERENCES, TO THE EXTENT THAT SUCH MATTERS CAN BE LOCATED. THE PROPERTY SHOWN ON THE SURVEY IS THE PROPERTY DESCRIBED IN THAT TITLE REPORT.

4. THE SUBJECT PROPERTY HAS ACCESS TO AND FROM DULY DEDICATED AND ACCEPTED PUBLIC STREETS.

5. THE MEASURED BEARINGS AND DISTANCES SHOWN HEREON FORMS A MATHEMATICALLY CLOSED FIGURE WITH A MINIMUM LATITUDE AND DEPARTURE CLOSURE ERROR OF 1 IN 50,000.

6.THIS SITE LIES WITHIN WITHIN THE LIMITS OF FEMA MAP NUMBER 41005C0279D, WHICH IS NOT PRINTED SINCE THE ENTIRE MAP IS IN ZONE 'X' AS REITERATED ON FEMA MAP NUMBER 41005C1ND0A, EFFECTIVE DATE: JUNE 17, 2008.

7.SUBJECT PROPERTY IS ZONED, MUC-2 "MIXED USE CORRIDOR"

8. NO ORTHOPHOTOGRAPHY, PHOTOGRAMMETRIC MAPPING, LASER SCANNING, OR SIMILAR PRODUCTS WERE UTILIZED IN THE PREPARATION OF THIS SURVEY.

I HEREBY CERTIFY TO PACLAND; WAL-MART STORES, INC., A DELAWARE CORPORATION; WAL-MART REAL ESTATE BUSINESS TRUST, A DELAWARE STATUTORY TRUST; WAL-MART TRS, LLC, A DELAWARE LIMITED LIABILITY COMPANY; STEWART TITLE GUARANTY COMPANY;

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2011 "MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS", JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 1-6, 7(a), 7(b)(1), 7(c), 8, 9, 10(a), 11(b), 13, 14, 15-19, 20(a), 21 AND 22 OF TABLE 'A' THEREOF. THE FIELD WORK WAS COMPLETED ON JULY 9, 2012.

CES/NW MAKES NO WARRANTIES AS TO MATTER OF UNWRITTEN TITLE SUCH AS ACQUIESCENCE, ESTOPPEL, ADVERSE POSSESSION, ETC.

RYAN H. GODSEY
PROFESSIONAL LAND SURVEYOR
REGISTRATION NO.(OR) 65604

NARRATIVE

THE BASIS OF BEARINGS IS THE MONUMENTED CENTERLINE OF MOLALLA AVENUE (FORMERLY STATE HIGHWAY NO. 213), AS ESTABLISHED BY MONUMENTS NO. 140 AND NO. 139 AS SHOWN HEREON PER SN 2010-176, SURVEY RECORDS, CLACKAMAS COUNTY, OREGON.

THE PURPOSE OF THIS SURVEY IS TO RETRACE THE BOUNDARIES AS SHOWN ON CLACKAMAS COUNTY SURVEY NUMBER SN2004-37. ALL MONUMENTS SHOWN WERE VISITED IN THE PROCESS OF THIS RETRACEMENT.

VERTICAL DATUM IS BASED ON A CITY OF OREGON CITY BENCHMARK, A BRASS DISK LOCATED BY THE FLAG POLE IN FRONT OF THE OREGON CITY POLICE BUILDING, 320 WARNER MILNE RD, ELEVATION 447.729' (NGVD 1929) AND BENCHMARK 0030, A BRASS DISK STAMPED "DAVID EVANS AND ASSOCIATES, INC. GPS STA. LIBRARY 1990" ELEVATION = 452.739'

LEGAL DESCRIPTION PER TITLE REPORT

A TRACT OF LAND SITUATED IN THE SOUTHWEST QUARTER AND THE SOUTHEAST QUARTER OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, WILLAMETTE MERIDIAN, CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON, SAID TRACT IS MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT A THREE INCH BRASS DISK SET BY THE OREGON STATE HIGHWAY DEPARTMENT IN THE CENTERLINE OF MOLALLA AVENUE (FORMERLY STATE HIGHWAY NO. 213) AT ENGINEER'S STATION 31+00; THENCE SOUTH 73°27'47" EAST A DISTANCE OF 289.83 FEET TO THE NORTHWEST CORNER OF THAT TRACT DESCRIBED IN FEE NO. 96-010378, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SAID POINT ALSO BEING ON THE SOUTHERLY RIGHT-OF-WAY LINE OF HILLTOP AVENUE; THENCE ALONG THE WESTERLY LINE OF SAID TRACT, SOUTH 27°39'59" EAST A DISTANCE OF 104.03 FEET TO THE SOUTHWEST CORNER OF SAID TRACT, AND BEING THE TRUE POINT OF BEGINNING; THENCE ALONG THE NORTHERLY LINE OF THOSE TRACTS DESCRIBED IN FEE NO. 72-08888 AND FEE NO. 69-09411, NORTH 78°20'26" EAST A DISTANCE OF 846.78 FEET TO THE COMMON CORNER OF THOSE LANDS DESCRIBED IN FEE NO. 69-09411, FEE NO. 95-073144 AND FEE NO. 96-010376, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE SOUTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-010376, DEED RECORDS, CLACKAMAS COUNTY, OREGON, NORTH 67°47'51" EAST A DISTANCE OF 59.75 FEET TO THE COMMON CORNER OF THOSE LANDS DESCRIBED IN FEE NO. 96-010376 AND FEE NO. 96-007471, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE CONTINUING ALONG THE WESTERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-007471, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 14°26'42" EAST A DISTANCE OF 407.81 FEET TO THE COMMON CORNER OF THOSE LANDS DESCRIBED IN FEE NO. 69-09411, FEE NO. 96-007471, AND FEE NO. 96-046001, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE CONTINUING ALONG THE COMMON LINE OF THOSE LANDS DESCRIBED IN FEE NO. 96-046001 AND FEE NO. 96-007471, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 88°29'47" EAST A DISTANCE OF 62.63 FEET; THENCE SOUTH 23°58'58" EAST A DISTANCE OF 133.44 FEET TO THE SOUTHEASTERLY CORNER OF THAT TRACT DESCRIBED IN FEE NO. 96-046001, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE CONTINUING ALONG THE SOUTHERLY LINE OF SAID TRACT, AND ALONG THE NORTHERLY LINE OF THOSE LANDS DESCRIBED IN FEE NO. 98-044696 AND FEE NO. 99-004122, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 76°38'35" WEST A DISTANCE OF 125.26 FEET; THENCE ALONG SAID SOUTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-046001, AND THE NORTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 95-045260, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 76°19'45" WEST A DISTANCE OF 45.33 FEET; THENCE ALONG SAID SOUTHERLY LINE, AND THE NORTHERLY LINE OF THOSE LANDS DESCRIBED IN FEE NO. 98-041108, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 76°29'26" WEST A DISTANCE OF 750.61 FEET TO A POINT IN THE NORTHEASTERLY RIGHT-OF-WAY OF BEAVERCREEK ROAD (MARKET ROAD NO. 11) (COUNTY ROAD NO. 398), SAID POINT BEING 30' NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, THE CENTERLINE OF SAID ROAD; THENCE ALONG SAID NORTHEASTERLY RIGHT-OF-WAY, NORTH 59°27'26" WEST A DISTANCE OF 206.63 FEET TO THE COMMON NORTHEASTERLY RIGHT-OF-WAY INTERSECTION OF SAID BEAVERCREEK ROAD AND MOLALLA AVENUE (FORMERLY STATE HIGHWAY NO. 213), SAID POINT BEING 35' NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, SAID CENTERLINE OF MOLALLA AVENUE; THENCE CONTINUING ALONG THE NORTHEASTERLY RIGHT-OF-WAY OF SAID MOLALLA AVENUE, ALONG THE ARC OF A 5694.58 FOOT RADIUS CURVE TO THE RIGHT A DISTANCE OF 66.39 FEET, THROUGH A CENTRAL ANGLE OF 00°40'05" (THE LONG CHORD OF WHICH BEARS NORTH 27°43'34" WEST A DISTANCE OF 66.39 FEET); THENCE NORTH 27°23'32" WEST A DISTANCE OF 307.30 FEET; THENCE NORTH 62°36'28" EAST A DISTANCE OF 5.00 FEET TO A POINT 40 FEET NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, SAID CENTERLINE, SAID POINT ALSO BEING ON THE SOUTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 97-022793, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE LEAVING SAID NORTHEASTERLY RIGHT-OF-WAY LINE, AND CONTINUING ALONG SAID SOUTHERLY TRACT LINE, NORTH 78°20'26" EAST A DISTANCE OF 176.19 FEET TO THE SOUTHEASTERLY CORNER OF SAID TRACT; THENCE ALONG THE EASTERLY LINE OF SAID TRACT, NORTH 27°39'59" WEST A DISTANCE OF 73.67 FEET TO THE TRUE POINT OF BEGINNING.

CONTAINING AN AREA OF 560,272 SQUARE FEET, OR 12.862 ACRES, MORE OR LESS.

RECORD DESCRIPTIONS

2004-091249 PARCEL 1
A TRACT OF LAND SITUATED IN THE SOUTHWEST 1/4 AND THE SOUTHEAST 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, WILLAMETTE MERIDIAN, CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON. SAID TRACT IS MORE PARTICULARLY DESCRIBED AS FOLLOW:

COMMENCING AT THE EXTREME SOUTHERLY CORNER OF TRACT DESCRIBED IN CLACKAMAS COUNTY DEED BOOK "O", PAGE 265, SAID POINT BEING IN THE CENTERLINE OF MOLALLA AVENUE; THENCE SOUTH 88°29'47" EAST A DISTANCE OF 39.98 FEET TO A POINT BEING 35 FEET NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, THE CENTERLINE OF SAID ROAD, SAID POINT BEING THE TRUE POINT OF BEGINNING; THENCE ALONG THE NORTHEASTERLY RIGHT-OF-WAY OF SAID MOLALLA AVENUE, NORTH 27°23'32" WEST A DISTANCE OF 10.28 FEET; THENCE ALONG THE SOUTHERLY LINE THAT TRACT DESCRIBED IN FEE NO. 72-08888 DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 88°29'47" EAST A DISTANCE OF 653.92 FEET TO THE SOUTHEAST CORNER OF SAID TRACT; THENCE ALONG THE EASTERLY LINE OF SAID TRACT, NORTH 12°38'23" WEST A DISTANCE OF 110.72 FEET TO THE NORTHWEST CORNER OF THAT TRACT DESCRIBED IN FEE NO. 81-19662, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE NORTHERLY LINE OF SAID TRACT, SOUTH 88°29'47" EAST A DISTANCE OF 120.00 FEET TO THE NORTHEAST CORNER OF SAID TRACT; THENCE ALONG THE EASTERLY LINE OF SAID TRACT, SOUTH 12°38'23" EAST A DISTANCE OF 120.00 FEET TO A POINT ON THE NORTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-046001, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE NORTHERLY LINE OF SAID TRACT, NORTH 88°29'47" WEST A DISTANCE OF 771.22 FEET TO THE TRUE POINT OF BEGINNING.

CONTAINING AN AREA OF 19,837 SQUARE FEET, OR 0.455 ACRES, MORE OR LESS.

2004-091249 PARCEL 2
A TRACT OF LAND SITUATED IN THE SOUTHWEST 1/4 AND THE SOUTHEAST 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, WILLAMETTE MERIDIAN, CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON. SAID TRACT IS MORE PARTICULARLY DESCRIBED AS FOLLOW:

COMMENCING AT THE EXTREME SOUTHERLY CORNER OF TRACT DESCRIBED IN CLACKAMAS COUNTY DEED BOOK "O", PAGE 265, SAID POINT BEING IN THE CENTERLINE OF MOLALLA AVENUE; THENCE SOUTH 88°29'47" EAST A DISTANCE OF 39.98 FEET TO A POINT BEING 35 FEET NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, THE CENTERLINE OF SAID ROAD; THENCE ALONG THE NORTHEASTERLY RIGHT-OF-WAY OF SAID MOLALLA AVENUE, NORTH 27°23'32" WEST A DISTANCE OF 67.85 FEET; THENCE NORTH 62°36'28" EAST A DISTANCE OF 5.00 FEET TO A POINT 40 FEET NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, SAID CENTERLINE, SAID POINT ALSO BEING ON THE SOUTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 97-022793, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE LEAVING SAID NORTHEASTERLY RIGHT-OF-WAY LINE, AND CONTINUING ALONG SAID SOUTHERLY LINE, NORTH 78°20'26" EAST A DISTANCE OF 176.19 FEET TO THE SOUTHWEST CORNER OF THAT TRACT DESCRIBED IN FEE NO. 96-010378, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE NORTHERLY LINE OF THOSE TRACTS DESCRIBED IN FEE NO. 72-08888 AND FEE NO. 69-09411, NORTH 78°20'26" EAST A DISTANCE OF 846.78 FEET TO THE COMMON CORNER OF THOSE LANDS DESCRIBED IN FEE NO. 96-010376, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE SOUTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-010376, DEED RECORDS, CLACKAMAS COUNTY, NORTH 67°47'51" EAST A DISTANCE OF 59.75 FEET TO THE COMMON CORNER OF THOSE LANDS DESCRIBED IN FEE NO. 96-010376 AND FEE NO. 96-007471, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE CONTINUING ALONG THE WESTERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-007471, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 14°26'42" EAST A DISTANCE OF 407.81 FEET TO THE COMMON CORNER OF THOSE TRACTS DESCRIBED IN FEE NO. 69-09411, FEE NO. 96-007471, AND FEE NO. 96-046001, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE SOUTHERLY LINE OF THAT TRACT OF LAND DESCRIBED IN FEE NO. 69-09411, DEED RECORDS, CLACKAMAS COUNTY, OREGON, NORTH 88°29'47" WEST A DISTANCE OF 322.36 FEET TO THE SOUTHEAST CORNER OF THAT TRACT DESCRIBED IN FEE NO. 81-19662, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE EASTERLY LINE OF SAID TRACT DESCRIBED IN FEE NO. 81-19662, NORTH 1238'23" WEST A DISTANCE OF 120.00 FEET; THENCE ALONG THE NORTHERLY LINE OF SAID TRACT, NORTH 8829'47" WEST A DISTANCE OF 120.00 FEET; THENCE ALONG THE WESTERLY LINE OF SAID TRACT, SOUTH 12°38'23" EAST A DISTANCE OF 110.72 FEET TO THE SOUTHEAST CORNER OF THAT TRACT DESCRIBED IN FEE NO. 72-08888, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE SOUTHERLY LINE OF SAID TRACT DESCRIBED IN FEE NO. 72-08888, NORTH 8829'47" WEST A DISTANCE OF 653.92 FEET TO THE TRUE POINT OF BEGINNING.

CONTAINING AN AREA OF 256,397 SQUARE FEET, OR 5.886 ACRES, MORE OR LESS.

2004-091251
A TRACT OF LAND SITUATED IN THE SOUTHWEST 1/4 AND THE SOUTHEAST 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, WILLAMETTE MERIDIAN, CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON. SAID TRACT IS MORE PARTICULARLY DESCRIBED AS FOLLOW:

COMMENCING AT THE EXTREME SOUTHERLY CORNER OF TRACT DESCRIBED IN CLACKAMAS COUNTY DEED BOOK "O", PAGE 265, SAID POINT BEING IN THE CENTERLINE OF MOLALLA AVENUE; THENCE SOUTH 88°29'47" EAST A DISTANCE OF 39.98 FEET TO A POINT BEING 35 FEET NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, THE CENTERLINE OF SAID ROAD, SAID POINT BEING THE TRUE POINT OF BEGINNING; THENCE ALONG THE SOUTHERLY LINE OF THOSE LANDS DESCRIBED IN FEE NO. 81-19662, FEE NO. 69-09411, AND FEE NO. 96-007471 DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 88°29'47" EAST A DISTANCE OF 1156.21 FEET; THENCE SOUTH 23°58'58" EAST A DISTANCE OF 133.44 FEET TO THE SOUTHEASTERLY CORNER OF THAT TRACT DESCRIBED IN FEE NO. 96-046001, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE CONTINUING ALONG THE SOUTHERLY LINE OF SAID TRACT, AND ALONG THE NORTHERLY LINE OF THOSE LANDS DESCRIBED IN FEE NO. 98-044696 AND FEE NO. 99-004122, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 76°38'35" WEST A DISTANCE OF 125.26 FEET; THENCE ALONG SAID SOUTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-046001, AND THE NORTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 95-045260, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 76°19'45" WEST A DISTANCE OF 45.33 FEET; THENCE ALONG SAID SOUTHERLY LINE, AND THE NORTHERLY LINE OF THOSE LANDS DESCRIBED IN FEE NO. 92-21067, FEE NO. 97-004501, AND FEE NO. 98-041108, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 76°29'26" WEST A DISTANCE OF 750.61 FEET TO A POINT IN THE NORTHEASTERLY RIGHT-OF-WAY OF BEAVERCREEK ROAD (MARKET ROAD NO. 11) (COUNTY ROAD NO. 398), SAID POINT BEING 30' NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, THE CENTERLINE OF SAID ROAD; THENCE ALONG SAID NORTHEASTERLY RIGHT-OF-WAY, NORTH 59°27'26" WEST A DISTANCE OF 206.63 FEET TO THE COMMON NORTHEASTERLY RIGHT-OF-WAY INTERSECTION OF SAID BEAVERCREEK ROAD AND MOLALLA AVENUE (FORMERLY STATE HIGHWAY NO. 213), SAID POINT BEING 35' NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, SAID CENTERLINE OF MOLALLA AVENUE; THENCE CONTINUING ALONG THE NORTHEASTERLY RIGHT-OF-WAY OF SAID MOLALLA AVENUE, ALONG THE ARC OF A 5694.58 FOOT RADIUS CURVE TO THE RIGHT A DISTANCE OF 66.39 FEET, THROUGH A CENTRAL ANGLE OF 00°40'05" (THE LONG CHORD OF WHICH BEARS NORTH 27°43'34" WEST A DISTANCE OF 66.39 FEET); THENCE NORTH 27°23'32" WEST A DISTANCE OF 229.17 FEET TO THE TRUE POINT OF BEGINNING.

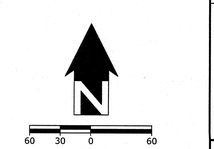
CONTAINING AN AREA OF 284,038 SQUARE FEET, OR 6.521 ACRES, MORE OR LESS.

REFERENCES

(1) PS-3291
(2) PS-24613
(3) PS-22135
(4) PS-27403
(5) PARTITION PLAT NO. 1996-14
(6) PS-18026
(7) PS-26512
(8) PS-23880
(9) PARTITION PLAT NO. 1992-49
(10) PS-24728
(11) PS-27729
(12) PS-28185
(13) PS-16481
(14) OREGON STATE HIGHWAY DEPARTMENT DRG. NO. 8B-12-9 DEC. 1958
(15) PS-27047
(16) BT BOOK 12, PAGE 6
(17) LP 060 SUPPLEMENTAL
(18) PS-25313
(19) PS-24286
(20) HILLTOP ACRES, PLAT BOOK 37 PAGE 26
(21) PS-18187
(22) PS-26713
(23) SN29636
(24) SN2004-377
(25) SN2010-176
(26) SN2008-034

LEGEND

● = FOUND SURVEY MONUMENT AS NOTED
◥ = FOUND 5/8" IRON ROD W/ORANGE PLASTIC CAP MARKED "CES NW, INC." PER S.N. 29636
BS W/WASHER = BRASS SCREW WITH WASHER
L = LENGTH ALONG ARC
W/YPC = WITH YELLOW PLASTIC CAP
DOC. NO. = DOCUMENT NUMBER, CLACKAMAS COUNTY RECORDS
FTC = FROM TRUE CORNER
NR = RECORD NOT LOCATED
PS = PRIVATE SURVEY NUMBER AS FILED, CLACKAMAS COUNTY SURVEYOR'S OFFICE
SN = SURVEY NUMBER AS FILED, CLACKAMAS COUNTY SURVEYOR'S OFFICE
FEE NO. RECORDING NUMBER, CLACKAMAS COUNTY RECORDER
###.## = DENOTES MEASURED DISTANCE
(###.##')(#) = DENOTES RECORD DISTANCE PER REFERENCE NUMBER
###.##'(#) = DENOTES MEASURED AND RECORD DISTANCE(HELD) PER REFERENCE NUMBER
[###](#) = DENOTES FOUND MONUMENT NUMBER AND REFERENCE NUMBER



SHEET INDEX

SHEET 1 - VICINITY MAP, BOUNDARY SURVEY & SURVEYORS CERT
SHEET 2 - ZONING & EXCEPTIONS
SHEET 3 - SITE TOPOGRAPHIC FEATURES, UTILITIES & ELEVATIONS
SHEET 4 - STORM & SANITARY SEWER
SHEET 5 - TREE SURVEY

REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON DECEMBER 13, 2007 RYAN H. GODSEY 65604
RENEWS: 6/30/13

OREGON CITY
PROJECT NO. 3051-00

PACLAND
6400 SE LAKE ROAD, SUITE 300
PORTLAND, OR 97222

CES|NW
13190 SW 68TH PKWY, STE 150
TIGARD, OREGON 97223
(503)968-6655 www.cesnw.com

ALTA SURVEY

REVISIONS

2689-ALTA.DWG

DATE: 07-09-12
CHECKED BY: RHG
2689
283
PROJECT NO. 3051-00:
DRAWN BY:

BOUNDARY SURVEY

SHEET 1
OF 5

ALTA/ACSM SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2
EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON
REFERENCE: STEWART TITLE PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 1
ORDER NO. 1016646 DATED APRIL 27, 2012

SPECIAL EXCEPTIONS

6. CITY LIENS, IF ANY, OF THE CITY OF OREGON CITY.

7. PERSONAL PROPERTY TAXES, IF ANY

8. COVENANTS, CONDITIONS, RESTRICTIONS AND EASEMENTS IN DECLARATION OF RESTRICTIONS, AND ANY AMENDMENTS THERETO:
RECORDED: JUNE 3, 1981
RECORDING NO.: 81015230
(PLOTTED BUILDING RESTRICTION)

9. AN EASEMENT CREATED BY JUDGEMENT, AND THE TERMS AND CONDITIONS THEREOF:
ENTERED: DECEMBER 20, 1996
SUIT NO.: CV96-09-321
IN FAVOR OF: THE CITY OF OREGON CITY
FOR: RIGHT OF WAY
AFFECTS: THE WESTERLY PORTION OF SAID PREMISES
(PLOTTED RIGHT-OF-WAY EASEMENT)

10. EASEMENT AND THE TERMS AND CONDITIONS THEREOF:
GRANTEE: LES SCHWAB PROFIT SHARING TRUST
PURPOSE: INGRESS AND EGRESS
AFFECTS: REFERENCE SAID DOCUMENT FOR PARTICULARS
RECORDED: OCTOBER 1, 2004
RECORDING NO.: 2004091594
(NOT PLOTTED - EASEMENT AREA NOT CLEARLY DEFINED)

11. ANY UNRECORDED LEASEHOLDS, RIGHT OF VENDORS AND HOLDERS OF SECURITY INTEREST ON PERSONAL PROPERTY INSTALLED UPON SAID PROPERTY, AND RIGHT OF TENANTS TO REMOVE TRADE FIXTURES AT THE EXPIRATION OF THE TERM.

12. EVIDENCE OF THE INDEMNITY AND AUTHORITY OF THE OFFICES OF WAL-MART STORES, INC., A DELAWARE CORPORATION TO EXECUTE THE FORTHCOMING INSTRUMENT MUST BE SUBMITTED.

ZONING
MUC-2 - MIXED-USE CORRIDOR
OREGON CITY OREGON - MUNICIPAL CODE CHAPTER 17.29

SETBACKS 17.29.060 DIMENSIONAL STANDARDS

MAXIMUM ALLOWABLE SETBACKS:	
FRONT YARD	5'*
INTERIOR SIDE YARD	NONE
CORNER SIDE YARD ABUTTING STREET	25'**
REAR YARD	NONE
REAR YARD	NONE
MINIMUM REQUIRED INTERIOR AND REAR YARD SETBACKS IF ABUTTING A RESIDENTIAL ZONE	25'***
MAXIMUM BUILDING SQUARE FOOTAGE	NO MAXIMUM
MAXIMUM BUILDING HEIGHT	60'

*MAY BE EXPANDED WITH SITE PLAN AND DESIGN REVIEW REQUIREMENTS OF SECTION 17.62.055
**PROVIDED THE SITE PLAN AND DESIGN REVIEW REQUIREMENTS OF SECTION 17.62.055 ARE MET
***PLUS ONE FOOT ADDITIONAL YARD SETBACK FOR EVERY TWO FEET OF BUILDING HEIGHT OVER 35'

CITY OF OREGON CITY
PLANNING DEPARTMENT
221 MOLALLA AVENUE, SUITE 200
OREGON CITY, OR 97045
503-722-3789

NO REPRESENTATION IS MADE FOR THE ACCURACY OR COMPLETENESS OF SAID THIRD PARTY INFORMATION. THIS FIRM IS NOT AN EXPERT IN THE INTERPRETATION OF COMPLEX ZONING ORDINANCES. COMPLIANCE IS BEYOND THE SCOPE OF THIS SURVEY. ANY USER OF SAID INFORMATION IS URGED TO CONTACT THE LOCAL AGENCY DIRECTLY.



60 30 0 60
1" = 60'

REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
DECEMBER 13, 2007
RYAN H. GODSEY
65604
RENEWS: 6/30/13

OREGON CITY
PROJECT NO. 3051-00

PACLAND
6400 SE LAKE ROAD, SUITE 300
PORTLAND, OR 97222

CES NW
13190 SW 68TH PKWY, STE 150
TIGARD, OREGON 97223
(503)968-6655 www.cesnw.com

ALTA SURVEY

REVISIONS

2689-ALTA.DWG

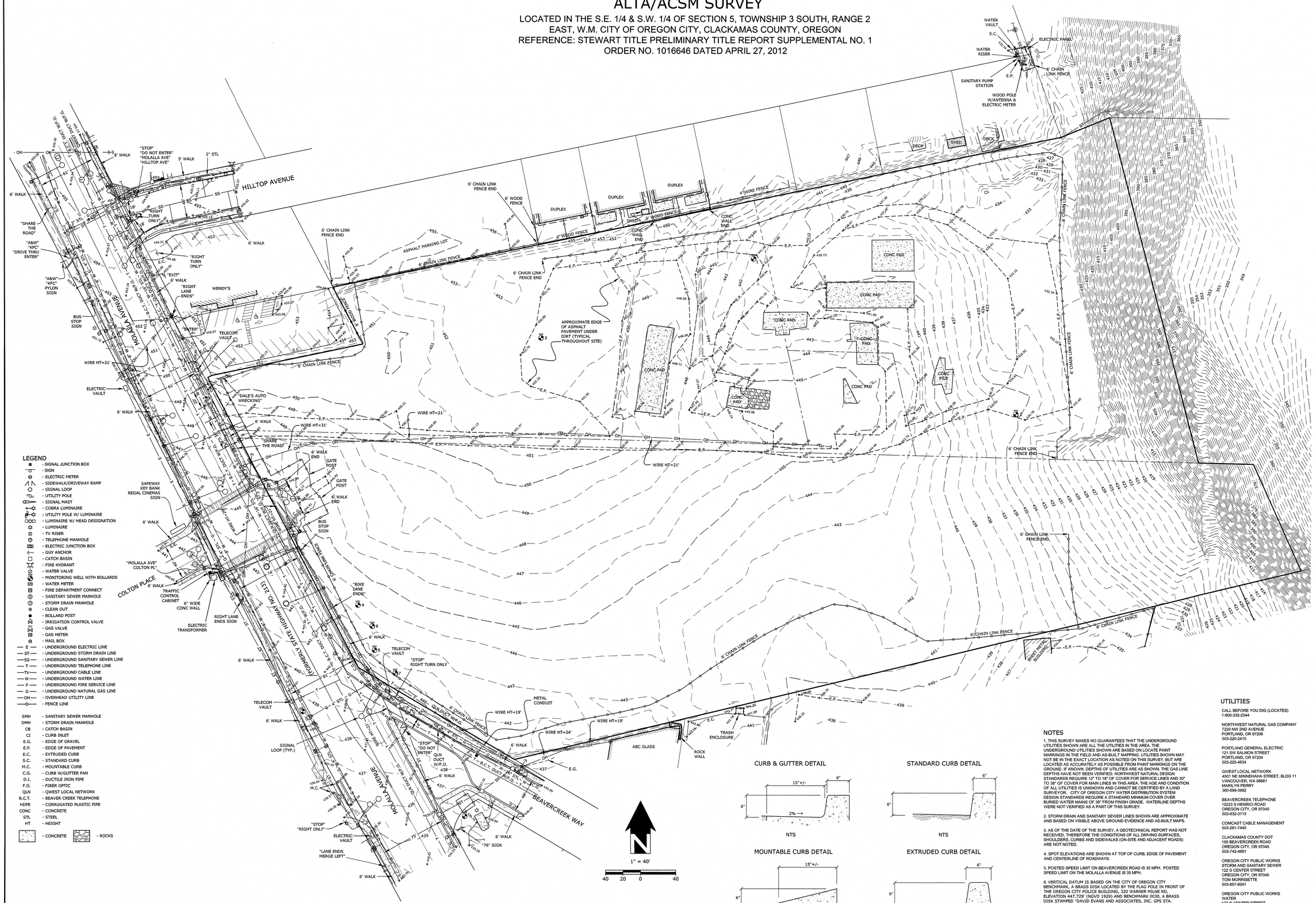
PROJECT NO. 3051-00: 2689
DRAWN BY: JBJ
DATE: 07-09-12
CHECKED BY: RHG

TITLE EXCEPTIONS

SHEET 2
OF 5

ALTA/ACSM SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON
REFERENCE: STEWART TITLE PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 1
ORDER NO. 1016646 DATED APRIL 27, 2012



LEGEND

- SIGNAL JUNCTION BOX
- SIGN
- ELECTRIC METER
- SIDEWALK/DRIVEWAY RAMP
- SIGNAL LOOP
- UTILITY POLE
- SIGNAL MAST
- COBRA LUMINAIRE
- UTILITY POLE W/ LUMINAIRE
- LUMINAIRE W/ HEAD DESIGNATION
- LUMINAIRE
- TV RISER
- TELEPHONE MANHOLE
- ELECTRIC JUNCTION BOX
- GUY ANCHOR
- CATCH BASIN
- FIRE HYDRANT
- WATER VALVE
- MONITORING WELL WITH BOLLARDS
- WATER METER
- FIRE DEPARTMENT CONNECT
- SANITARY SEWER MANHOLE
- STORM DRAIN MANHOLE
- CLEAN OUT
- BOLLARD POST
- IRRIGATION CONTROL VALVE
- GAS VALVE
- GAS METER
- MAIL BOX
- E — UNDERGROUND ELECTRIC LINE
- ST — UNDERGROUND STORM DRAIN LINE
- SS — UNDERGROUND SANITARY SEWER LINE
- T — UNDERGROUND TELEPHONE LINE
- TV — UNDERGROUND CABLE LINE
- W — UNDERGROUND WATER LINE
- F — UNDERGROUND FIRE SERVICE LINE
- G — UNDERGROUND NATURAL GAS LINE
- OH — OVERHEAD UTILITY LINE
- FENCE LINE

SMH	SANITARY SEWER MANHOLE
DMH	STORM DRAIN MANHOLE
CB	CATCH BASIN
CI	CURB INLET
E.G.	EDGE OF GRAVEL
E.P.	EDGE OF PAVEMENT
E.C.	EXTRUDED CURB
S.C.	STANDARD CURB
M.C.	MOUNTABLE CURB
C.G.	CURB W/GUTTER PAN
D.I.	DUCTILE IRON PIPE
F.O.	FIBER OPTIC
QLN	QWEST LOCAL NETWORK
B.C.T.	BEAVER CREEK TELEPHONE
HDPE	CORRUGATED PLASTIC PIPE
CONC	CONCRETE
STL	STEEL
HT	HEIGHT

- CONCRETE
- ROCKS

CURB & GUTTER DETAIL

NTS

STANDARD CURB DETAIL

NTS

MOUNTABLE CURB DETAIL

NTS

EXTRUDED CURB DETAIL

NTS

NOTES

1. THIS SURVEY MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN ARE ALL THE UTILITIES IN THE AREA. THE UNDERGROUND UTILITIES SHOWN ARE BASED ON LOCATE PAINT MARKINGS IN THE FIELD AND AS-BUILT MAPPING. UTILITIES SHOWN MAY NOT BE IN THE EXACT LOCATION AS NOTED ON THIS SURVEY, BUT ARE LOCATED AS ACCURATELY AS POSSIBLE FROM PAINT MARKINGS ON THE GROUND. IF KNOWN, DEPTHS OF UTILITIES ARE AS SHOWN. THE GAS LINE DEPTHS HAVE NOT BEEN VERIFIED. NORTHWEST NATURAL DESIGN STANDARDS REQUIRE 12" TO 18" OF COVER FOR SERVICE LINES AND 30" TO 36" OF COVER FOR MAIN LINES IN THIS AREA. THE AGE AND CONDITION OF ALL UTILITIES IS UNKNOWN AND CANNOT BE CERTIFIED BY A LAND SURVEYOR. CITY OF OREGON CITY WATER DISTRIBUTION SYSTEM DESIGN STANDARDS REQUIRE A STANDARD MINIMUM COVER OVER BURIED WATER MAINS OF 36" FROM FINISH GRADE. WATERLINE DEPTHS WERE NOT VERIFIED AS A PART OF THIS SURVEY.

2. STORM DRAIN AND SANITARY SEWER LINES SHOWN ARE APPROXIMATE AND BASED ON VISIBLE ABOVE GROUND EVIDENCE AND AS-BUILT MAPS.

3. AS OF THE DATE OF THE SURVEY, A GEOTECHNICAL REPORT WAS NOT RECEIVED, THEREFORE THE CONDITIONS OF ALL DRIVING SURFACES, SHOULDERS, CURBS AND SIDEWALKS (ON-SITE AND ADJACENT ROADS) ARE NOT NOTED.

4. SPOT ELEVATIONS ARE SHOWN AT TOP OF CURB, EDGE OF PAVEMENT AND CENTERLINE OF ROADWAYS.

5. POSTED SPEED LIMIT ON BEAVERCREEK ROAD IS 35 MPH. POSTED SPEED LIMIT ON THE MOLALLA AVENUE IS 35 MPH.

6. VERTICAL DATUM IS BASED ON THE CITY OF OREGON CITY BENCHMARK, A BRASS DISK LOCATED BY THE FLAG POLE IN FRONT OF THE OREGON CITY POLICE BUILDING, 320 WARNER MILNE RD, ELEVATION 447.729' (NGVD 1929) AND BENCHMARK 0030, A BRASS DISK STAMPED "DAVID EVANS AND ASSOCIATES, INC. GPS STA. LIBRARY 1990" ELEVATION = 452.739'

UTILITIES

CALL BEFORE YOU DIG (LOCATES)
1-800-332-2344

NORTHWEST NATURAL GAS COMPANY
7220 NW 2ND AVENUE
PORTLAND, OR 97206
503-220-2415

PORTLAND GENERAL ELECTRIC
121 SW SALMON STREET
PORTLAND, OR 97204
503-225-4634

QWEST LOCAL NETWORK
4501 NE MINNEHAHA STREET, BLDG 11
VANCOUVER, WA 98661
MARILYN PERRY
360-696-3992

BEAVERCREEK TELEPHONE
15223 S HENRICI ROAD
OREGON CITY, OR 97045
503-632-3113

COMCAST CABLE MANAGEMENT
503-261-7440

CLACKAMAS COUNTY DOT
150 BEAVERCREEK ROAD
OREGON CITY, OR 97045
503-742-4681

OREGON CITY PUBLIC WORKS
STORM AND SANITARY SEWER
122 S CENTER STREET
OREGON CITY, OR 97045
TOM MORRISETTE
503-657-8241

OREGON CITY PUBLIC WORKS
WATER
122 S CENTER STREET
OREGON CITY, OR 97045
SCOTT KATRENA
503-657-8241

REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
DECEMBER 15, 2007
RYAN H. GODSEY
65604
RENEWS: 6/30/13

OREGON CITY
PROJECT NO. 3051-00

PACLAND
6400 SE LAKE ROAD, SUITE 300
PORTLAND, OR 97222

CES|NW
13190 SW 68TH PKWY, STE 150
TIGARD, OREGON 97223
(503)968-6655 www.cesnw.com

ALTA SURVEY

REVISIONS	DATE:	CHECKED BY:
7-13-12 UPDATED TO REFLECT COMMENTS	07-09-12	RHG

2689-ALTA.DWG

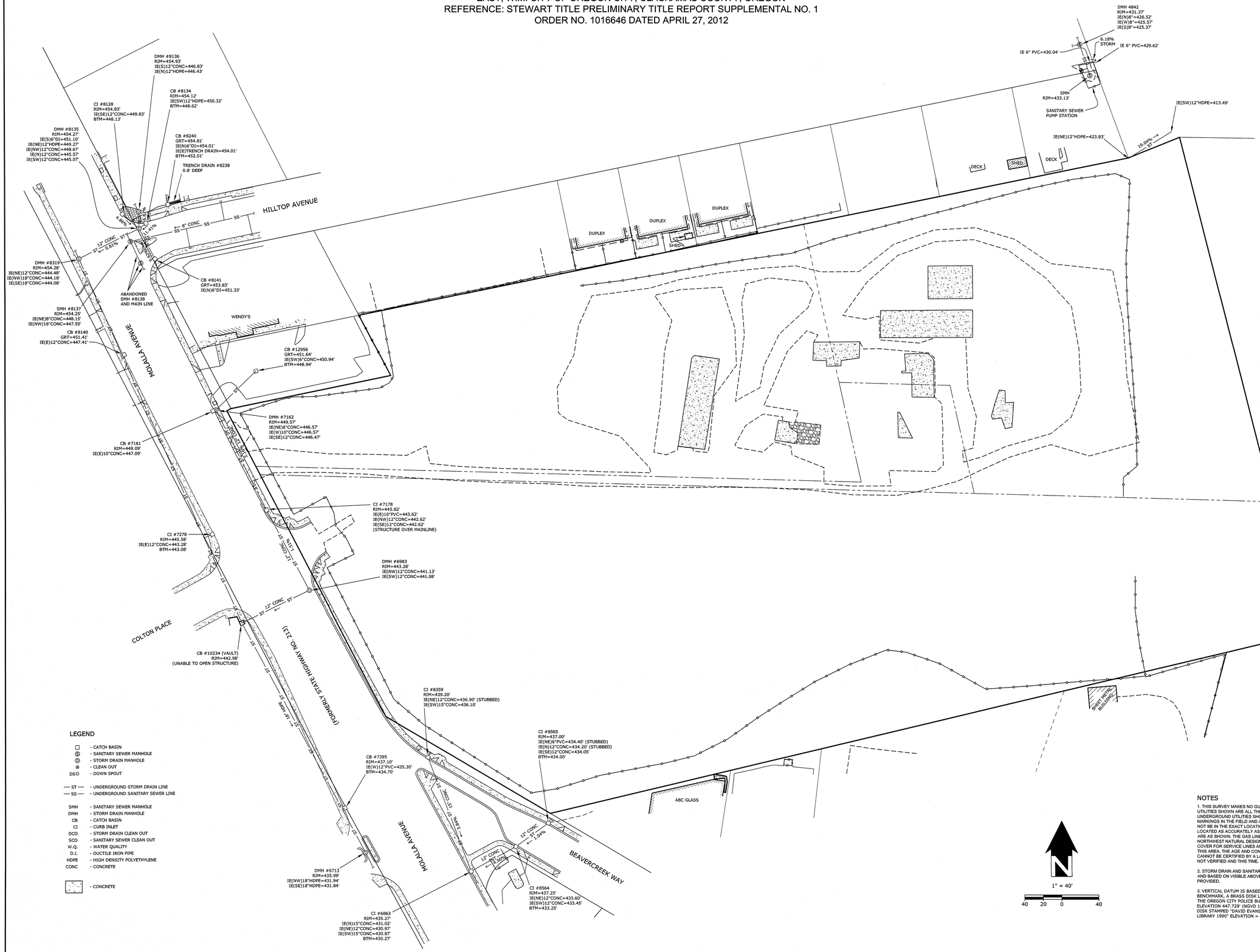
TOPOGRAPHIC SURVEY

PROJECT NO. 3051-00: 2689
DRAWN BY: JBJ

SHEET 3
OF 5

ALTA/ACSM SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2
EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON
REFERENCE: STEWART TITLE PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 1
ORDER NO. 1016646 DATED APRIL 27, 2012



LEGEND

- □ - CATCH BASIN
- Ⓢ - SANITARY SEWER MANHOLE
- Ⓒ - STORM DRAIN MANHOLE
- ⊛ - CLEAN OUT
- DSO - DOWN SPOUT
- — ST — - UNDERGROUND STORM DRAIN LINE
- — SS — - UNDERGROUND SANITARY SEWER LINE
- SMH - SANITARY SEWER MANHOLE
- DMH - STORM DRAIN MANHOLE
- CB - CATCH BASIN
- CI - CURB INLET
- DCO - STORM DRAIN CLEAN OUT
- SCO - SANITARY SEWER CLEAN OUT
- W.Q. - WATER QUALITY
- D.I. - DUCTILE IRON PIPE
- HDPE - HIGH DENSITY POLYETHYLENE
- CONC - CONCRETE
- - CONCRETE

NOTES

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REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
DECEMBER 13, 2007
RYAN H. GODSEY
65604
RENEWS: 6/30/13

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(503)968-6655 www.cesnw.com

ALTA SURVEY

REVISIONS

2689-ALTA.DWG

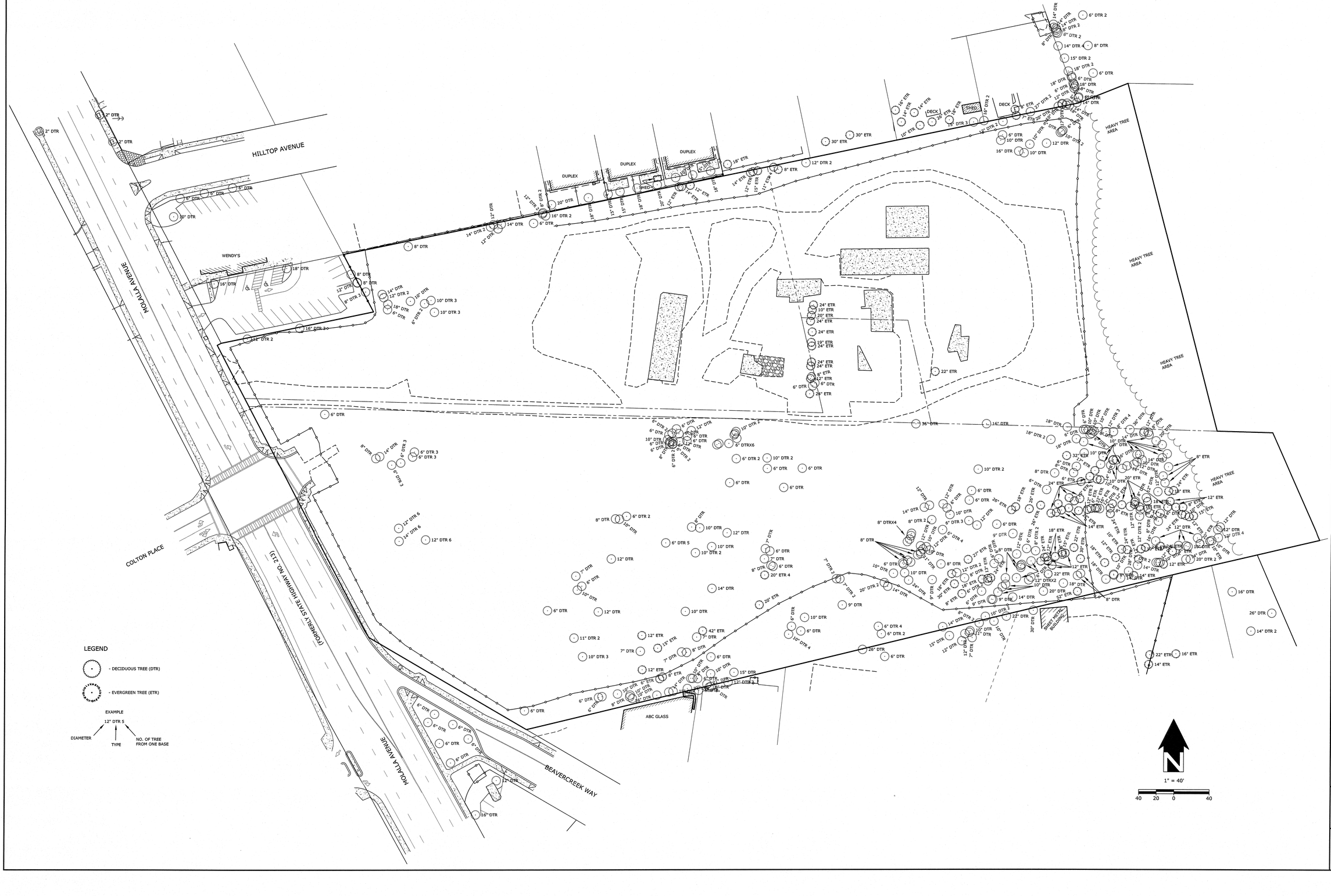
DATE: 07-09-12
CHECKED BY: KVG
2689
357
PROJECT NO.: 3051-00:
DRAWN BY:

STORM AND SANITARY SEWER

SHEET 4
OF 5

ALTA/ACSM SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2
EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON
REFERENCE: STEWART TITLE PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 1
ORDER NO. 1016646 DATED APRIL 27, 2012



REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
DECEMBER 13, 2007
RYAN H. GODSEY
65604
RENEWS: 6/30/13

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ALTA SURVEY

REVISIONS

PROJECT NO. 3051-00: 2689
DRAWN BY: JBJ
DATE: 07-09-12
CHECKED BY: RHG

TREE SURVEY

2689-ALTA.DWG

SHEET 5
OF 5

TOPOGRAPHIC SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2
EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON

TOPOGRAPHIC SURVEY

LEGEND

- SIGN
- ELECTRIC METER
- SIDEWALK/DRIVEWAY RAMP
- SIGNAL LOOP
- UTILITY POLE
- SIGNAL MAST
- COBRA LUMINAIRE
- UTILITY POLE W/ LUMINAIRE
- LUMINAIRE W/ HEAD DESIGNATION
- LUMINAIRE
- TV RISER
- TELEPHONE MANHOLE
- ELECTRIC JUNCTION BOX
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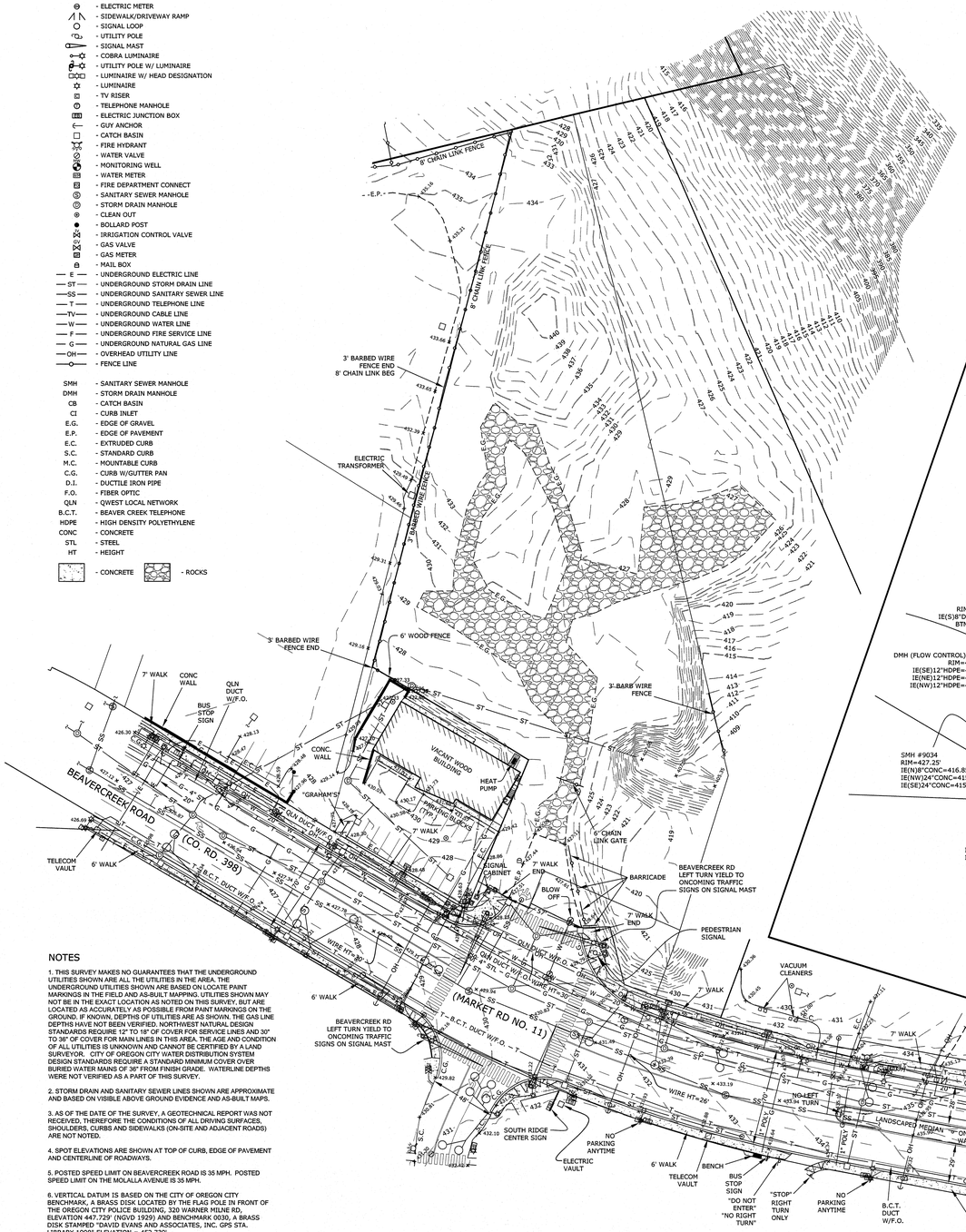

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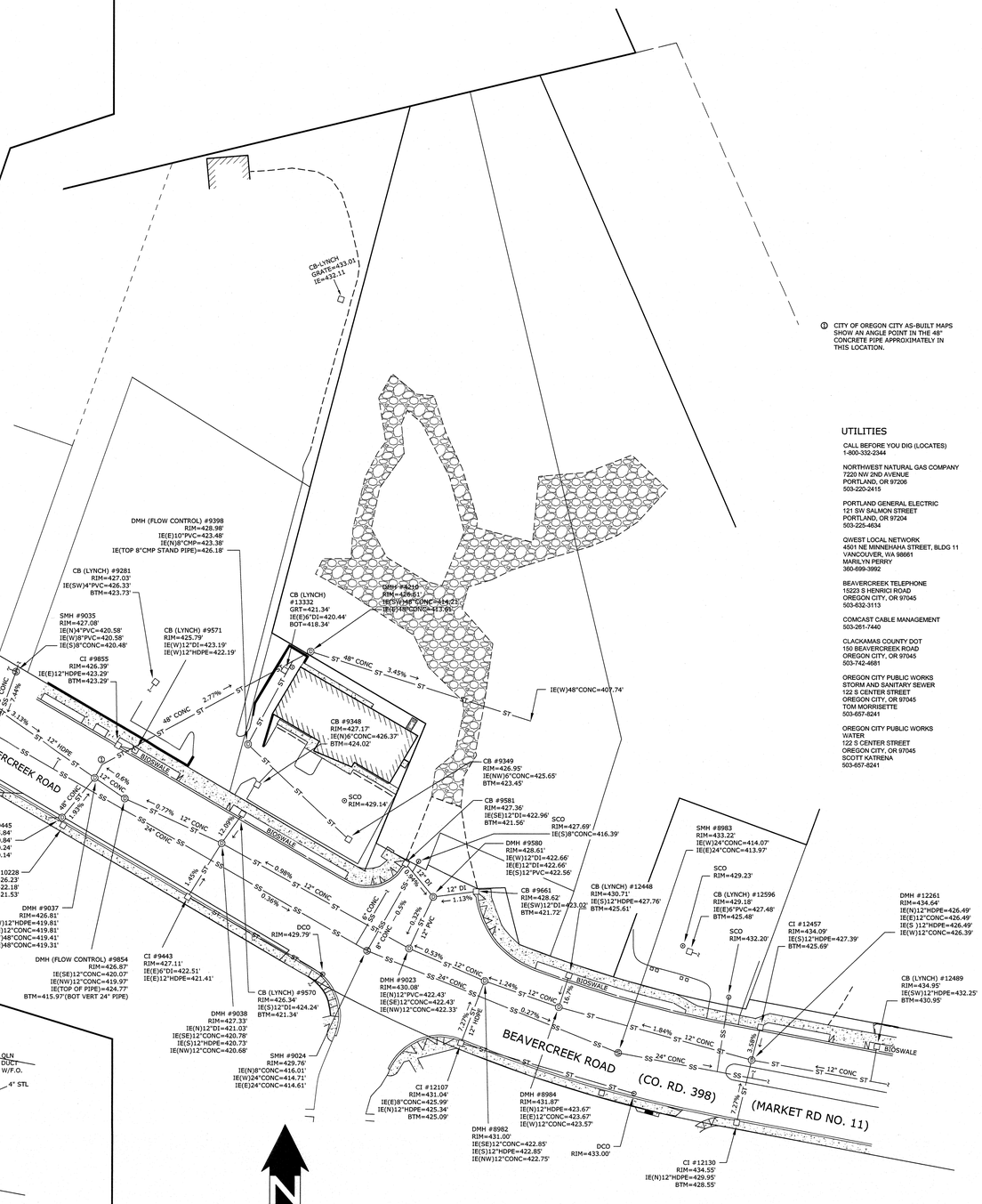
STORM AND SANITARY SEWER



① CITY OF OREGON CITY AS-BUILT MAPS SHOW AN ANGLE POINT IN THE 48" CONCRETE PIPE APPROXIMATELY IN THIS LOCATION.

UTILITIES

CALL BEFORE YOU DIG (LOCATES)
1-800-332-2344

NORTHWEST NATURAL GAS COMPANY
7220 NW 2ND AVENUE
PORTLAND, OR 97206
503-220-2415

PORTLAND GENERAL ELECTRIC
121 SW SALMON STREET
PORTLAND, OR 97204
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503-657-8241

OREGON CITY PUBLIC WORKS
WATER
122 S CENTER STREET
OREGON CITY, OR 97045
SCOTT KATRENA
503-657-8241

1" = 40'
40 20 0 40

REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
DECEMBER 13, 2007
RYAN H. GODSEY
65604
RENEWS: 6/30/13

OREGON CITY
PROJECT NO. 3051-00

PACLAND
6400 SE LAKE ROAD, SUITE 300
PORTLAND, OR 97222

CES NW
13190 SW 68TH PKWY, STE 150
TIGARD, OREGON 97223
(503)968-6655 www.cesnw.com

TOPOGRAPHIC SURVEY

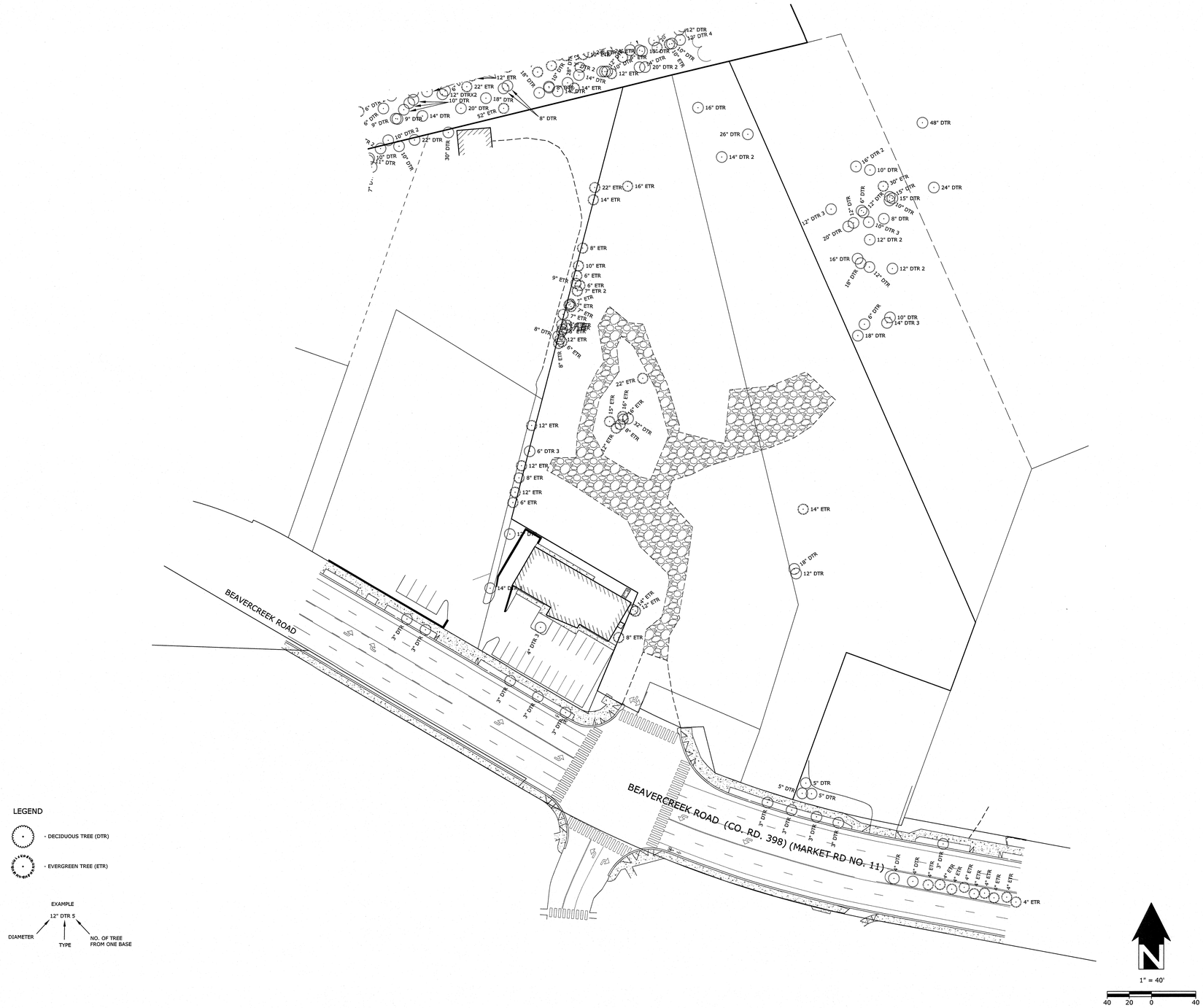
REVISIONS	DATE:	CHECKED BY:	2689-ALTA.DWG
7-13-12 REVISED ADA RAMP PER COMMENTS	07-09-12	KNG	

PROJECT NO. 3051-00
DRAWN BY: JBO

SHEET 1
OF 3

TOPOGRAPHIC SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2
EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON



REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
DECEMBER 13, 2007
RYAN H. GODSEY
65604
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OREGON CITY
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TOPOGRAPHIC SURVEY

REVISIONS

2689-ALTA.DWG

PROJECT NO. 3051-00: 2689
DATE: 07-09-12
DRAWN BY: JBJ
CHECKED BY: RHG

TREE SURVEY

SHEET 2 OF 3

TOPOGRAPHIC SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON

SPECIAL EXCEPTIONS AS SHOWN ON PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 2, ORDER NUMBER 01049-4020, DATED JUNE 13, 2012

6. CITY LIENS, IF ANY, OF THE CITY OF OREGON CITY.

7. ACCORDING TO THE RECORD, THE SUBJECT PROPERTY APPEARS TO LIE WITHIN THE BOUNDARIES OF THE OREGON CITY URBAN RENEWAL/NEIGHBORHOOD DEVELOPMENT DISTRICT OF THE CITY OF OREGON CITY.

8. EASEMENT AND THE TERMS AND CONDITIONS THEREOF:
   GRANTEE: METRO, A MUNICIPAL CORPORATION
   PURPOSE: ACCESS EASEMENT
   AFFECTS: TAX LOT 500 AND THE NORTHERLY PORTION OF TAX LOT 401
   RECORDED: MAY 21, 1998
   FEE NO.: 98044597
(15' WIDE ACCESS EASEMENT - LOCATION NOT CLEARLY DEFINED)

9. EASEMENT AND THE TERMS AND CONDITIONS THEREOF:
   GRANTEE: STEVEN N. MOLNER
   PURPOSE: PRIVATE UTILITY EASEMENT
   AFFECTS: PORTION OF TAX LOT 401
   RECORDED: SEPTEMBER 10, 1999
   FEE NO.: 99089214
(PLOTTED)

10. ORDINANCE NO. 00-1013 AND THE TERMS AND CONDITIONS THEREOF:
    RECORDED: MAY 18, 2000
    RECORDING NO.: 2000032147
(NOT SURVEY RELATED)

11. ANY UNRECORDED LEASEHOLDS, RIGHT OF VENDORS AND HOLDERS OF SECURITY INTEREST ON PERSONAL PROPERTY INSTALLED UPON SAID PROPERTY, AND RIGHT OF TENANTS TO REMOVE TRADE FIXTURES AT THE EXPIRATION OF THE TERM.

12. THE ATTACHED COMMERCIAL TITLE AFFIDAVIT MUST BE COMPLETED IN FULL, NOTARIZED, AND SUBMITTED TO THE COMPANY FOR REVIEW PRIOR TO CLOSING.

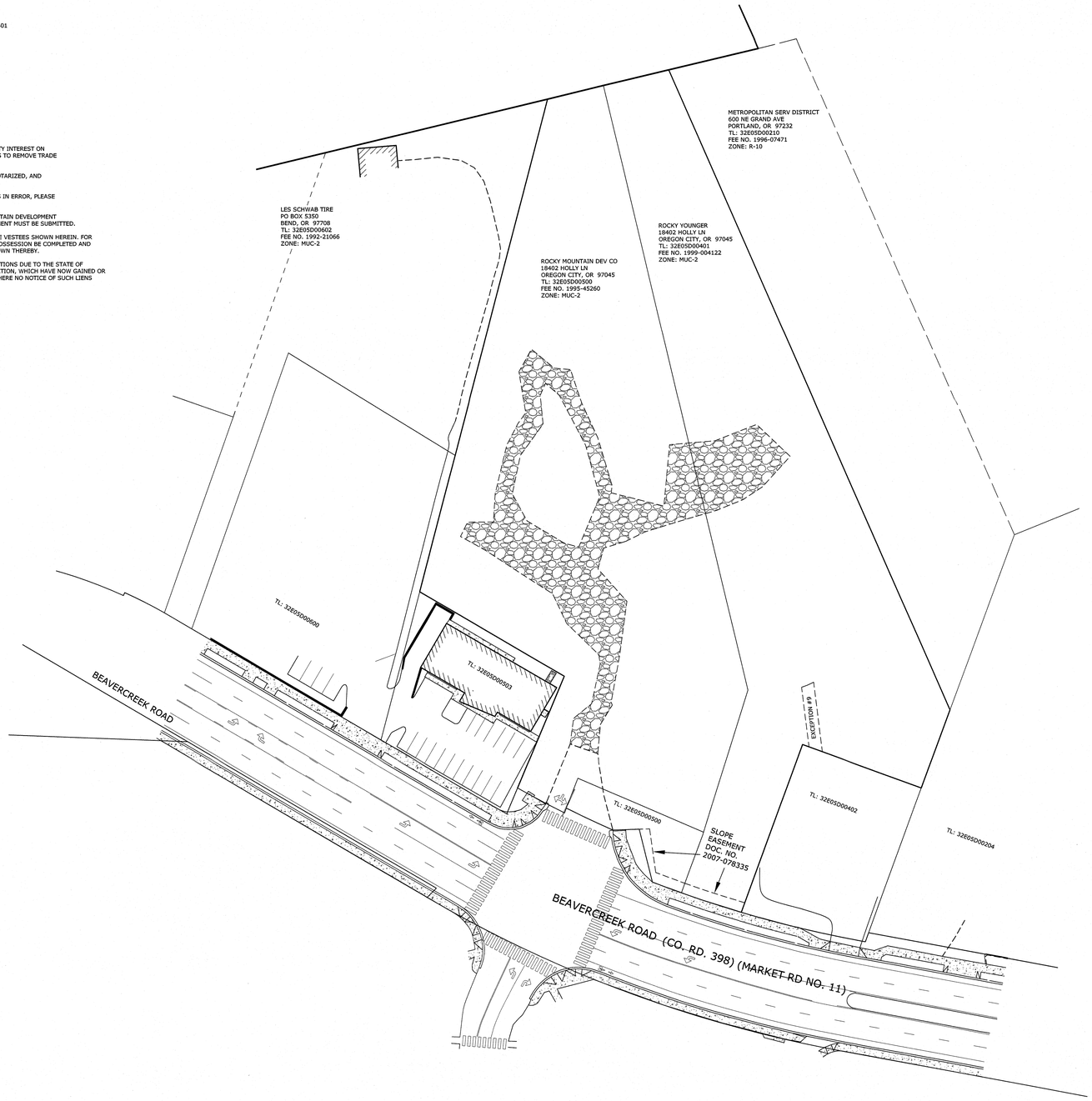
13. WE FIND NO TRUST DEEDS OF RECORD FOR THIS PROPERTY. IF THE COMPANY IS IN ERROR, PLEASE NOTIFY YOUR TITLE OFFICER IMMEDIATELY.

14. EVIDENCE OF THE IDENTITY AND AUTHORITY OF THE OFFICERS OF ROCKY MOUNTAIN DEVELOPMENT COMPANY, AS OREGON CORPORATION TO EXECUTE THE FORTHCOMING INSTRUMENT MUST BE SUBMITTED.

15. PARTIES IN POSSESSION, OR CLAIMING TO BE IN POSSESSION, OTHER THAN THE VESTEES SHOWN HEREIN. FOR PURPOSE OF ALTA EXTENDED COVERAGE, WE WILL REQUIRE AN AFFIDAVIT OF POSSESSION BE COMPLETED AND RETURNED TO US. EXCEPTION MAY BE TAKEN TO SUCH MATTERS AS MAY BE SHOWN THEREBY.

16. STATUTORY LIENS FOR LABOR OR MATERIALS, INCLUDING LIENS FOR CONTRIBUTIONS DUE TO THE STATE OF OREGON FOR UNEMPLOYMENT COMPENSATION AND FOR WORKMEN'S COMPENSATION, WHICH HAVE NOW GAINED OR HEREAFTER MAY GAIN PRIORITY OVER THE LIEN OF THE INSURED MORTGAGE WHERE NO NOTICE OF SUCH LIENS APPEAR OF RECORD.

TL = TAX LOT NUMBER, CLACKAMAS COUNTY



1" = 40'

40 20 0 40

REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
DECEMBER 13, 2007
RYAN H. GODSEY
65604
RENEWS: 6/30/13

OREGON CITY
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TOPOGRAPHIC SURVEY

REVISIONS

2689-ALTA.DWG

PROJECT NO. 3051-00: 2689
DRAWN BY: JBJ
DATE: 07-09-12
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EASEMENTS

SHEET 3
OF 3

CYPRESS EQUITIES OREGON CITY MIXED USE MASTERPLAN - DETAILED DEVELOPMENT PLAN

1367 MOLALLA AVENUE
OREGON CITY, OR 97045



VICNITY MAP
NTS



LOCATION MAP
NTS

PROPERTY DESCRIPTION

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON

VERTICAL BENCHMARK

VERTICAL DATUM IS BASED ON THE CITY OF OREGON CITY BENCHMARK, A BRASS DISK LOCATED BY THE FLAG POLE IN FRONT OF THE OREGON CITY POLICE BUILDING, 320 WARNER MILNE ROAD, ELEVATION 447.729' (NGVD 1929) AND BENCHMARK 0030, A BRASS DISK STAMPED "DAVID EVANS AND ASSOCIATES, INC. GPS STA. LIBRARY 1990".
ELEVATION = 452.739'.

SURVEY MONUMENT PROTECTION

EXISTING SURVEY MONUMENT ARE TO BE PROTECTED DURING CONSTRUCTION OR REPLACED IN ACCORDANCE WITH OREGON REVISED STATUTES 209.140 – 209.155.

GENERAL NOTES

1. ALL WORK AND MATERIALS SHALL COMPLY WITH ALL OREGON CITY REGULATIONS AND CODES AND O.S.H.A. STANDARDS, INCLUDING BUT NOT LIMITED TO THE CURRENT OREGON CITY ROAD DESIGN AND CONSTRUCTION STANDARDS, CLEAN WATER SERVICES DESIGN AND CONSTRUCTION STANDARDS, THE OREGON TRANSPORTATION COMMISSION STANDARDS FOR ACCESSIBLE PARKING DATED AUGUST 2018, AND THE APWA STANDARDS WHICH ARE HEREBY REFERENCED AS PART OF THESE PLANS.

2. THE DESIGN SHOWN IS BASED UPON THE ENGINEER'S UNDERSTANDING OF THE EXISTING CONDITIONS. THE PLAN DOES NOT REPRESENT A DETAILED FIELD SURVEY. THE EXISTING CONDITIONS SHOWN ON THIS PLAN SHEET ARE BASED UPON THE ALTA SURVEY PREPARED BY CES | NW, DATED JULY 9, 2012. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING FIELD CONDITIONS PRIOR TO BIDDING THE PROPOSED SITEWORK IMPROVEMENTS. IF CONFLICTS ARE DISCOVERED, THE CONTRACTOR SHALL NOTIFY THE OWNER/DEVELOPER PRIOR TO INSTALLATION OF ANY PORTION OF THE SITEWORK WHICH WOULD BE AFFECTED. IF CONTRACTOR DOES NOT ACCEPT EXISTING SURVEY, INCLUDING TOPOGRAPHY AS SHOWN ON THE PLANS, WITHOUT EXCEPTION, HE SHALL HAVE MADE, AT HIS OWN EXPENSE, A TOPOGRAPHIC SURVEY BY A REGISTERED LAND SURVEYOR AND SUBMIT IT TO THE OWNER FOR REVIEW.

3. CAUTION – NOTICE TO CONTRACTOR
THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 48 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.

4. IN THE EVENT OF CONFLICTS BETWEEN THE VARIOUS PROVISIONS OF THIS PLAN SET, THE MORE STRINGENT PROVISION APPLY.

5. ATTENTION: OREGON LAW REQUIRES YOU TO FOLLOW RULES ADOPTED BY THE OREGON UTILITY NOTIFICATION CENTER. THOSE RULES ARE SET FORTH IN OAR 952–001–0001 (ADOPTION OF MODEL RULES) THROUGH 952–001–0100 (RECORD KEEPING REQUIREMENTS). YOU MAY OBTAIN COPIES OF THE RULES BY CALLING THE CENTER.
NOTES: THE TELEPHONE NUMBER FOR THE OREGON UTILITY NOTIFICATION CENTER IS (503) 232–1987.

6. A ROAD CLOSURE WILL NO BE PERMITTED WITHOUT A SEPARATE ROAD CLOSURE PERMIT THROUGH WASHINGTON COUNTY TRAFFIC ENGINEERING.

7. THE CONTRACTOR, AT THE TIME OF MEETING WITH COUNTY INSPECTION STAFF FOR A PRE–CONSTRUCTION MEETING, SHALL PROVIDE THEIR WORK TRAFFIC CONTROL PLAN.

8. ACCOMMODATE ALL ROAD USERS AT ALL TIMES INCLUDING MOTORISTS, BICYCLISTS, PEDESTRIANS, AND THOSE WITH DISABILITIES OR IMPAIRMENTS. INSTALL AND MAINTAIN ADDITIONAL TEMPORARY SIGNING AND TRAFFIC CONTROL DEVICES FOR THE CONTROL OF NON–MOTORIZED VEHICLES AND PEDESTRIANS WHERE A REASONABLE VOLUME OF THESE USERS ARE EXPECTED AND WHERE WORK IS EXPECTED TO LAST LONGER THAN ONE HOUR. MAINTAIN SAFE ACCESSIBILITY OR PROVIDE SUITABLE ALTERNATE ROUTES IN, THROUGH, OR AROUND WORK AREAS.

9. ESTABLISH AND MAINTAIN WORK ZONE TRAFFIC CONTROL IN COMPLIANCE WITH THE OREGON TEMPORARY TRAFFIC CONTROL HANDBOOK FOR OPERATIONS OF THREE DAYS OR LESS (DECEMBER 2011) ANY TIME VEHICLE OR PEDESTRIAN TRAFFIC IS INFLUENCED BY THE WORK. FOR WORK REQUIRING DEVICES IN PLACE LONGER THAN THREE (3) DAYS, A SITE SPECIFIC TRAFFIC CONTROL PLAN BASED ON THE PRINCIPLES IN PART 6 OF THE MUTCD, THE OREGON SUPPLEMENT AND ODOT'S 2015 STANDARD DRAWINGS TM800 –TM871, IS REQUIRED. ALL TRAFFIC CONTROL DEVICES SHALL MEET OR EXCEED THE NCHRP 350 REQUIREMENTS FOR CRASHWORTHINESS. COMPLETED SIGNAL SHUT DOWN REQUESTS MUST BE RECEIVED BY THE COUNTY A MINIMUM OF 3 WORKING DAYS PRIOR TO ANY PROPOSED SIGNAL SHUT DOWN.

SHEET INDEX

DDP-C0.0	CIVIL COVER SHEET
DDP-C0.1	PRELIMINARY ROUGH GRADING AND EROSION CONTROL PLAN
DDP-C1.0	CIVIL SITE PLAN
DDP-C1.1	MOLALLA AVENUE STREET PLAN AND TYPICAL SECTIONS
DDP-C1.2	PROPOSED PUBLIC ROAD PLAN, PROFILE, AND TYPICAL SECTIONS
DDP-C1.3	PROPOSED PUBLIC ROAD PLAN, PROFILE, AND TYPICAL SECTIONS
DDP-C1.4	TRUCK TURNING - LEFT TURN ONTO BEAVERCREEK ROAD
DDP-C1.5	TRUCK TURNING - RIGHT TURN ONTO BEAVERCREEK ROAD
DDP-C2.0	PRELIMINARY CIVIL GRADING AND DRAINAGE PLAN
DDP-C3.0	PRELIMINARY CIVIL UTILITY PLAN
DDP-L0.1	TREE REMOVAL PLAN
DDP-L0.2	ARBORIST REPORT MAP
DDP-L0.3	ARBORIST REPORT TABLES
DDP-L1.0	OVERALL LANDSCAPE PLAN
DDP-L2.0	OVERALL LIGHTING PLAN

EXISTING CONDITIONS PLANS

ALTA / BOUNDARY SURVEY SHEETS:

1	BOUNDARY SURVEY
2	TITLE EXCEPTIONS
3	TOPOGRAPHIC SURVEY
4	STORM AND SANITARY SEWER
5	TREE SURVEY

OFF-SITE TOPOGRAPHIC SURVEY SHEETS:

1	TOPOGRAPHIC SURVEY
2	TREE SURVEY
3	EASEMENTS

PROJECT CONTACTS

CONSULTANTS

CIVIL ENGINEER:
LANGAN ENGINEERING
10135 SE SUNNYSIDE RD., SUITE 200
CLACKAMAS, OR 97015
(503) 680–0029
CONTACT: SCOTT FRANKLIN, PE

SURVEYOR
CES | NW
15115 SW SEQUOIA PARKWAY, SUITE 150
TIGARD, OR 97224
(503) 684–0652
CONTACT: RYAN GODSEY

LANDSCAPE ARCHITECT
LANGAN ENGINEERING
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IRVINE, CA 92612
(949) 255–8640
CONTACT: ANNA ILAO

CULTURAL RESOURCES
LANGAN ENGINEERING
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SANTA BARBARA, CA 93101
(805) 957–6013
CONTACT: HEATHER MCDANIEL MCDEVITT

WETLANDS
LANGAN ENGINEERING
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SANTA BARBARA, CA 93101
(805) 957–6034
CONTACT: STEVEN NEUMANN

APPLICANT/DEVELOPER

CYPRESS ACQUISITIONS, LLC
8144 WALNUT HILL LANE, SUITE 1200
DALLAS, TX 75231
(214) 561–8838
CONTACT: KIRK WILLIAMS

GOVERNING AGENCY

OREGON CITY PUBLIC WORKS DEPARTMENT
13895 FIR STREET
OREGON CITY, OR 97045
(503) 204–4631
CONTACT: ERIK NICHOLS

TRAFFIC

TRANSPO GROUP
12131 113TH AVENUE NE, SUITE 203
KIRKLAND, WA 98034
(425) 896–5208
CONTACT: MIKE SWENSON PE, PTOE
KASSI LEINGANG PE

Know what's **below.**
Call before you dig.

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CLIENT/OWNER

CYPRESS EQUITIES

PROJECT NAME

OREGON CITY MIXED USE DETAILED DEVELOPMENT PLAN

LANGAN PROJECT NUMBER: 794-002-701

PROJECT ADDRESS

1367 MOLALLA AVENUE
OREGON CITY, OR 97045

STAMP

REVISIONS

REV	ISSUED FOR:	DATE
0	DDP SUBMITTAL	11/14/2025

SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

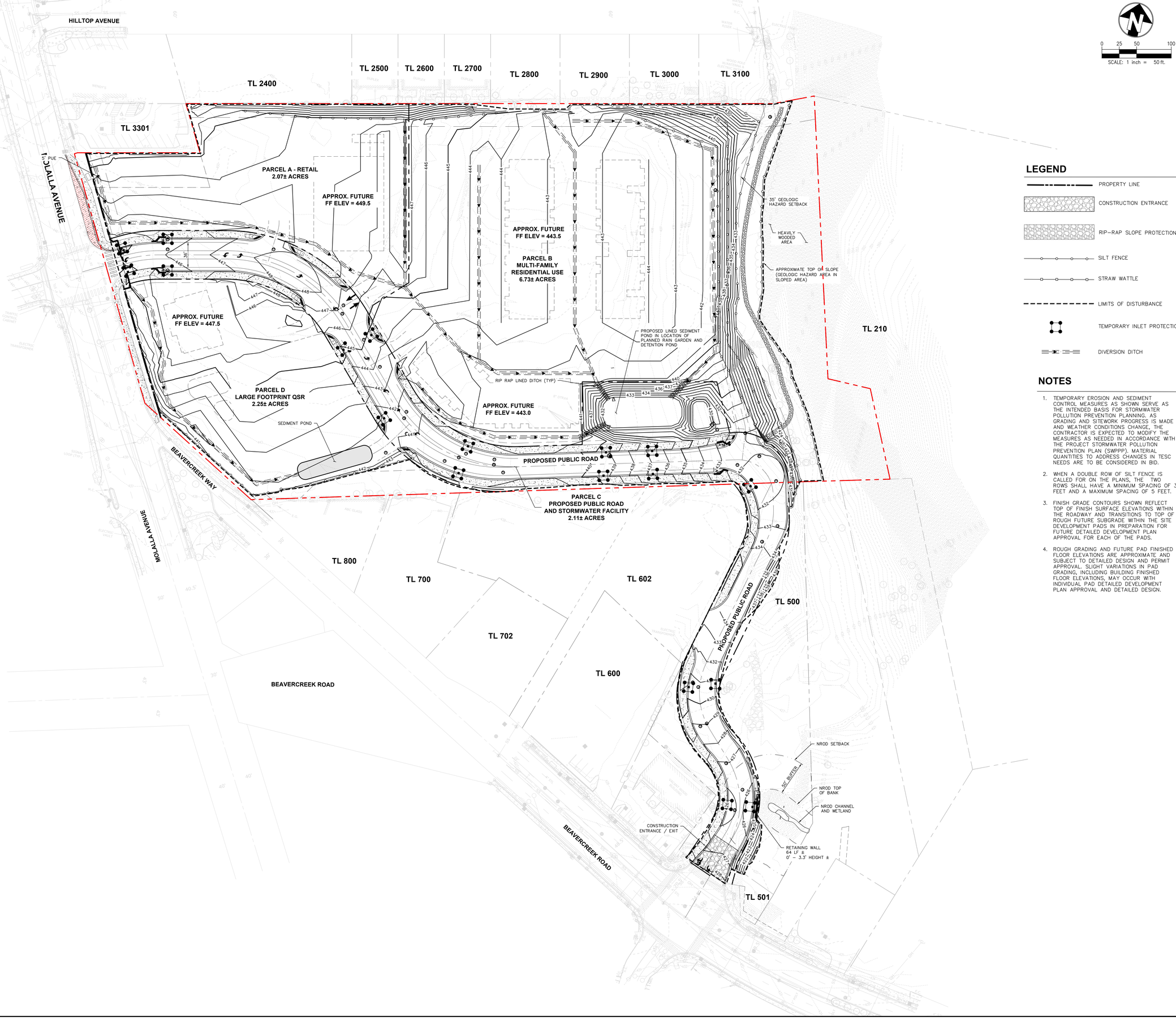
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

CIVIL COVER SHEET

SHEET NUMBER

DDP-C0.0



0 25 50 100

SCALE: 1 inch = 50 ft.

LEGEND

- PROPERTY LINE
- CONSTRUCTION ENTRANCE
- RIP–RAP SLOPE PROTECTION
- SILT FENCE
- STRAW WATTLE
- LIMITS OF DISTURBANCE
- TEMPORARY INLET PROTECTION
- DIVERSION DITCH

NOTES

1. TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES AS SHOWN SERVE AS THE INTENDED BASIS FOR STORMWATER POLLUTION PREVENTION PLANNING. AS GRADING AND SITEWORK PROGRESS IS MADE AND WEATHER CONDITIONS CHANGE, THE CONTRACTOR IS EXPECTED TO MODIFY THE MEASURES AS NEEDED IN ACCORDANCE WITH THE PROJECT STORMWATER POLLUTION PREVENTION PLAN (SWPPP). MATERIAL QUANTITIES TO ADDRESS CHANGES IN TESC NEEDS ARE TO BE CONSIDERED IN BID.
2. WHEN A DOUBLE ROW OF SILT FENCE IS CALLED FOR ON THE PLANS, THE TWO ROWS SHALL HAVE A MINIMUM SPACING OF 3 FEET AND A MAXIMUM SPACING OF 5 FEET.
3. FINISH GRADE CONTOURS SHOWN REFLECT TOP OF FINISH SURFACE ELEVATIONS WITHIN THE ROADWAY AND TRANSITIONS TO TOP OF ROUGH FUTURE SUBGRADE WITHIN THE SITE DEVELOPMENT PADS IN PREPARATION FOR FUTURE DETAILED DEVELOPMENT PLAN APPROVAL FOR EACH OF THE PADS.
4. ROUGH GRADING AND FUTURE PAD FINISHED FLOOR ELEVATIONS ARE APPROXIMATE AND SUBJECT TO DETAILED DESIGN AND PERMIT APPROVAL. SLIGHT VARIATIONS IN PAD GRADING, INCLUDING BUILDING FINISHED FLOOR ELEVATIONS, MAY OCCUR WITH INDIVIDUAL PAD DETAILED DEVELOPMENT PLAN APPROVAL AND DETAILED DESIGN.

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SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

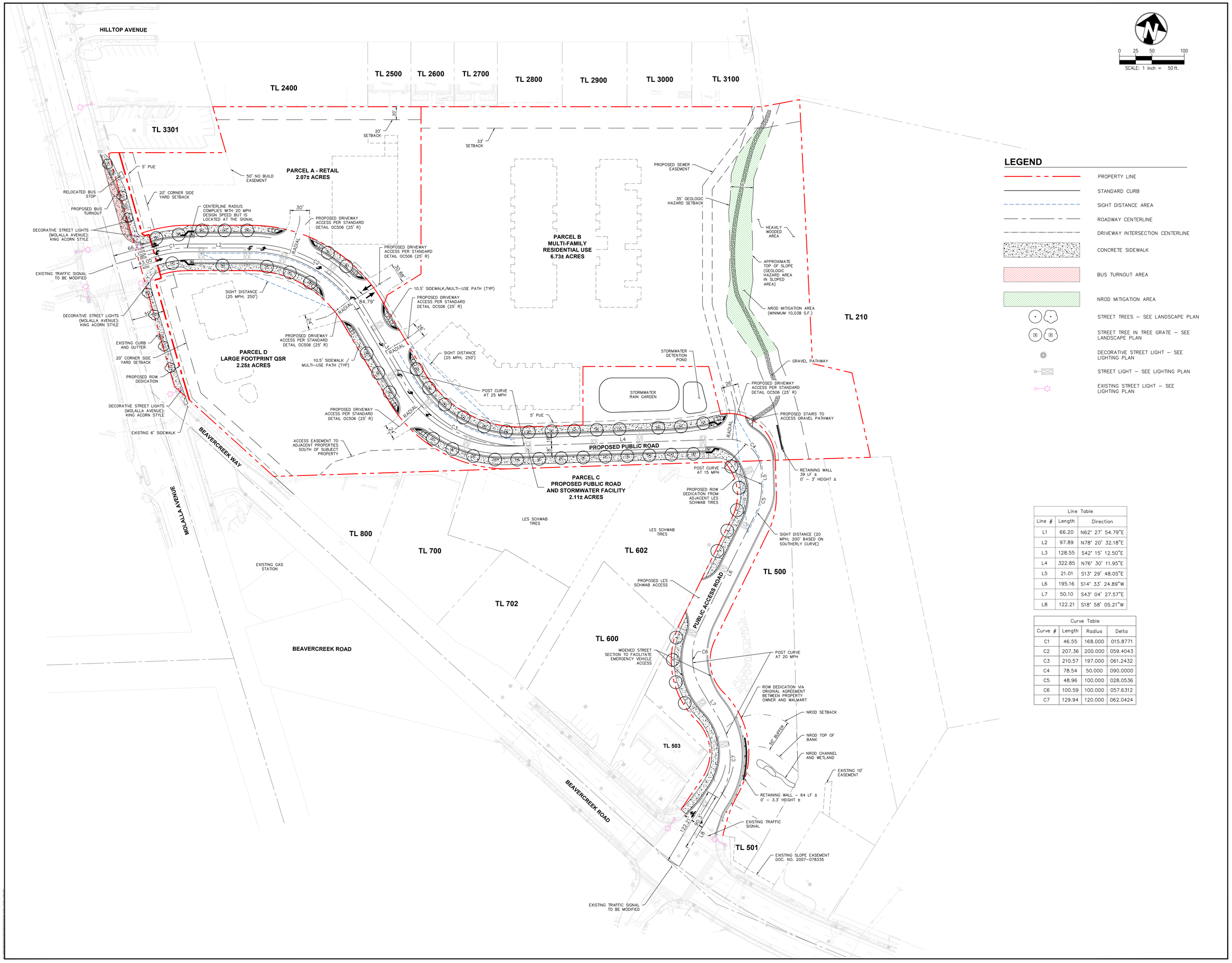
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

PRELIMINARY ROUGH GRADING AND EROSION CONTROL PLAN

SHEET NUMBER

DDP-C0.1



Line Table		
Line #	Length	Direction
L1	66.20	N62° 27' 54.79"E
L2	97.89	N78° 20' 32.18"E
L3	128.55	S42° 15' 12.50"E
L4	322.85	N76° 30' 11.95"E
L5	21.01	S13° 29' 48.05"E
L6	195.16	S14° 33' 24.89"W
L7	50.10	S43° 04' 27.57"E
L8	122.21	S18° 58' 05.21"W

Curve Table			
Curve #	Length	Radius	Delta
C1	46.55	168.000	015.8771
C2	207.36	200.000	059.4043
C3	210.57	197.000	061.2432
C4	78.54	50.000	090.0000
C5	48.96	100.000	028.0536
C6	100.59	100.000	057.6312
C7	129.94	120.000	062.0424

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811

SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

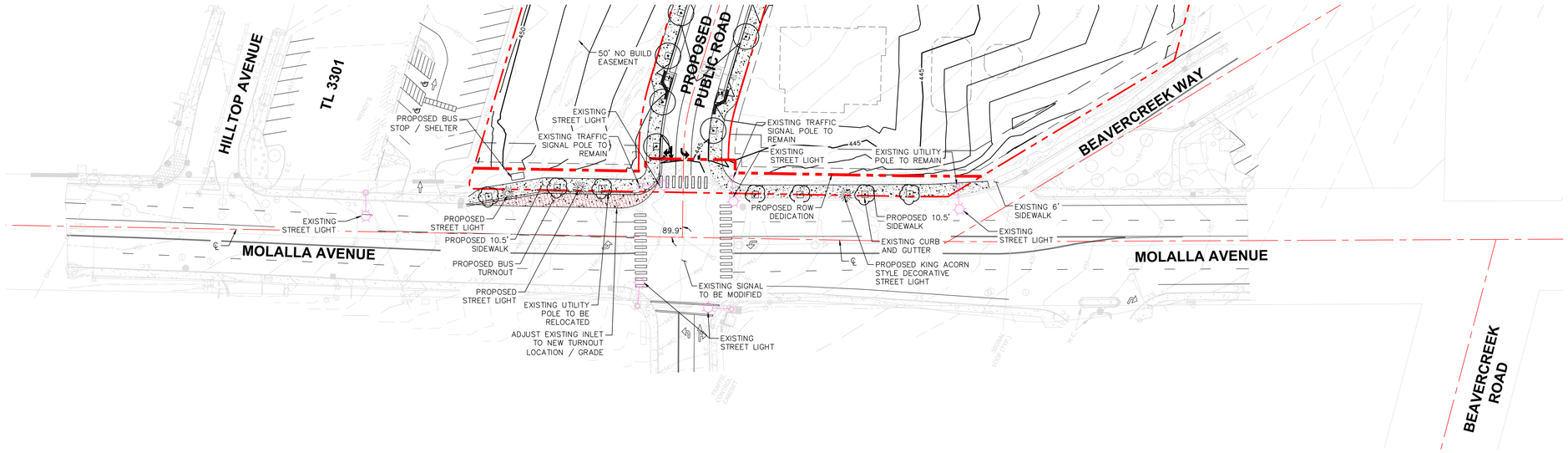
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

CIVIL SITE PLAN

SHEET NUMBER

DDP-C1.0



0 20 40 80

SCALE: 1 inch = 40 ft.

LEGEND

- PROPERTY LINE
- STANDARD CURB
- ROAD CENTER LINE
- 5' PUE
- CONCRETE SIDEWALK
- STREET TREES – SEE LANDSCAPE PLAN
- STREET TREE IN TREE GRATE – SEE LANDSCAPE PLAN
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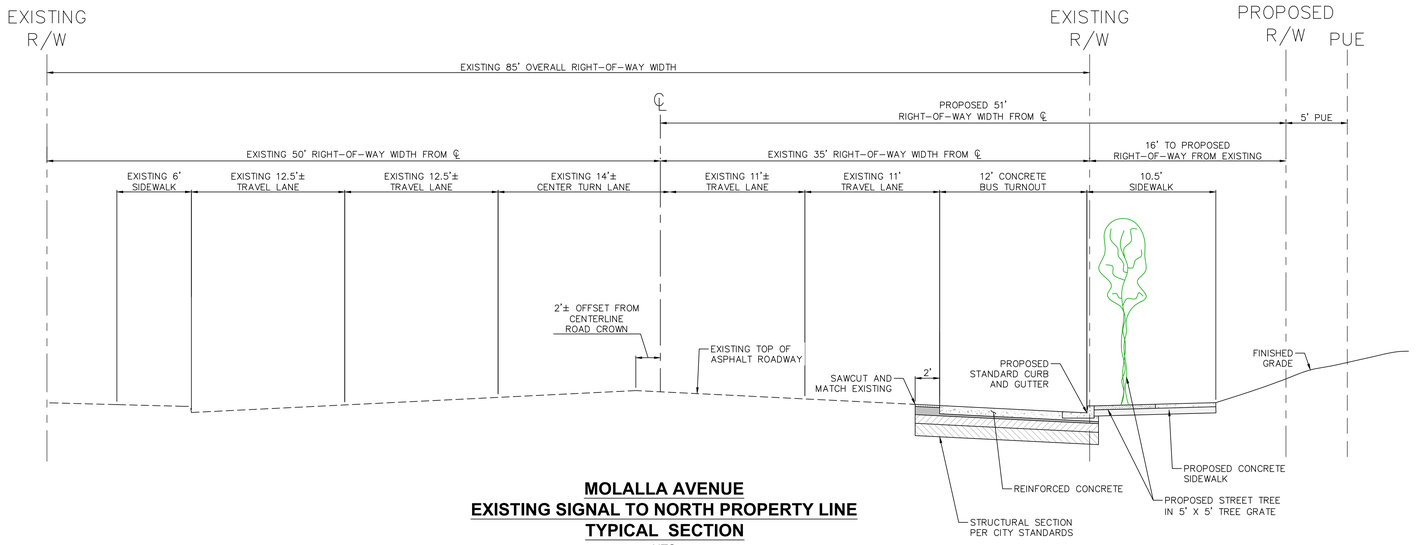
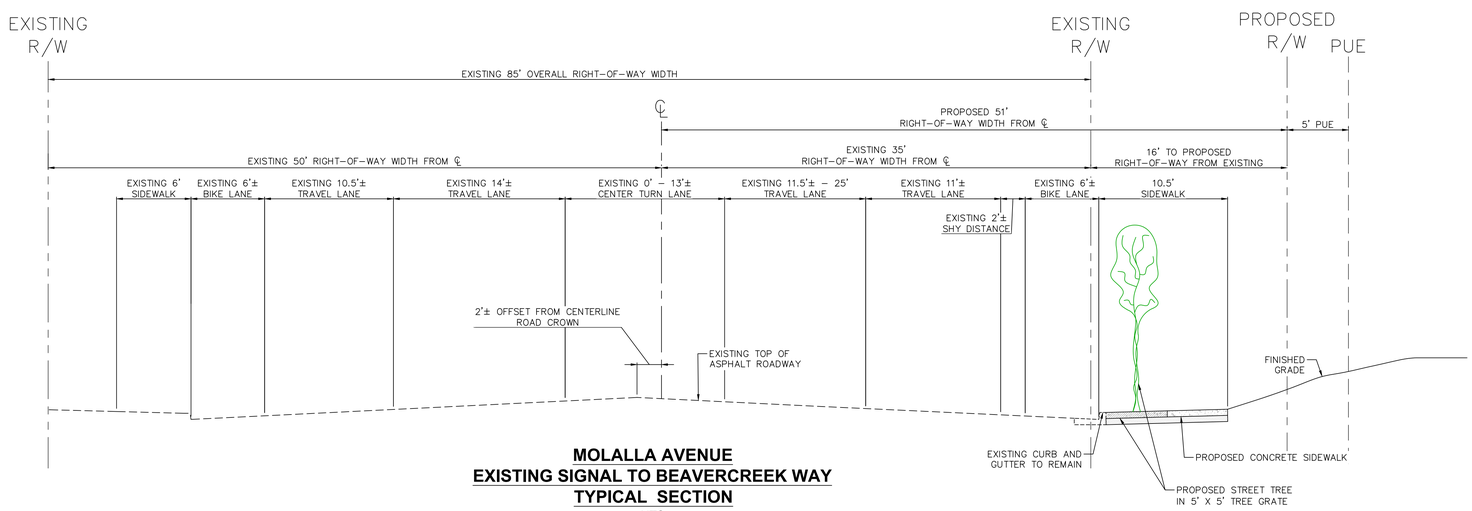


MOLALLA AVENUE
EXISTING SIGNAL TO NORTH PROPERTY LINE
TYPICAL SECTION
NTS



MOLALLA AVENUE
EXISTING SIGNAL TO BEAVERCREEK WAY
TYPICAL SECTION
NTS

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SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

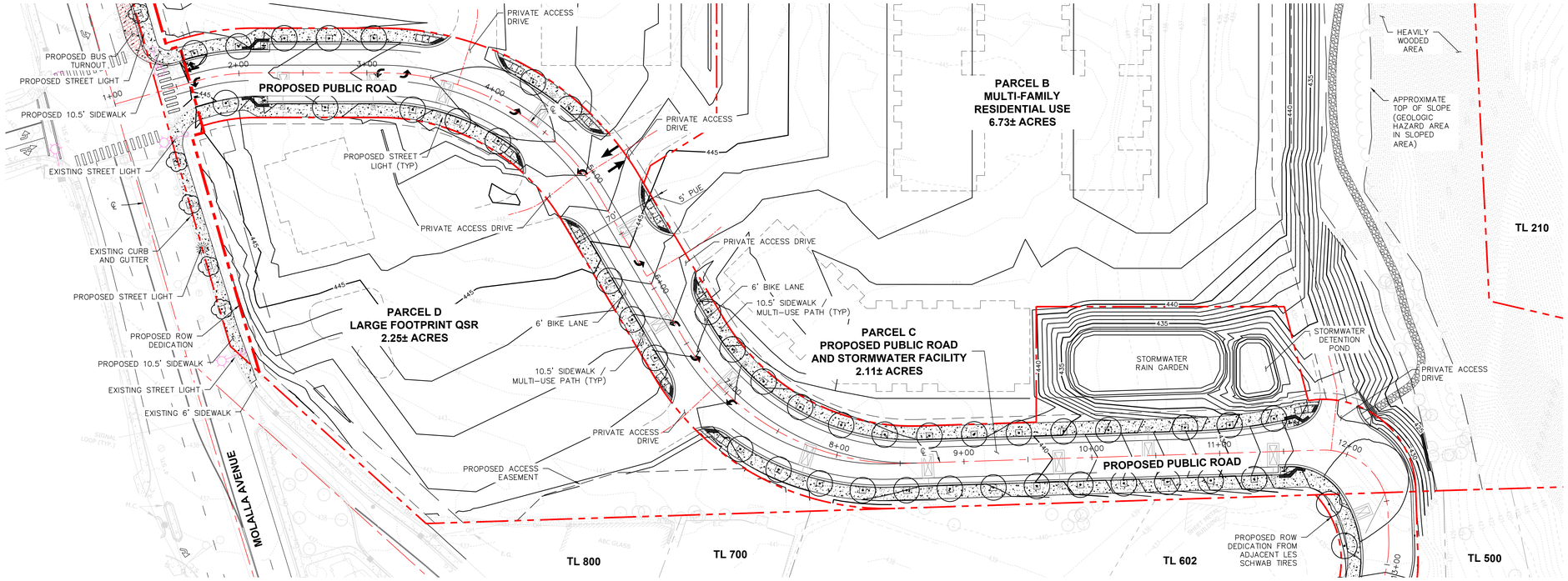
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

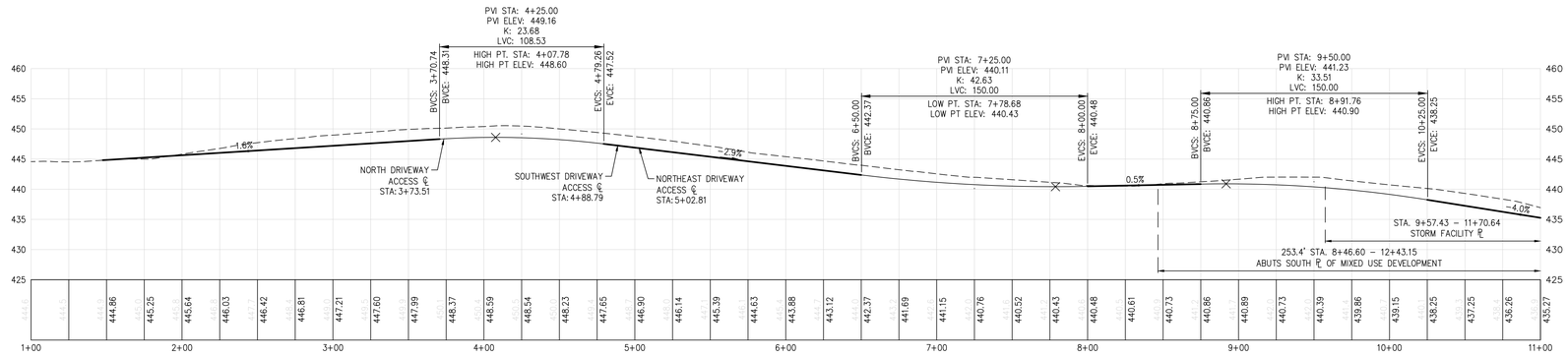
SHEET NAME

MOLALLA AVENUE STREET PLAN AND TYPICAL SECTIONS

SHEET NUMBER

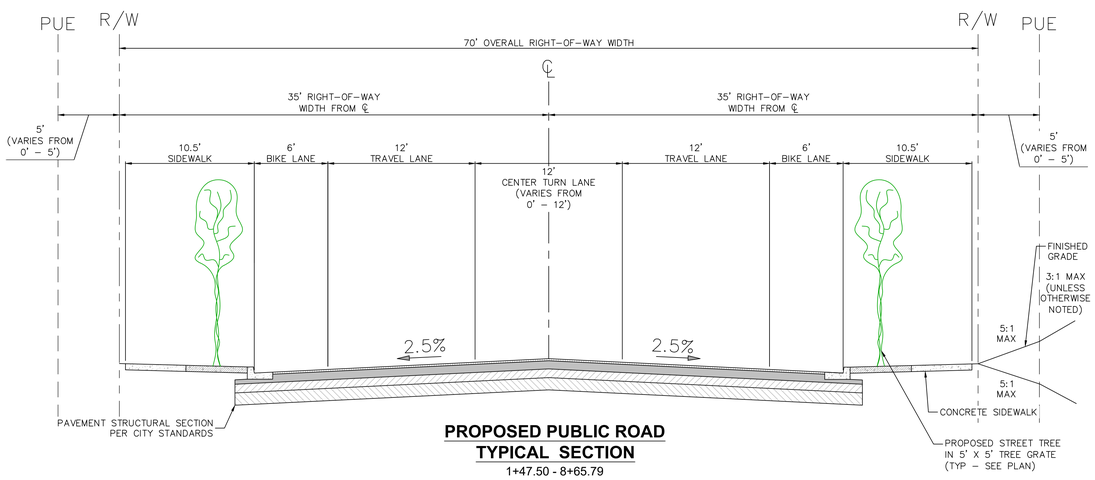
DDP-C1.1





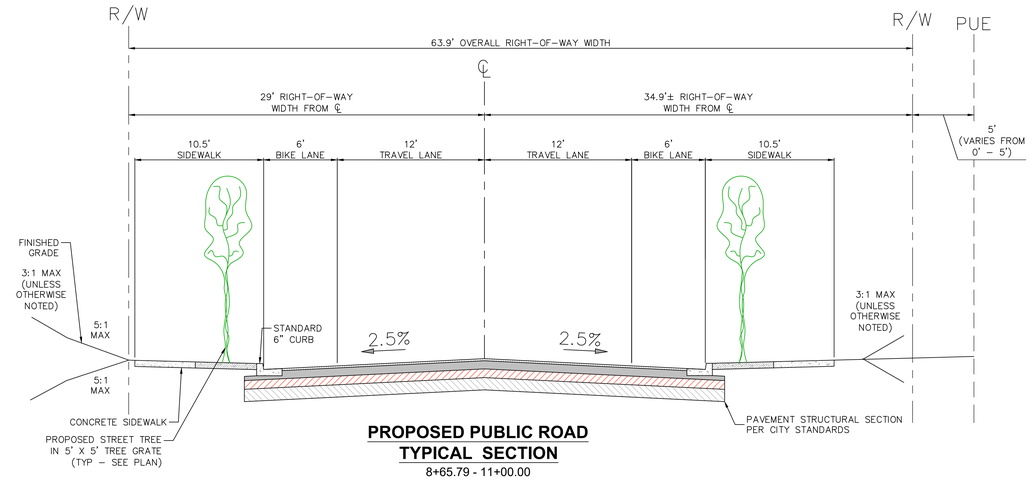
PROPOSED PUBLIC ROAD PROFILE

SCALE:
HORIZONTAL: 1" = 40'
VERTICAL: 1" = 10'



PROPOSED PUBLIC ROAD TYPICAL SECTION

1+47.50 - 8+65.79
NTS



PROPOSED PUBLIC ROAD TYPICAL SECTION

8+65.79 - 11+00.00
NTS

N
0 20 40 80
SCALE: 1 inch = 40 ft.

LEGEND

- PROPERTY LINE
- STANDARD CURB
- ROAD CENTER LINE
- 5' PUE
- CONCRETE SIDEWALK
- STREET TREES – SEE LANDSCAPE PLAN
- STREET TREE IN TREE GRATE – SEE LANDSCAPE PLAN
- DECORATIVE STREET LIGHT – SEE LIGHTING PLAN
- STREET LIGHT – SEE LIGHTING PLAN
- EXISTING STREET LIGHT – SEE LIGHTING PLAN

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PROJECT TEAM

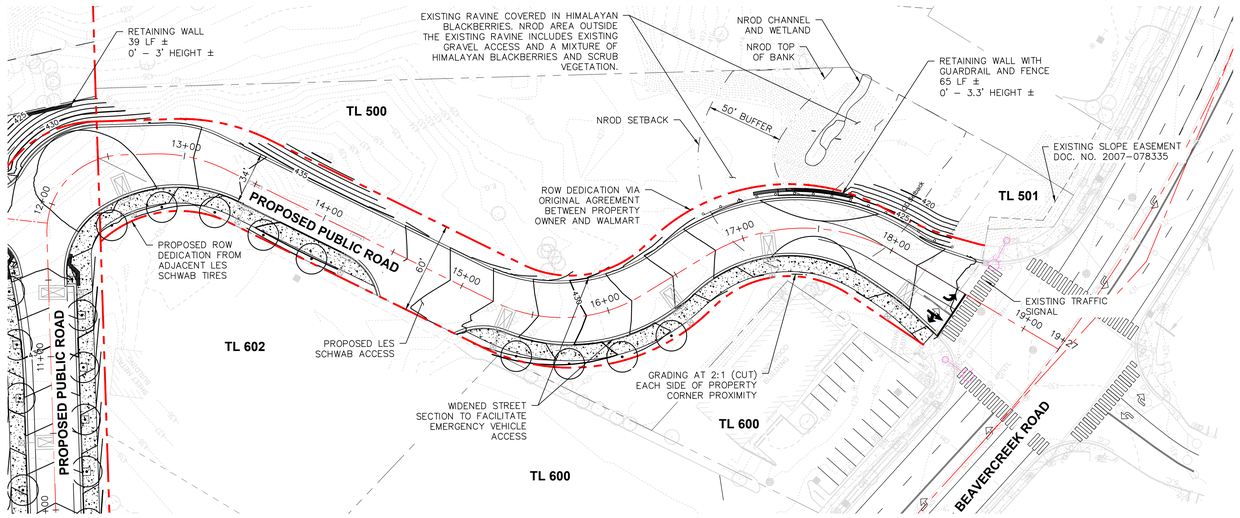
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

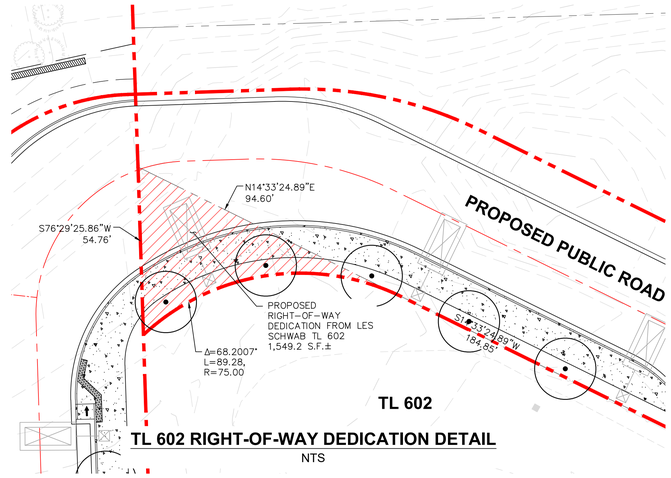
SHEET NAME

PROPOSED PUBLIC ROAD PLAN, PROFILE, AND TYPICAL SECTIONS

SHEET NUMBER

DDP-C1.2





TL 602 RIGHT-OF-WAY DEDICATION DETAIL
NTS

0 20 40 80
SCALE: 1 inch = 40 ft.

LEGEND

- PROPERTY LINE
- STANDARD CURB
- ROAD CENTER LINE
- 5' PUE
- CONCRETE SIDEWALK
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- STREET TREE IN TREE GRATE – SEE LANDSCAPE PLAN
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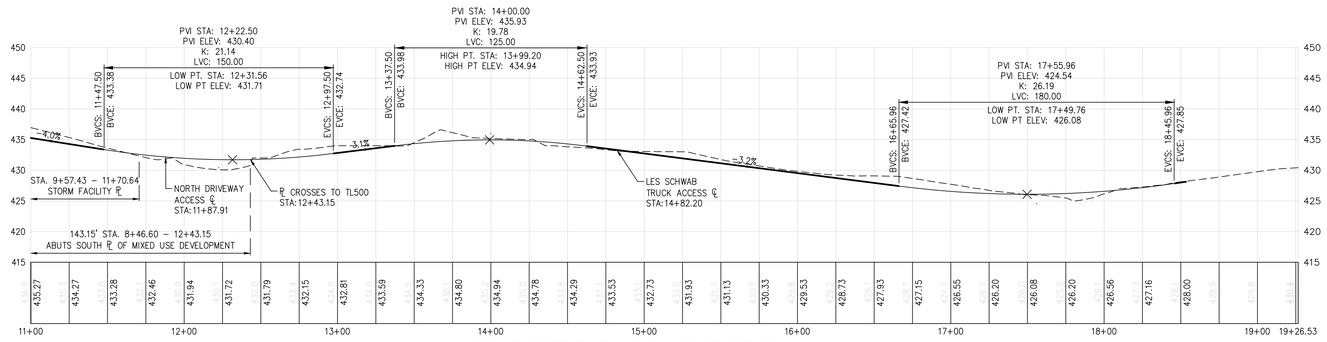
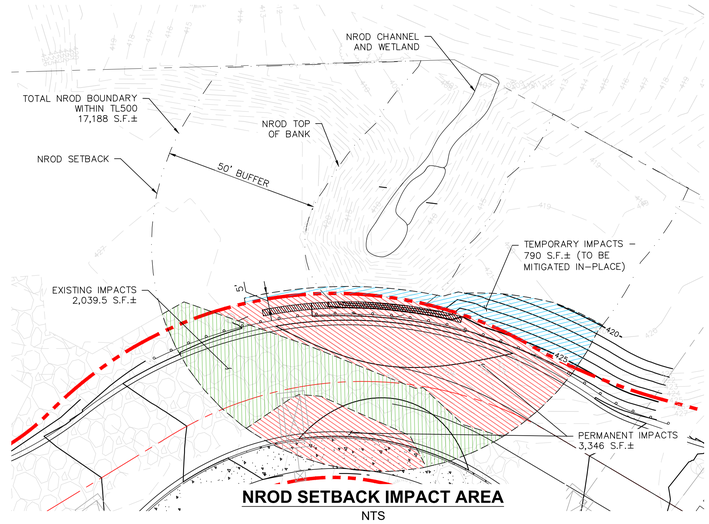
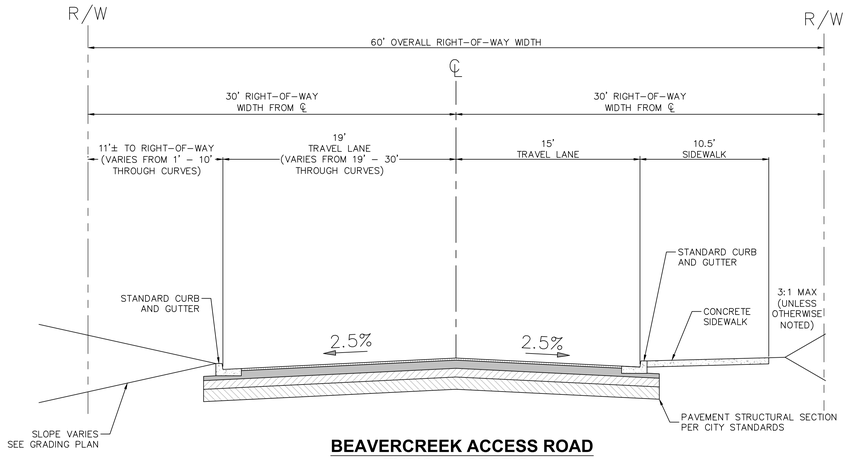
- STREET LIGHT – SEE LIGHTING PLAN
- EXISTING STREET LIGHT – SEE LIGHTING PLAN



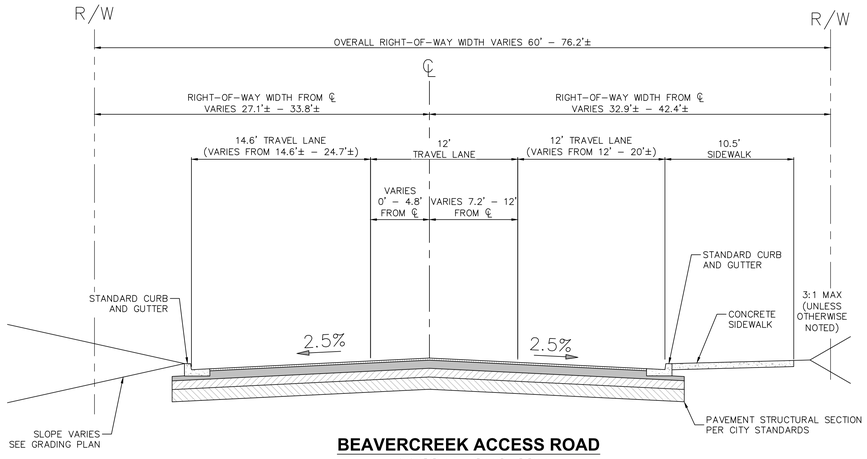
PROPOSED PUBLIC ROAD PROFILE
SCALE:
HORIZONTAL: 1" = 40'
VERTICAL: 1" = 10'



NROD SETBACK IMPACT AREA
NTS



BEAVERCREEK ACCESS ROAD
TYPICAL SECTION
11+00.00 - 17+54.30
NTS



BEAVERCREEK ACCESS ROAD
TYPICAL SECTION
17+54.30 - 18+59
NTS

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CLIENT/OWNER

CYPRESS EQUITIES

PROJECT NAME

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SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

PROPOSED PUBLIC ROAD PLAN, PROFILE, AND TYPICAL SECTIONS

SHEET NUMBER

DDP-C1.3

SCALE: 1 inch = 30 ft.

TL 210

TL 500

TL 501

TL 602

TL 600

TL 702

PROPOSED PUBLIC ACCESS ROAD

NROD AREA / BUFFER

ROW DEDICATION VIA ORIGINAL AGREEMENT BETWEEN PROPERTY OWNER AND WALMART

PROPOSED ROW DEDICATION FROM ADJACENT LES SCHWAB TIRES

PROPOSED LES SCHWAB ACCESS

10.5' WIDE SIDEWALK

STORMWATER MANAGEMENT FACILITY

PROPOSED PUBLIC ROAD

LES SCHWAB TIRES

LES SCHWAB TIRES

EXISTING MIXED USE AND ZONING

BEAVERCREEK ROAD

PROPOSED PUBLIC ROAD

60'

34'

57.14'

10.5'

31.00'

(72.48')(11)
72.39'

(52.77')(11)
52.87'

1.37'
(1.39')(7)

(62.55')(2)

(133.31')(1)

180.09' (180.00')(6)

269.74' (269.73')(10)

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OREGON CITY, OR 97045

STAMP

REVISIONS

REV	ISSUED FOR:	DATE
0	DDP SUBMITTAL	11/14/2025

SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

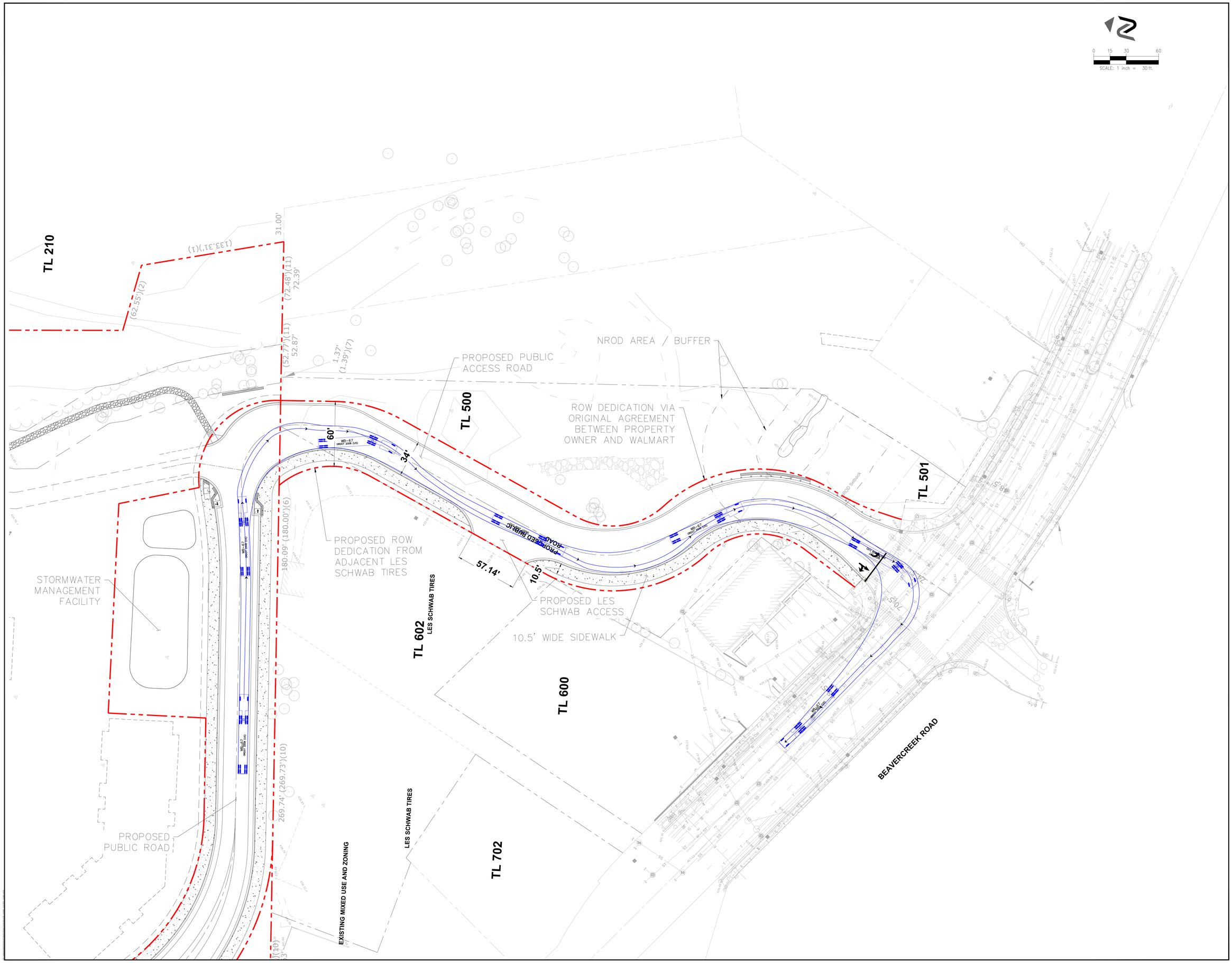
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

TRUCK TURNING - RIGHT TURN ONTO PROPOSED PUBLIC ROAD

SHEET NUMBER

DDP-C1.4



LANGAN

Langan Engineering, Environmental, Surveying, Landscape Architecture, and Geology, D.P.C.
10135 SE Sunnyside Road Suite 200
Clackamas, OR 97015
T: 503.659.9500 www.langan.com

CLIENT/OWNER

CYPRESS EQUITIES

PROJECT NAME

OREGON CITY MIXED USE DETAILED DEVELOPMENT PLAN

LANGAN PROJECT NUMBER: 794-002-701

PROJECT ADDRESS

1367 MOLALLA AVENUE
OREGON CITY, OR 97045

STAMP

REVISIONS

REV	ISSUED FOR:	DATE
0	DDP SUBMITTAL	11/14/2025

811

SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

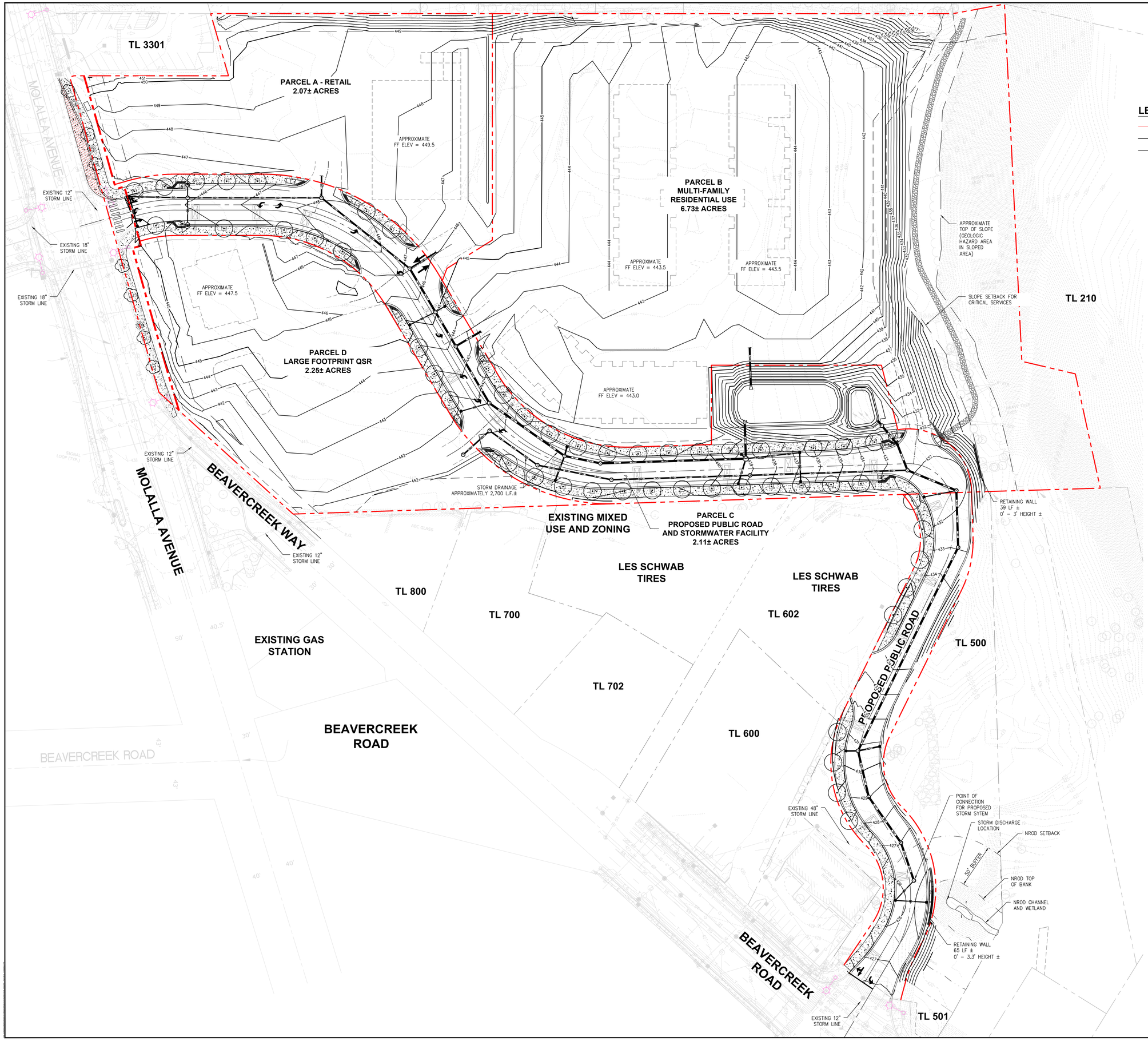
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

TRUCK TURNING - RIGHT TURN ONTO BEAVERCREEK ROAD

SHEET NUMBER

DDP-C1.5



LEGEND

- PROPERTY LINE
- MAJOR CONTOUR
- MINOR CONTOUR
- STORM PIPE
- STORM MANHOLE
- STORM CATCH BASIN
- STORM CURB INLET
- STORM FLOW CONTROL STRUCTURE
- STORM FLARED END STRUCTURE

NOTES

1. FINISH GRADE CONTOURS SHOWN REFLECT TOP OF FINISH SURFACE ELEVATIONS WITHIN THE ROADWAY AND TRANSITIONS TO TOP OF ROUGH FUTURE SUBGRADE WITHIN THE SITE DEVELOPMENT PADS IN PREPARATION FOR FUTURE DETAILED DEVELOPMENT PLAN APPROVAL FOR EACH OF THE PADS.
2. ROUGH GRADING AND FUTURE PAD FINISHED FLOOR ELEVATIONS ARE APPROXIMATE AND SUBJECT TO DETAILED DESIGN AND PERMIT APPROVAL. SLIGHT VARIATIONS IN PAD GRADING, INCLUDING BUILDING FINISHED FLOOR ELEVATIONS, MAY OCCUR WITH INDIVIDUAL PAD DETAILED DEVELOPMENT PLAN APPROVAL AND DETAILED DESIGN.

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SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

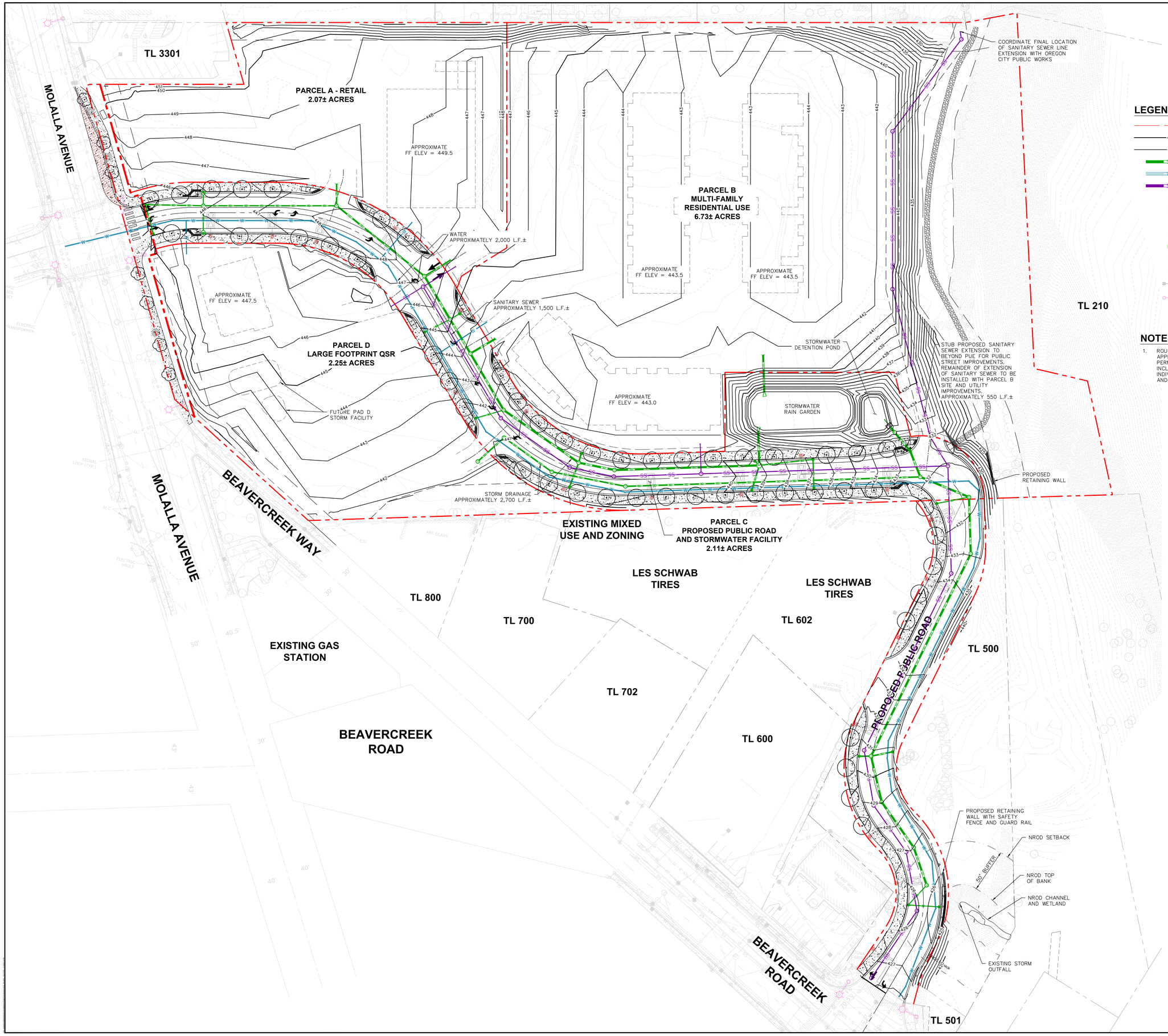
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

PRELIMINARY CIVIL GRADING AND DRAINAGE PLAN

SHEET NUMBER

DDP-C2.0



LEGEND

- PROPERTY LINE
- 400 MAJOR CONTOUR
- 441 MINOR CONTOUR
- STORM PIPE
- WATER PIPE
- SANITARY SEWER PIPE
- STORM MANHOLE
- STORM CATCH BASIN
- STORM CURB INLET
- STORM FLOW CONTROL STRUCTURE
- STORM FLARED END STRUCTURE
- SANITARY SEWER MANHOLE
- DECORATIVE STREET LIGHT – SEE LIGHTING PLAN
- STREET LIGHT – SEE LIGHTING PLAN
- EXISTING STREET LIGHT – SEE LIGHTING PLAN

NOTES

1. ROUGH GRADING AND FUTURE PAD FF ELEVATIONS ARE APPROXIMATE AND SUBJECT TO DETAILED DESIGN AND PERMIT APPROVAL. SLIGHT VARIATIONS IN PAD GRADING, INCLUDING BUILDING FF ELEVATIONS, MAY OCCUR WITH INDIVIDUAL PAD DETAILED DEVELOPMENT PLAN APPROVAL AND DETAILED DESIGN.

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CLIENT/OWNER

CYPRESS EQUITIES

PROJECT NAME

OREGON CITY MIXED USE DETAILED DEVELOPMENT PLAN

LANGAN PROJECT NUMBER: 794-002-701

PROJECT ADDRESS

1367 MOLALLA AVENUE
OREGON CITY, OR 97045

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SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

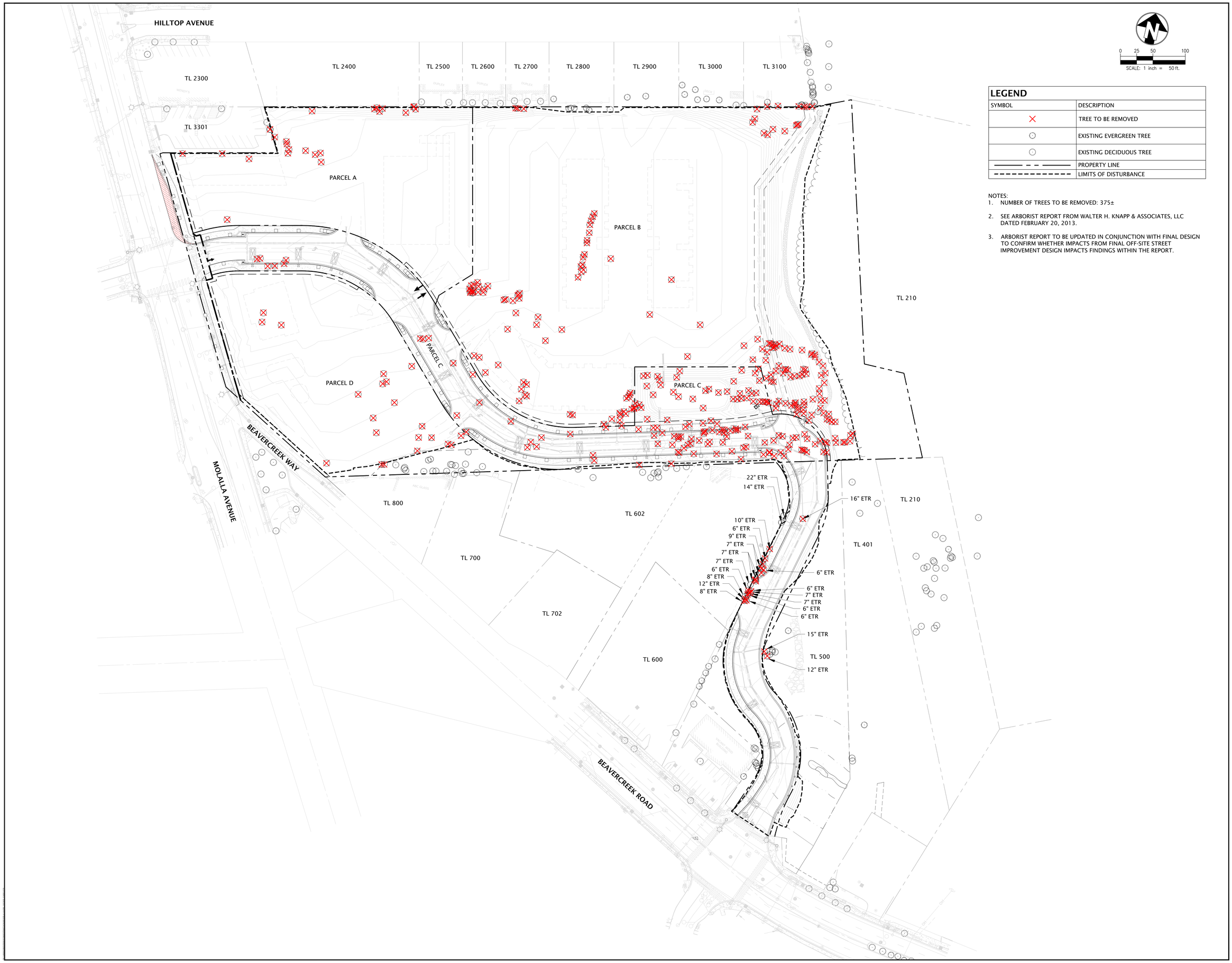
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

PRELIMINARY CIVIL UTILITY PLAN

SHEET NUMBER

DDP-C3.0



LEGEND

SYMBOL	DESCRIPTION
×	TREE TO BE REMOVED
⊙	EXISTING EVERGREEN TREE
⊙	EXISTING DECIDUOUS TREE
——— — — ———	PROPERTY LINE
- - - - - - - - - -	LIMITS OF DISTURBANCE

NOTES:

1. NUMBER OF TREES TO BE REMOVED: 375±
2. SEE ARBORIST REPORT FROM WALTER H. KNAPP & ASSOCIATES, LLC DATED FEBRUARY 20, 2013.
3. ARBORIST REPORT TO BE UPDATED IN CONJUNCTION WITH FINAL DESIGN TO CONFIRM WHETHER IMPACTS FROM FINAL OFF-SITE STREET IMPROVEMENT DESIGN IMPACTS FINDINGS WITHIN THE REPORT.

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CYPRESS EQUITIES

PROJECT NAME

OREGON CITY MIXED USE DETAILED DEVELOPMENT PLAN

LANGAN PROJECT NUMBER: 794-002-701

PROJECT ADDRESS

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OREGON CITY, OR 97045

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0	DDP SUBMITTAL	11/14/2025

SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

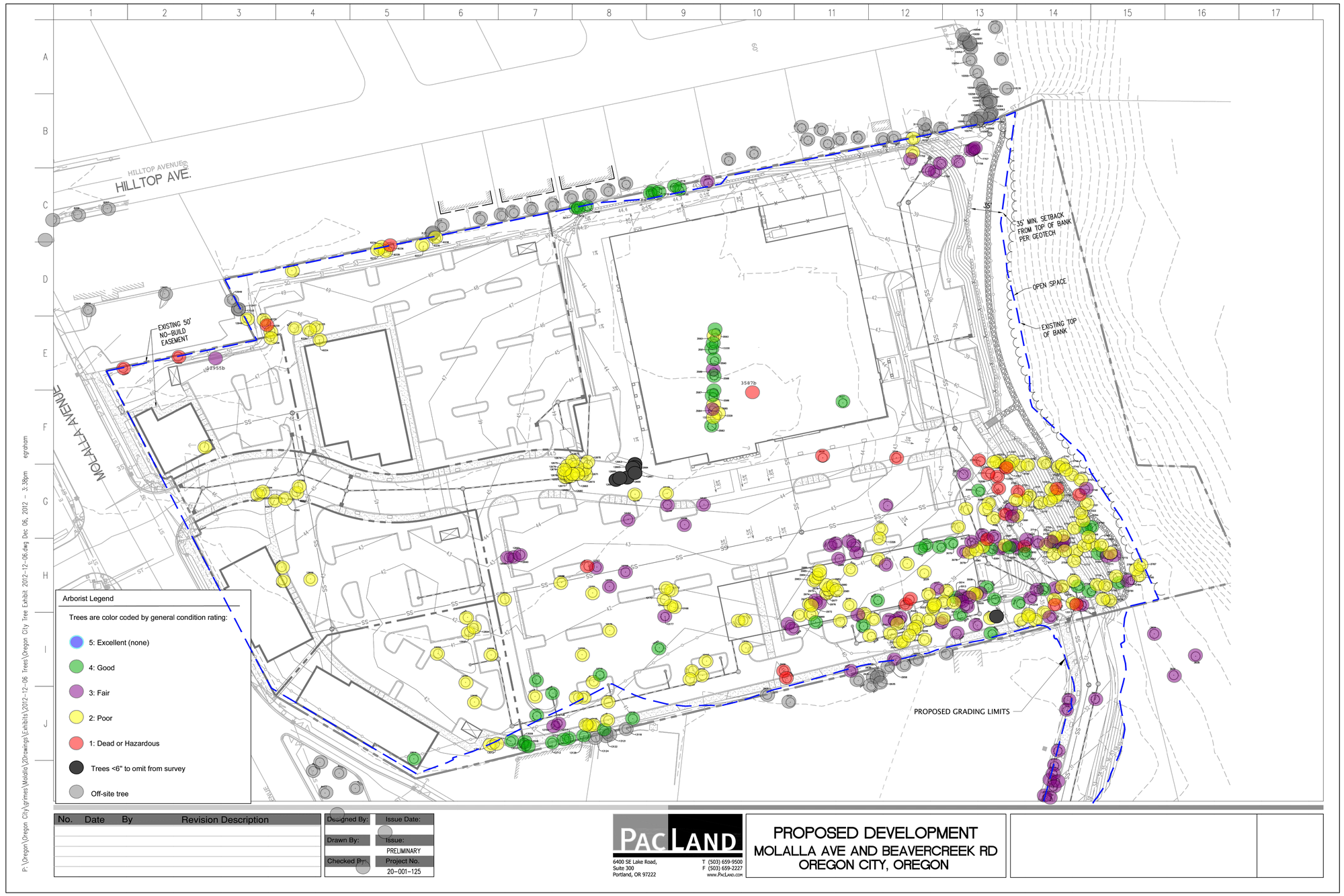
REVIEWED BY: A.ILAO
DESIGNED BY: D.LOPEZ

SHEET NAME

TREE REMOVAL PLAN

SHEET NUMBER

DDP-L0.1



P:\Oregon\Oregon City\grimes\Molalla\20cawings\Exhibits\2012-12-06 Trees\Oregon City Tree Exhibit 2012-12-06.dwg Dec 06, 2012 - 3:38pm egrothom

No.	Date	By	Revision Description

Designed By:	Issue Date:
Drawn By:	Issue: PRELIMINARY
Checked By:	Project No. 20-001-125

PACLAND
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Portland, OR 97222
T (503) 659-9500
F (503) 659-2227
www.PacLand.com

PROPOSED DEVELOPMENT
MOLALLA AVE AND BEAVERCREEK RD
OREGON CITY, OREGON

NOTES:
1. THIS SHEET IS FOR REFERENCE ONLY. SEE ARBORIST REPORT FROM WALTER H. KNAPP & ASSOCIATES, LLC DATED FEBRUARY 20, 2013.

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CLIENT/OWNER

CYPRESS EQUITIES

PROJECT NAME

OREGON CITY MIXED USE DETAILED DEVELOPMENT PLAN

LANGAN PROJECT NUMBER: 794-002-701

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SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

REVIEWED BY: A.ILAO
DESIGNED BY: D.LOPEZ

SHEET NAME

ARBORIST REPORT MAP

SHEET NUMBER

DDP-L0.2

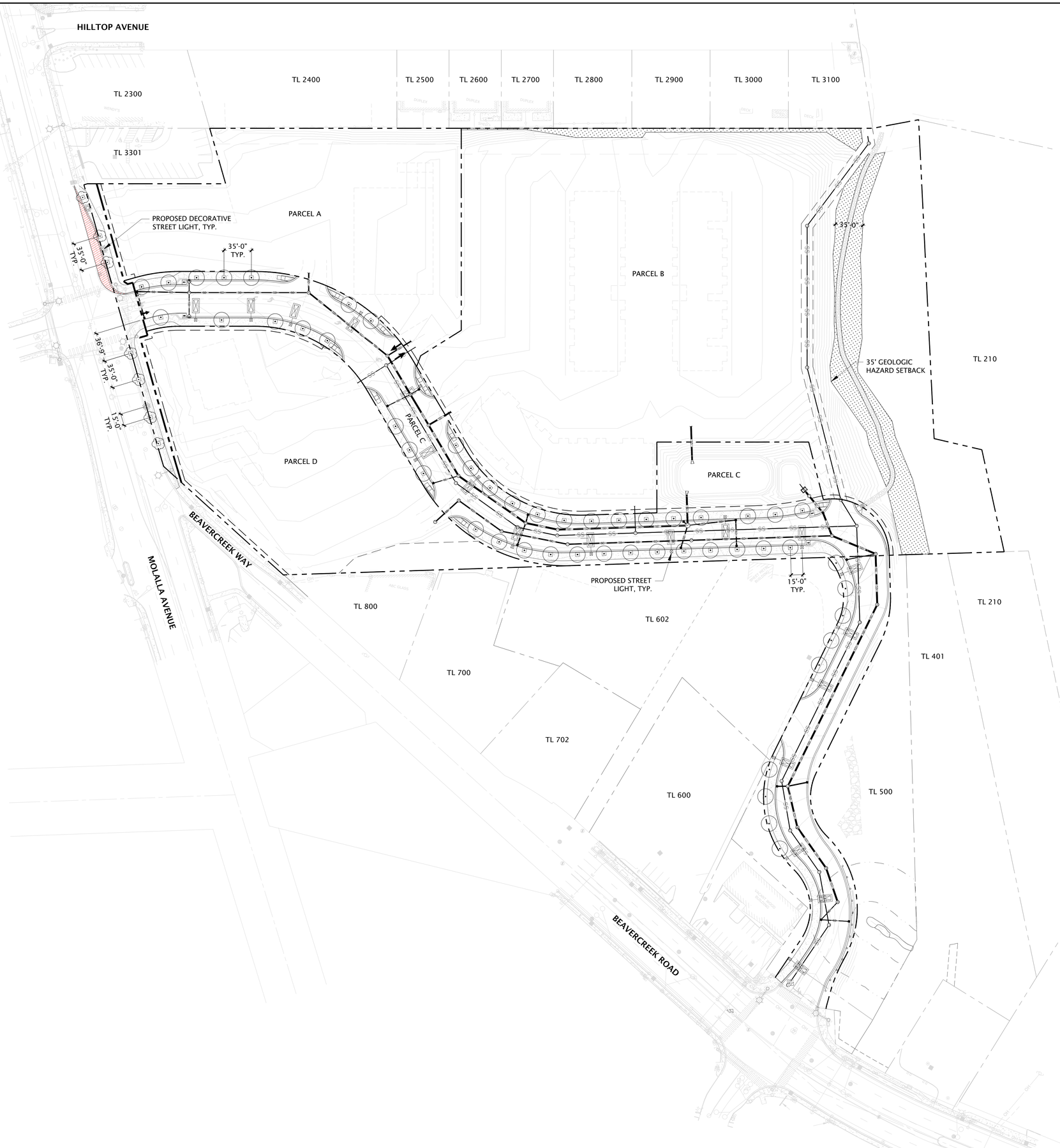
No.	Outside (O) or Within (W) Construction	Common Name	Species Name	DBH[1]	C-Rad[2]	Cond[3]	Comments	Invasive Species	Treatment	Mitigation
2931	O	Oregon white oak	*Quercus garryana*	26		0	not accessible		off-site	0
2932	O	adjacent tree		6		0			off-site	0
2935	O	adjacent tree		7		0			off-site	0
2936	O	adjacent tree		10	10	0			off-site	0
2937	O	adjacent tree		12	12	0			off-site	0
2938	O	adjacent tree		11	10	0			off-site	0
2939	O	adjacent tree		12	12	0			off-site	0
2940	O	adjacent tree		15	12	0			off-site	0
2941	W	bigleaf maple	*Acer macrophyllum*	14	12	3			retain	0
2953	W	adjacent tree		22		0			off-site	0
2954	O	adjacent tree		10	10	0			off-site	0
2955	W	bigleaf maple	*Acer macrophyllum*	10	10	3			retain	0
2956	O	adjacent tree		11	10	0			off-site	0
2957	W	sweet cherry	*Prunus avium*	8	8	1		Yes	remove	0
2958	W	Sculler's willow	*Salix scouleriana*	12	12	1			remove	0
2966	O	bigleaf maple	*Acer macrophyllum*	14	14	3			remove	6
2967	O	bigleaf maple	*Acer macrophyllum*	28	22	3			remove	12
2968	O	sweet cherry	*Prunus avium*	10	10	2		Yes	remove	0
2969	O	sweet cherry	*Prunus avium*	10	10	2		Yes	remove	0
2970	O	bigleaf maple	*Acer macrophyllum*	24	20	4			remove	9
2971	O	bigleaf maple	*Acer macrophyllum*	9	9	2			remove	3
2972	O	sweet cherry	*Prunus avium*	6		2		Yes	remove	0
2973	O	bigleaf maple	*Acer macrophyllum*	8	8	2			remove	3
2974	O	bigleaf maple	*Acer macrophyllum*	10	8	3			remove	3
2975	O	bigleaf maple	*Acer macrophyllum*	10	8	3			remove	3
2976	O	bigleaf maple	*Acer macrophyllum*	8	8	2			remove	3
2977	O	bigleaf maple	*Acer macrophyllum*	8	8	2			remove	3
2978	O	bigleaf maple	*Acer macrophyllum*	11		2			remove	3
2979	O	bigleaf maple	*Acer macrophyllum*	10	10	2			remove	3
2980	O	bigleaf maple	*Acer macrophyllum*	10	10	2			remove	3
2981	O	bigleaf maple	*Acer macrophyllum*	12	10	2			remove	3
2982	O	bigleaf maple	*Acer macrophyllum*	12	15	2			remove	3
2983	O	bigleaf maple	*Acer macrophyllum*	10	8	2			remove	3
2984	O	bigleaf maple	*Acer macrophyllum*	10	8	2			remove	3
2985	O	bigleaf maple	*Acer macrophyllum*	10	8	2			remove	3
2986	O	bigleaf maple	*Acer macrophyllum*	10	8	2			remove	3
2987	O	bigleaf maple	*Acer macrophyllum*	14	10	3			remove	6
2988	O	bigleaf maple	*Acer macrophyllum*	12	10	3			remove	3
2989	O	Oregon ash	*Fraxinus latifolia*	11	10	3			remove	3
2990	O	bigleaf maple	*Acer macrophyllum*	12	8	3			remove	3
2991	O	bigleaf maple	*Acer macrophyllum*	6		3			remove	3
2992	O	bigleaf maple	*Acer macrophyllum*	10	10	3			remove	3
2996	O	adjacent tree		30		0			off-site	0
2998	W	bigleaf maple	*Acer macrophyllum*	20		3			remove	3
2999	W	bigleaf maple	*Acer macrophyllum*	18		3			remove	2
3000	W	Douglas-fir	*Pseudotsuga menziesii*	52	20	4			remove	5
3005	O	Douglas-fir	*Pseudotsuga menziesii*	30		4			remove	12
3006	O	Douglas-fir	*Pseudotsuga menziesii*	22		4			remove	9
3007	O	Douglas-fir	*Pseudotsuga menziesii*	8		2			remove	3
3008	O	Douglas-fir	*Pseudotsuga menziesii*	15	10	3			remove	6
3009	O	Douglas-fir	*Pseudotsuga menziesii*	8		2			remove	3
3010	O	Douglas-fir	*Pseudotsuga menziesii*	20		3			remove	9
3011	O	Douglas-fir	*Pseudotsuga menziesii*	15		3			remove	6
3012	O	Douglas-fir	*Pseudotsuga menziesii*	18		3			remove	6
3013	O	Douglas-fir	*Pseudotsuga menziesii*	12		3			remove	3
3014	O	Douglas-fir	*Pseudotsuga menziesii*	24	15	4			remove	9
3015	O	Douglas-fir	*Pseudotsuga menziesii*	15		2	old broken top		remove	6
3016	W	Douglas-fir	*Pseudotsuga menziesii*	22	12	4			remove	3
3017	W	bigleaf maple	*Acer macrophyllum*	15		3			remove	2
3018	W	sweet cherry	*Prunus avium*	12		2		Yes	remove	0
3019	O	sweet cherry	*Prunus avium*	6		2		Yes	remove	0
3021	O	sweet cherry	*Prunus avium*	8		2		Yes	remove	0
3022	O	sweet cherry	*Prunus avium*	8		2		Yes	remove	0
3023	O	sweet cherry	*Prunus avium*	8		2		Yes	remove	0
3024	O	sweet cherry	*Prunus avium*	11	10	2		Yes	remove	0
3026	O	sweet cherry	*Prunus avium*	12	10	2		Yes	remove	0

No.	Outside (O) or Within (W) Construction	Common Name	Species Name	DBH[1]	C-Rad[2]	Cond[3]	Comments	Invasive Species	Treatment	Mitigation
3027	O	sweet cherry	*Prunus avium*	6		2		Yes	remove	0
3028	O	bigleaf maple	*Acer macrophyllum*	9	8	2	broken top		remove	3
3030	O	sweet cherry	*Prunus avium*	6		1	dead	Yes	remove	0
3031	O	sweet cherry	*Prunus avium*	6		1	dying, not viable	Yes	remove	0
3032	O	Douglas-fir	*Pseudotsuga menziesii*	27	20	4			remove	12
3033	O	bigleaf maple	*Acer macrophyllum*	8	8	2			remove	3
3034	O	bigleaf maple	*Acer macrophyllum*	12	12	2			remove	3
3035	O	Douglas-fir	*Pseudotsuga menziesii*	18		3			remove	6
3036	O	bigleaf maple	*Acer macrophyllum*	8		2			remove	3
3037	O	Douglas-fir	*Pseudotsuga menziesii*	30		4			remove	12
3038	W	Douglas-fir	*Pseudotsuga menziesii*	8		2			remove	1
3039	W	pear	*Pyrus* spp.	6		2			remove	1
3040	O	Douglas-fir	*Pseudotsuga menziesii*	18	10	3			remove	6
3041	O	Douglas-fir	*Pseudotsuga menziesii*	13	10	3			remove	6
3042	O	sweet cherry	*Prunus avium*	8	8	2		Yes	remove	0
3043	O	Douglas-fir	*Pseudotsuga menziesii*	24	12	3			remove	9
3044	O	sweet cherry	*Prunus avium*	8		2		Yes	remove	0
3046	W	sweet cherry	*Prunus avium*	8		2		Yes	remove	0
3047	W	sweet cherry	*Prunus avium*	8		2		Yes	remove	0
3048	W	sweet cherry	*Prunus avium*	10		2		Yes	remove	0
3049	W	sweet cherry	*Prunus avium*	9	8	2		Yes	remove	0
3050	W	sweet cherry	*Prunus avium*	9	8	2		Yes	remove	0
3051	W	sweet cherry	*Prunus avium*	14	10	2		Yes	remove	0
3052	O	bigleaf maple	*Acer macrophyllum*	6		2			remove	3
3063	W	bigleaf maple	*Acer macrophyllum*	25	12	3			remove	4
3070	O	Oregon ash	*Fraxinus latifolia*	12	10	3			remove	3
3071	O	bigleaf maple	*Acer macrophyllum*	6		2			remove	3
3072	O	Douglas-fir	*Pseudotsuga menziesii*	26		4			remove	12
3073	O	Douglas-fir	*Pseudotsuga menziesii*	18	18	4			remove	6
3074	O	Douglas-fir	*Pseudotsuga menziesii*	26	22	4			remove	12
3075	O	Douglas-fir	*Pseudotsuga menziesii*	26	22	4			remove	12
3076	O	English hawthorn	*Crataegus monogyna*	6		2		Yes	remove	0
3077	O	Douglas-fir	*Pseudotsuga menziesii*	26		3			remove	12
3078	O	Douglas-fir	*Pseudotsuga menziesii*	38		3	codominant stems		remove	15
3079	O	Douglas-fir	*Pseudotsuga menziesii*	15		2			remove	6
3080	O	Douglas-fir	*Pseudotsuga menziesii*	15		2			remove	6
3081	O	Douglas-fir	*Pseudotsuga menziesii*	12		2			remove	3
3082	O	Douglas-fir	*Pseudotsuga menziesii*	26		3			remove	12
3083	O	Douglas-fir	*Pseudotsuga menziesii*	10		1			remove	0
3084	O	Douglas-fir	*Pseudotsuga menziesii*	22	10	4			remove	9
3085	O	Douglas-fir	*Pseudotsuga menziesii*	24	20	3			remove	9
3086	O	Douglas-fir	*Pseudotsuga menziesii*	17	12	3			remove	6
3087	O	Douglas-fir	*Pseudotsuga menziesii*	6	10	2			remove	3
3088	O	Douglas-fir	*Pseudotsuga menziesii*	22	10	4			remove	9
3089	O	Douglas-fir	*Pseudotsuga menziesii*	16		3			remove	6
3090	O	Douglas-fir	*Pseudotsuga menziesii*	12	10	3			remove	3
3091	W	Douglas-fir	*Pseudotsuga menziesii*	10	6	2			remove	1
3092	W	Douglas-fir	*Pseudotsuga menziesii*	24		3			remove	3
3093	W	Douglas-fir	*Pseudotsuga menziesii*	8		1			remove	0
3095	W	Douglas-fir	*Pseudotsuga menziesii*	17		3			remove	2
3096	O	Douglas-fir	*Pseudotsuga menziesii*	6		2			remove	3
3097	O	sweet cherry	*Prunus avium*	8		2		Yes	remove	0
3098	W	sweet cherry	*Prunus avium*	6		2		Yes	remove	0
3099	W	Douglas-fir	*Pseudotsuga menziesii*	32		4			remove	5
3100	O	Oregon ash	*Fraxinus latifolia*	8		2			remove	3
3101	W	bigleaf maple	*Acer macrophyllum*	14	10	4			remove	6
3102	O	English hawthorn	*Crataegus monogyna*	10	10	2		Yes	remove	0
3103	O	English hawthorn	*Crataegus monogyna*	12	12	2		Yes	remove	0
3107	O	Douglas-fir	*Pseudotsuga menziesii*	22	12	3	ROW access		protect off-site tree	0
3108	O	adjacent tree		20	20	0			off-site	0
3109	O	bigleaf maple	*Acer macrophyllum*	17	15	2			remove	6
3110	W	adjacent tree		7	7	0			off-site	0
3111	O	adjacent tree		8	10	0			off-site	0
3112	O	adjacent tree		10	10	0			off-site	0
3113	O	adjacent tree		14	10	0			off-site	0
3114	O	adjacent tree		16	10	0			off-site	0

No.	Outside (O) or Within (W) Construction	Common Name	Species Name	DBH[1]	C-Rad[2]	Cond[3]	Comments	Invasive Species	Treatment	Mitigation
3115	O	adjacent tree		14	10	0			off-site	0
3116	O	Port-Orford-cedar	*Chamaecyparis lawsoniana*	14	15	4			retain	0
3117	O	Port-Orford-cedar	*Chamaecyparis lawsoniana*	12	12	4			retain	0
3118	O	Port-Orford-cedar	*Chamaecyparis lawsoniana*	15	15	4			retain	0
3119	O	Port-Orford-cedar	*Chamaecyparis lawsoniana*	22	12	4			retain	0
3120	O	Port-Orford-cedar	*Chamaecyparis lawsoniana*	8	8	4			retain	0
3137	O	adjacent tree		11	10	0			off-site	0
3208	O	Port-Orford-cedar	*Chamaecyparis lawsoniana*	12	10	4			retain	0
3216	O	Port-Orford-cedar	*Chamaecyparis lawsoniana*	14	10	4			retain	0
3217	O	Port-Orford-cedar	*Chamaecyparis lawsoniana*	12	10	4			retain	0
3273	W	sweet cherry	*Prunus avium*	10		2		Yes	remove	0
3583	W	Douglas-fir	*Pseudotsuga menziesii*	24	14	4	retain in group only		remove	3
3584	W	Douglas-fir	*Pseudotsuga menziesii*	12	12	3	retain in group only		remove	1
3585	W	Douglas-fir	*Pseudotsuga menziesii*	8	8	2			remove	1
3586	W	Douglas-fir	*Pseudotsuga menziesii*	24	15	4	retain in group only		remove	3
3587	W	Douglas-fir	*Pseudotsuga menziesii*	24	15	4	retain in group only		remove	3
3587b	O	Sculler's willow	*Salix scouleriana*	14		1			remove	0
3588	W	Douglas-fir	*Pseudotsuga menziesii*	24	20	4	retain in group only		remove	3
3589	W	Douglas-fir	*Pseudotsuga menziesii*	19	18	3	retain in group only		remove	3
3590	W	Douglas-fir	*Pseudotsuga menziesii*	24	20	4	retain in group only		remove	3
3591	W	Douglas-fir	*Pseudotsuga menziesii*	24	18	4	retain in group only		remove	3
3592	W	Douglas-fir	*Pseudotsuga menziesii*	10	10	2			remove	1
3593	W	Douglas-fir	*Pseudotsuga menziesii*	24	20	4	retain in group only		remove	3
3627	W	Douglas-fir	*Pseudotsuga menziesii*	22	12	4			remove	3
3628	W	bigleaf maple	*Acer macrophyllum*	36	15	1	Ganoderma conks		remove	0
3665	O	adjacent tree		38	23	0			off-site	0
3670	O	sweet cherry	*Prunus avium*	17	12	3		Yes	remove	0
3672	O	adjacent tree		30	25	0			off-site	0
3673	O	adjacent tree		30	25	0			off-site	0
3682	O	adjacent tree		23	20	0			off-site	0
3683	O	adjacent tree		26	12	0			off-site	0
3684	O	adjacent tree		18	12	0			off-site	0
3685	O	adjacent tree		26	15	0			off-site	0
3691	W	Douglas-fir	*Pseudotsuga menziesii*	12		1			remove	1
3692	W	Douglas-fir	*Pseudotsuga menziesii*	8		1	dying, suppressed		remove	0
3693	W	Douglas-fir	*Pseudotsuga menziesii*	24		4			remove	3
3696	W	Douglas-fir	*Pseudotsuga menziesii*	18		4			remove	2
3697	W	bigleaf maple	*Acer macrophyllum*	18		2			remove	2
3698	W	bigleaf maple	*Acer macrophyllum*	14		2			remove	2
3699	W	bigleaf maple	*Acer macrophyllum*	10	10	2			remove	1
3700	W	Douglas-fir	*Pseudotsuga menziesii*	12	8	3			remove	1
3701	W	Oregon white oak	*Quercus garryana*	28		2			remove	4
3702	W	Douglas-fir	*Pseudotsuga menziesii*	14		3			remove	2
3703	W	bigleaf maple	*Acer macrophyllum*	14		1	stem decay		remove	0
3704	W	Douglas-fir	*Pseudotsuga menziesii*	12	8	3			remove	1
3706	W	bigleaf maple	*Acer macrophyllum*	12		1	broken top, not viable		remove	0
3707	W	Douglas-fir	*Pseudotsuga menziesii*	12		3			remove	1
3708	W	Douglas-fir	*Pseudotsuga menziesii*	24		4			remove	3
3709	W	bigleaf maple	*Acer macrophyllum*	12		2			remove	1
3710	W	Douglas-fir	*Pseudotsuga menziesii*	24	10	4			remove	3
3711	W	Douglas-fir	*Pseudotsuga menziesii*	10	8	2			remove	1
3712	W	Douglas-fir	*Pseudotsuga menziesii*	24	12	4			remove	3
3713	W	Douglas-fir	*Pseudotsuga menziesii*	10		3			remove	1
3714	W	Douglas-fir	*Pseudotsuga menziesii*	26		3			remove	3
3715	W	bigleaf maple	*Acer macrophyllum*	12		2			remove	1
3716	W	Douglas-fir	*Pseudotsuga menziesii*	20	10	3			remove	3
3717	W	bigleaf maple	*Acer macrophyllum*	17	10	2			remove	2
3719	W	sweet cherry	*Prunus avium*	6		2		Yes	remove	0
3720	W	sweet cherry	*Prunus avium*	14		2		Yes	remove	0
3721	W	sweet cherry	*Prunus avium*	10	10	2		Yes	remove	0
3722	W	sweet cherry	*Prunus avium*	14		2		Yes	remove	0
3724	W	sweet cherry	*Prunus avium*	8		1	lean	Yes	remove	0
3725	W	sweet cherry	*Prunus avium*	16		2		Yes	remove	0
3726	W	sweet cherry	*Prunus avium*	10		1	dying, not viable	Yes	remove	0
3728	W	bigleaf maple	*Acer macrophyllum*	18		1	hollow with decay		remove	0
3734	W	bigleaf maple	*Acer macrophyllum*	16		1	decay, history of failure		remove	0

No.	Outside (O) or Within (W) Construction	Common Name	Species Name	DBH[1]	C-Rad[2]	Cond[3]	Comments	Invasive Species	Treatment	Mitigation
3737	W	bigleaf maple	*Acer macrophyllum*	18		1	stem decay		remove	0
3739	O	sweet cherry	*Prunus avium*	21	12	2		Yes	remove	0
3740	O	bigleaf maple	*Acer macrophyllum*	16	12	2			remove	6
3741	O	sweet cherry	*Prunus avium*	36		1	stem decay, branch failures	Yes	remove	0
3742	O	sweet cherry	*Prunus avium*	14	10	2		Yes	remove	0
3743	O	sweet cherry	*Prunus avium*	12		2		Yes	remove	0
3744	O	sweet cherry	*Prunus avium*	8		2		Yes	remove	0
3745	O	sweet cherry	*Prunus avium*	10		2		Yes	remove	0
3746	O	bigleaf maple	*Acer macrophyllum*	20		2			retain	0
3747	O	bigleaf maple	*Acer macrophyllum*	11	8	2			retain	0
3748	O	bigleaf maple	*Acer macrophyllum*	12	8	3			retain	0
3749	O	bigleaf maple	*Acer macrophyllum*	6		1			remove	0
3750	O	bigleaf maple	*Acer macrophyllum*	14		2			remove	0
3751	O	bigleaf maple	*Acer macrophyllum*	12		1			remove	0
3752	O	sweet cherry	*Prunus avium*	10	10	2		Yes	remove	0
3753	O	sweet cherry	*Prunus avium*	12		2		Yes	remove	0
3754	W	Douglas-fir	*Pseudotsuga menziesii*	20	10	3			remove	3
3755	W	bigleaf maple	*Acer macrophyllum*	9		2			remove	1
3756	W	Douglas-fir	*Pseudotsuga menziesii*	16		3			remove	2
3757	W	bigleaf maple	*Acer macrophyllum*	8		2			remove	1
3758	W	Douglas-fir	*Pseudotsuga menziesii*	12		3			remove	1
3759	W	bigleaf maple	*Acer macrophyllum*	8		2			remove	1
3760	O	Douglas-fir	*Pseudotsuga menziesii*	18	8	3			remove	6
3761	O	bigleaf maple	*Acer macrophyllum*	12		2			remove	3
3762	O	sweet cherry	*Prunus avium*	12		2		Yes	remove	0
3763	O	bigleaf maple	*Acer macrophyllum*	10	8	2			remove	3
3764	O	Douglas-fir	*Pseudotsuga menziesii*	18	10	4			remove	6
3765	O	Douglas-fir	*Pseudotsuga menziesii*	24	12	4			retain	0
3766	O	Douglas-fir	*Pseudotsuga menziesii*	17		2	old broken top		remove	6
3767	O	Douglas-fir	*Pseudotsuga menziesii*	20		2			remove	9
3768	O	Douglas-fir	*Pseudotsuga menziesii*	12		2			remove	3
3769	O	Douglas-fir	*Pseudotsuga menziesii*	24		4			remove	9
3770	O	bigleaf maple	*Acer macrophyllum*	10		2			retain	0
3771	O	Douglas-fir	*Pseudotsuga menziesii*	12	7	3			retain	0
3772	O	Douglas-fir	*Pseudotsuga menziesii*	15	8	3			retain	0
3773	W	bigleaf maple	*Acer macrophyllum*	16		2			remove	2
3775	O	bigleaf maple	*Acer macrophyllum*	12		2			remove	3
3777	O	bigleaf maple	*Acer macrophyllum*	14		2			remove	6
3778	O	bigleaf maple	*Acer macrophyllum*	28	25	2			remove	12
3779	O	bigleaf maple	*Acer macrophyllum*	12		2			remove	3
3780	O	bigleaf maple	*Acer macrophyllum*	10		2			remove	3
3781	O	Douglas-fir	*Pseudotsuga menziesii*	20	10	4			retain	0
3782	O	bigleaf maple	*Acer macrophyllum*	12		2			remove	3
3783	O	Douglas-fir	*Pseudotsuga menziesii*	10		3			retain	0
3784	O	bigleaf maple	*Acer macrophyllum*	10		2			retain	0
3785	O	bigleaf maple	*Acer macrophyllum*	24	12	2			retain	0
3786	O	bigleaf maple	*Acer macrophyllum*	12		2			retain	0
3787	O	bigleaf maple	*Acer macrophyllum*	12		2			retain	0
3834	O	bigleaf maple	*Acer macrophyllum*	16		3	ROW access		protect off-site tree	0
3838	O	Oregon white oak	*Quercus garryana*	26		3	ROW access		protect off-site tree	0
3839	O	Oregon white oak	*Quercus garryana*	20	20	3	ROW access		protect off-site tree	0
3864	W	Douglas-fir	*Pseudotsuga menziesii*	16		3	ROW access		remove off-site tree	2
3904	W	Douglas-fir	*Pseudotsuga menziesii*	22		3	ROW access		protect off-site tree	0
3905	W	Douglas-fir	*Pseudotsuga menziesii*	14		3	ROW access		protect off-site tree	0
4184	O	adjacent tree		14	10	0	ROW access		protect off-site tree	0
4185	O	adjacent tree		12	8	0	ROW access		protect off-site tree	0
4211	W	Douglas-fir	*Pseudotsuga menziesii*	15		4	ROW access		remove off-site tree	2
4212	W	Douglas-fir	*Pseudotsuga menziesii*	12	10	4	ROW access		remove off-site tree	1
4213	W	Douglas-fir	*Pseudotsuga menziesii*	8	8	3	ROW access		remove off-site tree	1
4214	W	Douglas-fir	*Pseudotsuga menziesii*	16	12	4	ROW access		remove off-site tree	2
4215	W	Douglas-fir	*Pseudotsuga menziesii*	16	12	4	ROW access		remove off-site tree	2
4216	W	bigleaf maple	*Acer macrophyllum*	32	15	3	ROW access		remove off-site tree	5
4725	O	adjacent tree		15	12	0			off-site	0
4726	O	adjacent tree		15	12	0			off-site	0
4748	O	adjacent tree		18	20	0			off-site	0
4757	O	adjacent tree		18	12	0			off-site	0

No.	Outside (O) or Within (W) Construction	Common Name	Species Name	DBH[1]	C-Rad[2]	Cond[3]	Comments	Invasive Species	Treatment	Mitigation
4758	O	adjacent tree		20	15	0			off-site	0
4775	O	adjacent tree		10	10	0			off-site	0
4786	O	adjacent tree		18	15	0			off-site	0
4787	O	adjacent tree		15	15	0			off-site	0
4998	O	adjacent tree		18	12	0			off-site	0
6005	O	Douglas-fir	*Pseudotsuga menziesii*	14	10	0			off-site	0
6224	O	bigleaf maple	*Acer macrophyllum*	17	10	2			remove	6
6225	O	bigleaf maple	*Acer macrophyllum*	17	10	2			remove	6
6226	O	sweet cherry	*Prunus avium*	8	8	2		Yes	remove	0
6227	O	sweet cherry	*Prunus avium*	10	10	2		Yes	remove	0
6228	W	bigleaf maple	*Acer macrophyllum*	6	8	2			remove	1
6229	W	bigleaf maple	*Acer macrophyllum*	18	15	2			remove	2
6230	O	Sculler's willow	*Salix scouleriana*	17	12	1			remove	0
6231	O	bigleaf maple	*Acer macrophyllum*	14	12	2			remove	6
6232	O	bigleaf maple	*Acer macrophyllum*	8	8	2			remove	3
6233	O	sweet cherry	*Prunus avium*	20	14	2		Yes	remove	0
6234	O	sweet cherry	*Prunus avium*	12	10	2		Yes	remove	0
6235	O	sweet cherry	*Prunus avium*	12	10	2		Yes	remove	0
6236	O	sweet cherry	*Prunus avium*	16	14	1		Yes	remove	0
6237	O	sweet cherry	*Prunus avium*	6	10	2		Yes	remove	0
6238	O	sweet cherry	*Prunus avium*	23	20	2		Yes	remove	0
6239	O	adjacent tree		17	15	0			off-site	0
6289	W	bigleaf maple	*Acer macrophyllum*	10	15	2			remove	1
6290	W	bigleaf maple	*Acer macrophyllum*	10	15	2			remove	1
6291	O	bigleaf maple	*Acer macrophyllum*	10	15	2			remove	3
6293	W	bigleaf maple	*Acer macrophyllum*	10	15	2			remove	1
6294	W	bigleaf maple	*Acer macrophyllum*	14	15	2			remove	2
6295	W	bigleaf maple	*Acer macrophyllum*	8	12	2			remove	1
7353	W	sweet cherry	*Prunus avium*	6	8	2		Yes	remove	0
7702	O	black cottonwood	*Populus trichocarpa*	6	8	2			remove	3
7703	O	black cottonwood	*Populus trichocarpa*	10	10	3			remove	3
7704	O	Oregon ash	*Fraxinus latifolia*	10	10	3			remove	3
7705	O	black cottonwood	*Populus trichocarpa*	12	15	3			remove	3
7706	W	black cottonwood	*Populus trichocarpa*	14	6	3			remove	2
7707	W	black cottonwood	*Populus trichocarpa*	6	10	3			remove	1
7708	W	black cottonwood	*Populus trichocarpa*	6	10	3			remove	1
7709	O	black cottonwood	*Populus trichocarpa*	10	15	3			remove	3
7710	O	black cottonwood	*Populus trichocarpa*	16	20	3			remove	6
8257	O	adjacent tree		6	6	0			off-site	0
8258	O	adjacent tree		6	6	0			off-site	0
8259	O	adjacent tree		6	6	0			off-site	0
8276	O	adjacent tree		10	15	0			off-site	0
8452	O	adjacent tree		6	5	0			off-site	0
8453	O	adjacent tree		6	5	0			off-site	0
8454	O	adjacent tree		6	5



0 25 50 100

SCALE: 1 inch = 50 ft.

PLANT SCHEDULE

SYMBOL	QTY	BOTANICAL / COMMON NAME	SIZE
SHRUBS			
	52	GINKGO BILOBA 'PRINCETON SENTRY' / PRINCETON SENTRY MAIDENHAIR TREE	3" CAL.
	7	ACER BUERGERIANUM / TRIDENT MAPLE	3" CAL.
		PLANTING AREA FOR TREE MITIGATION AND NROD MITIGATION	

LEGEND

SYMBOL	DESCRIPTION
	TREE GRATE PER CITY STANDARD
	PROPERTY LINE
	RIGHT OF WAY
	EASEMENT
	NROD SETBACK

NOTES:
1. SOIL AMENDMENTS ARE PER SOILS REPORT.
2. ALL NEW PLANTING AREAS TO BE IRRIGATED IF REQUIRED BY THE CITY ENGINEER.
3. ROOT BARRIERS SHALL BE PROVIDED FOR ALL TREES THAT WILL BE LOCATED WITHIN SIX FEET OF ANY STRUCTURE, PAVEMENT, OR ALTERNATE MATERIAL SUCH AS WATERLINES, BUILDING FOUNDATIONS, CONCRETE FLATWORK, OR TURF AREA.
4. ALL TREES SHALL BE STAKED WITH AT LEAST TWO STAKES ONE SHALL BE LOCATED ON THE PREVAILING WINDWARD SIDE.
5. SCOPE OF WORK IS ONLY FOR THE RIGHT-OF-WAY. PRIVATE/ONSITE IS EXCLUDED.
6. PARCEL A, B, AND D TO HAVE THEIR OWN DETAILED MITIGATION PLAN.

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture, and Geology, D.P.C.
10135 SE Sunnyside Road Suite 200
Clackamas, OR 97015
T: 503.659.9500 www.langan.com

CLIENT/OWNER

CYPRESS EQUITIES

PROJECT NAME

OREGON CITY MIXED USE DETAILED DEVELOPMENT PLAN

LANGAN PROJECT NUMBER: 794-002-701

PROJECT ADDRESS

1367 MOLALLA AVENUE
OREGON CITY, OR 97045

STAMP

REVISIONS

REV	ISSUED FOR:	DATE
0	DDP SUBMITTAL	11/14/2025

SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

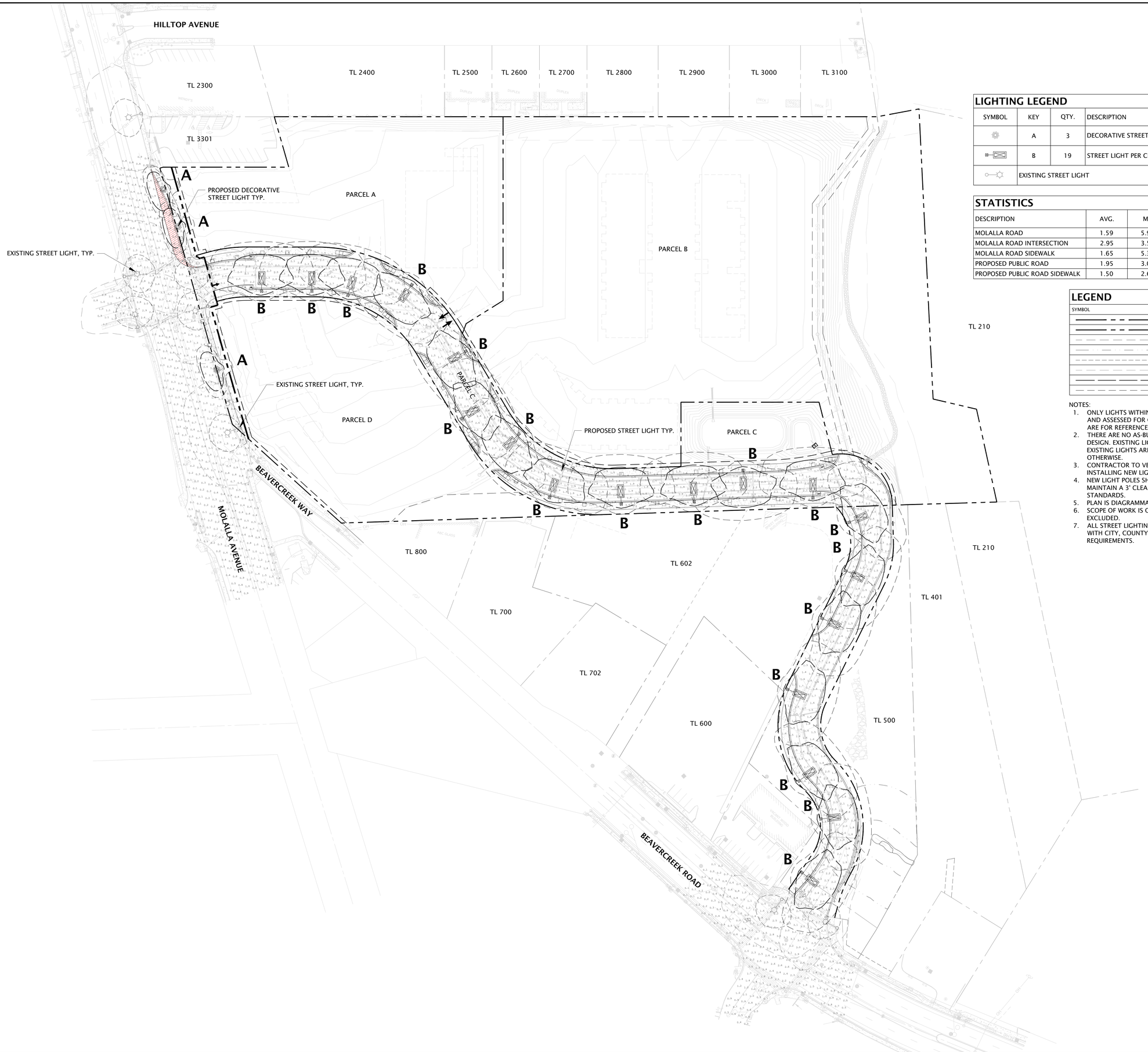
REVIEWED BY: A.ILAO
DESIGNED BY: D.LOPEZ

SHEET NAME

OVERALL LANDSCAPE PLAN

SHEET NUMBER

DDP-L1.0



LIGHTING LEGEND

SYMBOL	KEY	QTY.	DESCRIPTION
	A	3	DECORATIVE STREET LIGHT (KING ACORN STYLE) PER CITY STANDARD
	B	19	STREET LIGHT PER CITY STANDARD
	EXISTING STREET LIGHT		

STATISTICS

DESCRIPTION	AVG.	MAX.	MIN.	MAX./MIN.	AVG./MIN.
MOLALLA ROAD	1.59	5.9 FC	0.5 FC	14.7	3.98
MOLALLA ROAD INTERSECTION	2.95	3.5 FC	2.0 FC	1.75	1.48
MOLALLA ROAD SIDEWALK	1.65	5.3 FC	0.7 FC	7.57	2.36
PROPOSED PUBLIC ROAD	1.95	3.0 FC	0.6 FC	5.00	3.25
PROPOSED PUBLIC ROAD SIDEWALK	1.50	2.6 FC	0.5 FC	5.20	2.96

LEGEND

SYMBOL	DESCRIPTION
	PROPERTY LINE
	RIGHT OF WAY
	EASEMENT
	NROD SETBACK
	EXISTING ISOLINE 1.0 FOOT-CANDLE
	EXISTING ISOLINE 0.5 FOOT-CANDLE
	PROPOSED ISOLINE 1.0 FOOT-CANDLE
	PROPOSED ISOLINE 0.5 FOOT-CANDLE

NOTES:

1. ONLY LIGHTS WITHIN THE RIGHT OF WAY HAVE BEEN STUDIED/MODELED AND ASSESSED FOR COMPLIANCE. EXISTING LIGHTS AND ISOLINES SHOWN ARE FOR REFERENCE ONLY.
2. THERE ARE NO AS-BUILTS AVAILABLE AT THE TIME OF THIS PRELIMINARY DESIGN. EXISTING LIGHT INFORMATION IS NOT VERIFIED IN THE FIELD. EXISTING LIGHTS ARE TO REMAIN AND BE PROTECTED UNLESS SHOWN OTHERWISE.
3. CONTRACTOR TO VERIFY EXISTING CONDITIONS PRIOR TO REPLACING OR INSTALLING NEW LIGHT FIXTURES.
4. NEW LIGHT POLES SHALL NOT BE LOCATED IN THE PATH OF TRAVEL AND MAINTAIN A 3' CLEARANCE FROM THE FRONT OF CURB PER CITY STANDARDS.
5. PLAN IS DIAGRAMMATIC.
6. SCOPE OF WORK IS ONLY FOR THE RIGHT-OF-WAY. PRIVATE/ONSITE IS EXCLUDED.
7. ALL STREET LIGHTING RELATED WORK AND MATERIALS SHALL COMPLY WITH CITY, COUNTY, AND OTHER APPLICABLE GOVERNING AUTHORITY REQUIREMENTS.

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CLIENT/OWNER

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LANGAN PROJECT NUMBER: 794-002-701

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SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

REVIEWED BY: A.ILAO
DESIGNED BY: D.LOPEZ

SHEET NAME

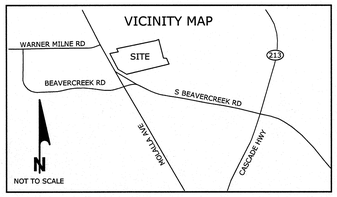
OVERALL LIGHTING PLAN

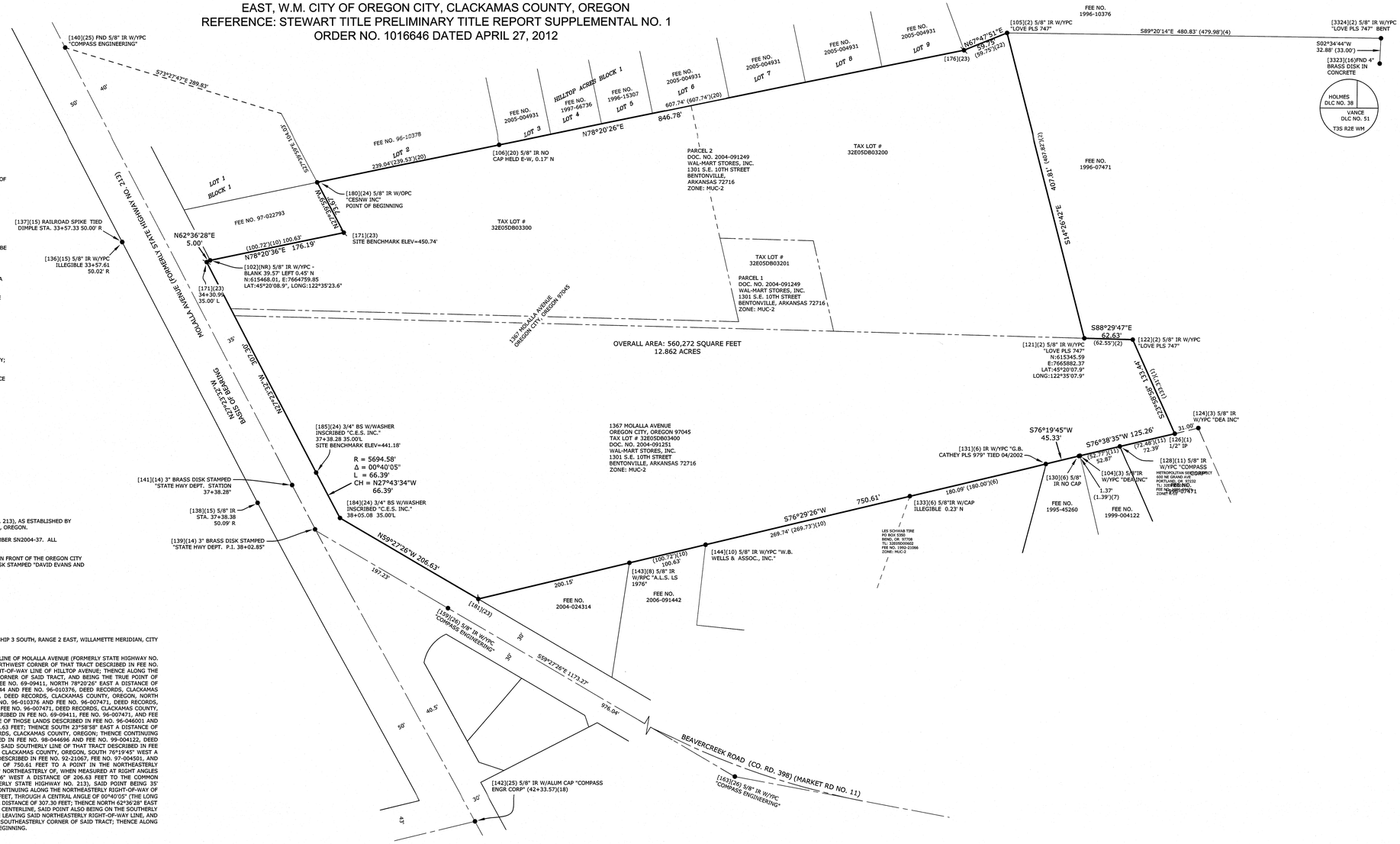
SHEET NUMBER

DDP-L2.0

ALTA/ACSM SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON
REFERENCE: STEWART TITLE PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 1
ORDER NO. 1016646 DATED APRIL 27, 2012





CERTIFICATION FOR SURVEY

1. THE SURVEY WAS MADE ON THE GROUND DURING APRIL AND MAY OF 2012, AND CORRECTLY SHOWS THE AREA OF THE SUBJECT PROPERTY, THE LOCATION AND TYPE OF ALL BUILDINGS, STRUCTURES AND OTHER IMPROVEMENTS SITUATED ON THE SUBJECT PROPERTY.

2. EXCEPT AS SHOWN ON THE SURVEY, THERE ARE NO OBSERVABLE, ABOVE GROUND ENCROACHMENTS BY THE IMPROVEMENTS ON THE SUBJECT PROPERTY UPON ADJOINING PROPERTIES, STREETS OR ALLEYS, OR BY THE IMPROVEMENTS ON ADJOINING PROPERTIES, STREETS OR ALLEYS UPON THE SUBJECT PROPERTY.

3. THE LOCATION OF EACH EASEMENT, RIGHT OF WAY, SERVITUDE, AND OTHER MATTER AFFECTING THE SUBJECT PROPERTY AND LISTED IN STEWART TITLE COMPANY, PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 1, ORDER NUMBER 1016646, DATED APRIL 27, 2012, WITH RESPECT TO THE SUBJECT PROPERTY, HAS BEEN SHOWN ON THE SURVEY, TOGETHER WITH THE APPROPRIATE RECORDING REFERENCES, TO THE EXTENT THAT SUCH MATTERS CAN BE LOCATED. THE PROPERTY SHOWN ON THE SURVEY IS THE PROPERTY DESCRIBED IN THAT TITLE REPORT.

4. THE SUBJECT PROPERTY HAS ACCESS TO AND FROM DULY DEDICATED AND ACCEPTED PUBLIC STREETS.

5. THE MEASURED BEARINGS AND DISTANCES SHOWN HEREON FORMS A MATHEMATICALLY CLOSED FIGURE WITH A MINIMUM LATITUDE AND DEPARTURE CLOSURE ERROR OF 1 IN 50,000.

6.THIS SITE LIES WITHIN WITHIN THE LIMITS OF FEMA MAP NUMBER 41005C0279D, WHICH IS NOT PRINTED SINCE THE ENTIRE MAP IS IN ZONE 'X' AS REITERATED ON FEMA MAP NUMBER 41005C1ND0A, EFFECTIVE DATE: JUNE 17, 2008.

7.SUBJECT PROPERTY IS ZONED, MUC-2 "MIXED USE CORRIDOR"

8. NO ORTHOPHOTOGRAPHY, PHOTOGRAMMETRIC MAPPING, LASER SCANNING, OR SIMILAR PRODUCTS WERE UTILIZED IN THE PREPARATION OF THIS SURVEY.

I HEREBY CERTIFY TO PACLAND; WAL-MART STORES, INC., A DELAWARE CORPORATION; WAL-MART REAL ESTATE BUSINESS TRUST, A DELAWARE STATUTORY TRUST; WAL-MART TRS, LLC, A DELAWARE LIMITED LIABILITY COMPANY; STEWART TITLE GUARANTY COMPANY;

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2011 "MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS", JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 1-6, 7(a), 7(b)(1), 7(c), 8, 9, 10(a), 11(b), 13, 14, 15-19, 20(a), 21 AND 22 OF TABLE 'A' THEREOF. THE FIELD WORK WAS COMPLETED ON JULY 9, 2012.

CES/NW MAKES NO WARRANTIES AS TO MATTER OF UNWRITTEN TITLE SUCH AS ACQUIESCENCE, ESTOPPEL, ADVERSE POSSESSION, ETC.

RYAN H. GODSEY
PROFESSIONAL LAND SURVEYOR
REGISTRATION NO.(OR) 65604

NARRATIVE

THE BASIS OF BEARINGS IS THE MONUMENTED CENTERLINE OF MOLALLA AVENUE (FORMERLY STATE HIGHWAY NO. 213), AS ESTABLISHED BY MONUMENTS NO. 140 AND NO. 139 AS SHOWN HEREON PER SN 2010-176, SURVEY RECORDS, CLACKAMAS COUNTY, OREGON.

THE PURPOSE OF THIS SURVEY IS TO RETRACE THE BOUNDARIES AS SHOWN ON CLACKAMAS COUNTY SURVEY NUMBER SN2004-37. ALL MONUMENTS SHOWN WERE VISITED IN THE PROCESS OF THIS RETRACEMENT.

VERTICAL DATUM IS BASED ON A CITY OF OREGON CITY BENCHMARK, A BRASS DISK LOCATED BY THE FLAG POLE IN FRONT OF THE OREGON CITY POLICE BUILDING, 320 WARNER MILNE RD, ELEVATION 447.729' (NGVD 1929) AND BENCHMARK 0030, A BRASS DISK STAMPED "DAVID EVANS AND ASSOCIATES, INC. GPS STA. LIBRARY 1990" ELEVATION = 452.739'

LEGAL DESCRIPTION PER TITLE REPORT

A TRACT OF LAND SITUATED IN THE SOUTHWEST QUARTER AND THE SOUTHEAST QUARTER OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, WILLAMETTE MERIDIAN, CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON, SAID TRACT IS MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT A THREE INCH BRASS DISK SET BY THE OREGON STATE HIGHWAY DEPARTMENT IN THE CENTERLINE OF MOLALLA AVENUE (FORMERLY STATE HIGHWAY NO. 213) AT ENGINEER'S STATION 31+00; THENCE SOUTH 73°27'47" EAST A DISTANCE OF 289.83 FEET TO THE NORTHWEST CORNER OF THAT TRACT DESCRIBED IN FEE NO. 96-010378, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SAID POINT ALSO BEING ON THE SOUTHERLY RIGHT-OF-WAY LINE OF HILLTOP AVENUE; THENCE ALONG THE WESTERLY LINE OF SAID TRACT, SOUTH 27°39'59" EAST A DISTANCE OF 104.03 FEET TO THE SOUTHWEST CORNER OF SAID TRACT, AND BEING THE TRUE POINT OF BEGINNING; THENCE ALONG THE NORTHERLY LINE OF THOSE TRACTS DESCRIBED IN FEE NO. 72-08888 AND FEE NO. 69-09411, NORTH 78°20'26" EAST A DISTANCE OF 846.78 FEET TO THE COMMON CORNER OF THOSE LANDS DESCRIBED IN FEE NO. 69-09411, FEE NO. 95-073144 AND FEE NO. 96-010376, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE SOUTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-010376, DEED RECORDS, CLACKAMAS COUNTY, OREGON, NORTH 67°47'51" EAST A DISTANCE OF 59.75 FEET TO THE COMMON CORNER OF THOSE LANDS DESCRIBED IN FEE NO. 96-010376 AND FEE NO. 96-007471, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE CONTINUING ALONG THE WESTERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-007471, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 14°26'42" EAST A DISTANCE OF 407.81 FEET TO THE COMMON CORNER OF THOSE LANDS DESCRIBED IN FEE NO. 69-09411, FEE NO. 96-007471, AND FEE NO. 96-046001, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE CONTINUING ALONG THE COMMON LINE OF THOSE LANDS DESCRIBED IN FEE NO. 96-046001 AND FEE NO. 96-007471, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 89°29'47" EAST A DISTANCE OF 62.63 FEET; THENCE SOUTH 23°58'58" EAST A DISTANCE OF 133.44 FEET TO THE SOUTHEASTERLY CORNER OF THAT TRACT DESCRIBED IN FEE NO. 96-046001, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE CONTINUING ALONG THE SOUTHERLY LINE OF SAID TRACT, AND ALONG THE NORTHERLY LINE OF THOSE LANDS DESCRIBED IN FEE NO. 98-044696 AND FEE NO. 99-004122, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 76°38'35" WEST A DISTANCE OF 125.26 FEET; THENCE ALONG SAID SOUTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-046001, AND THE NORTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 95-045260, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 76°19'45" WEST A DISTANCE OF 45.33 FEET; THENCE ALONG SAID SOUTHERLY LINE, AND THE NORTHERLY LINE OF THOSE LANDS DESCRIBED IN FEE NO. 92-21067, FEE NO. 97-004501, AND FEE NO. 98-041108, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 76°29'26" WEST A DISTANCE OF 750.61 FEET TO A POINT IN THE NORTHEASTERLY RIGHT-OF-WAY OF BEAVERCREEK ROAD (MARKET ROAD NO. 11) (COUNTY ROAD NO. 398), SAID POINT BEING 30' NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, THE CENTERLINE OF SAID ROAD; THENCE ALONG SAID NORTHEASTERLY RIGHT-OF-WAY, NORTH 59°27'26" WEST A DISTANCE OF 206.63 FEET TO THE COMMON NORTHEASTERLY RIGHT-OF-WAY INTERSECTION OF SAID BEAVERCREEK ROAD AND MOLALLA AVENUE (FORMERLY STATE HIGHWAY NO. 213), SAID POINT BEING 35' NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, SAID CENTERLINE OF MOLALLA AVENUE; THENCE CONTINUING ALONG THE NORTHEASTERLY RIGHT-OF-WAY OF SAID MOLALLA AVENUE, ALONG THE ARC OF A 5694.58 FOOT RADIUS CURVE TO THE RIGHT A DISTANCE OF 66.39 FEET, THROUGH A CENTRAL ANGLE OF 00°40'05" (THE LONG CHORD OF WHICH BEARS NORTH 27°43'34" WEST A DISTANCE OF 66.39 FEET); THENCE NORTH 27°23'32" WEST A DISTANCE OF 307.30 FEET; THENCE NORTH 62°36'28" EAST A DISTANCE OF 5.00 FEET TO A POINT 40 FEET NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, SAID CENTERLINE, SAID POINT ALSO BEING ON THE SOUTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 97-022793, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE LEAVING SAID NORTHEASTERLY RIGHT-OF-WAY LINE, AND CONTINUING ALONG SAID SOUTHERLY TRACT LINE, NORTH 78°20'26" EAST A DISTANCE OF 176.19 FEET TO THE SOUTHEASTERLY CORNER OF SAID TRACT; THENCE ALONG THE EASTERLY LINE OF SAID TRACT, NORTH 27°39'59" WEST A DISTANCE OF 73.67 FEET TO THE TRUE POINT OF BEGINNING.

CONTAINING AN AREA OF 560,272 SQUARE FEET, OR 12.862 ACRES, MORE OR LESS.

RECORD DESCRIPTIONS

2004-091249 PARCEL 1
A TRACT OF LAND SITUATED IN THE SOUTHWEST 1/4 AND THE SOUTHEAST 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, WILLAMETTE MERIDIAN, CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON. SAID TRACT IS MORE PARTICULARLY DESCRIBED AS FOLLOW:

COMMENCING AT THE EXTREME SOUTHERLY CORNER OF TRACT DESCRIBED IN CLACKAMAS COUNTY DEED BOOK "O", PAGE 265, SAID POINT BEING IN THE CENTERLINE OF MOLALLA AVENUE; THENCE SOUTH 88°29'47" EAST A DISTANCE OF 39.98 FEET TO A POINT BEING 35 FEET NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, THE CENTERLINE OF SAID ROAD, SAID POINT BEING THE TRUE POINT OF BEGINNING; THENCE ALONG THE NORTHEASTERLY RIGHT-OF-WAY OF SAID MOLALLA AVENUE, NORTH 27°23'32" WEST A DISTANCE OF 10.28 FEET; THENCE ALONG THE SOUTHERLY LINE THAT TRACT DESCRIBED IN FEE NO. 72-08888 DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 88°29'47" EAST A DISTANCE OF 653.92 FEET TO THE SOUTHEAST CORNER OF SAID TRACT; THENCE ALONG THE EASTERLY LINE OF SAID TRACT, NORTH 12°38'23" WEST A DISTANCE OF 110.72 FEET TO THE NORTHWEST CORNER OF THAT TRACT DESCRIBED IN FEE NO. 81-19662, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE NORTHERLY LINE OF SAID TRACT, SOUTH 88°29'47" EAST A DISTANCE OF 120.00 FEET TO THE NORTHEAST CORNER OF SAID TRACT; THENCE ALONG THE EASTERLY LINE OF SAID TRACT, SOUTH 12°38'23" EAST A DISTANCE OF 120.00 FEET TO A POINT ON THE NORTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-046001, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE NORTHERLY LINE OF SAID TRACT, NORTH 88°29'47" WEST A DISTANCE OF 771.22 FEET TO THE TRUE POINT OF BEGINNING.

CONTAINING AN AREA OF 19,837 SQUARE FEET, OR 0.455 ACRES, MORE OR LESS.

2004-091249 PARCEL 2
A TRACT OF LAND SITUATED IN THE SOUTHWEST 1/4 AND THE SOUTHEAST 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, WILLAMETTE MERIDIAN, CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON. SAID TRACT IS MORE PARTICULARLY DESCRIBED AS FOLLOW:

COMMENCING AT THE EXTREME SOUTHERLY CORNER OF TRACT DESCRIBED IN CLACKAMAS COUNTY DEED BOOK "O", PAGE 265, SAID POINT BEING IN THE CENTERLINE OF MOLALLA AVENUE; THENCE SOUTH 88°29'47" EAST A DISTANCE OF 39.98 FEET TO A POINT BEING 35 FEET NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, THE CENTERLINE OF SAID ROAD; THENCE ALONG THE NORTHEASTERLY RIGHT-OF-WAY OF SAID MOLALLA AVENUE, NORTH 27°23'32" WEST A DISTANCE OF 10.28 FEET TO THE TRUE POINT OF BEGINNING; THENCE CONTINUING ALONG THE NORTHEASTERLY RIGHT-OF-WAY OF SAID MOLALLA AVENUE, NORTH 27°23'32" WEST A DISTANCE OF 67.85 FEET; THENCE NORTH 62°36'28" EAST A DISTANCE OF 5.00 FEET TO A POINT 40 FEET NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, SAID CENTERLINE, SAID POINT ALSO BEING ON THE SOUTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 97-022793, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE LEAVING SAID NORTHEASTERLY RIGHT-OF-WAY LINE, AND CONTINUING ALONG SAID SOUTHERLY LINE, NORTH 78°20'26" EAST A DISTANCE OF 176.19 FEET TO THE SOUTHEAST CORNER OF THAT TRACT DESCRIBED IN FEE NO. 96-010378, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE NORTHERLY LINE OF THOSE TRACTS DESCRIBED IN FEE NO. 72-08888 AND FEE NO. 69-09411, NORTH 78°20'26" EAST A DISTANCE OF 846.78 FEET TO THE COMMON CORNER OF THOSE LANDS DESCRIBED IN FEE NO. 96-010376, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE SOUTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-010376, DEED RECORDS, CLACKAMAS COUNTY, OREGON, NORTH 67°47'51" EAST A DISTANCE OF 59.75 FEET TO THE COMMON CORNER OF THOSE LANDS DESCRIBED IN FEE NO. 96-010376 AND FEE NO. 96-007471, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE CONTINUING ALONG THE WESTERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-007471, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 14°26'42" EAST A DISTANCE OF 407.81 FEET TO THE COMMON CORNER OF THOSE TRACTS DESCRIBED IN FEE NO. 69-09411, FEE NO. 96-007471, AND FEE NO. 96-046001, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE SOUTHERLY LINE OF THAT TRACT OF LAND DESCRIBED IN FEE NO. 69-09411, DEED RECORDS, CLACKAMAS COUNTY, OREGON, NORTH 88°29'47" WEST A DISTANCE OF 322.36 FEET TO THE SOUTHEAST CORNER OF THAT TRACT DESCRIBED IN FEE NO. 81-19662, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE EASTERLY LINE OF SAID TRACT DESCRIBED IN FEE NO. 81-19662, NORTH 1238'23" WEST A DISTANCE OF 120.00 FEET; THENCE ALONG THE NORTHERLY LINE OF SAID TRACT, NORTH 8829'47" WEST A DISTANCE OF 120.00 FEET; THENCE ALONG THE WESTERLY LINE OF SAID TRACT, SOUTH 12°38'23" EAST A DISTANCE OF 110.72 FEET TO THE SOUTHEAST CORNER OF THAT TRACT DESCRIBED IN FEE NO. 72-08888, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE SOUTHERLY LINE OF SAID TRACT DESCRIBED IN FEE NO. 72-08888, NORTH 8829'47" WEST A DISTANCE OF 653.92 FEET TO THE TRUE POINT OF BEGINNING.

CONTAINING AN AREA OF 256,397 SQUARE FEET, OR 5.886 ACRES, MORE OR LESS.

2004-091251
A TRACT OF LAND SITUATED IN THE SOUTHWEST 1/4 AND THE SOUTHEAST 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, WILLAMETTE MERIDIAN, CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON. SAID TRACT IS MORE PARTICULARLY DESCRIBED AS FOLLOW:

COMMENCING AT THE EXTREME SOUTHERLY CORNER OF TRACT DESCRIBED IN CLACKAMAS COUNTY DEED BOOK "O", PAGE 265, SAID POINT BEING IN THE CENTERLINE OF MOLALLA AVENUE; THENCE SOUTH 88°29'47" EAST A DISTANCE OF 39.98 FEET TO A POINT BEING 35 FEET NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, THE CENTERLINE OF SAID ROAD, SAID POINT BEING THE TRUE POINT OF BEGINNING; THENCE ALONG THE SOUTHERLY LINE OF THOSE LANDS DESCRIBED IN FEE NO. 81-19662, FEE NO. 69-09411, AND FEE NO. 96-007471 DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 88°29'47" EAST A DISTANCE OF 1156.21 FEET; THENCE SOUTH 23°58'58" EAST A DISTANCE OF 133.44 FEET TO THE SOUTHEASTERLY CORNER OF THAT TRACT DESCRIBED IN FEE NO. 96-046001, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE CONTINUING ALONG THE SOUTHERLY LINE OF SAID TRACT, AND ALONG THE NORTHERLY LINE OF THOSE LANDS DESCRIBED IN FEE NO. 98-044696 AND FEE NO. 99-004122, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 76°38'35" WEST A DISTANCE OF 125.26 FEET; THENCE ALONG SAID SOUTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-046001, AND THE NORTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 95-045260, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 76°19'45" WEST A DISTANCE OF 45.33 FEET; THENCE ALONG SAID SOUTHERLY LINE, AND THE NORTHERLY LINE OF THOSE LANDS DESCRIBED IN FEE NO. 92-21067, FEE NO. 97-004501, AND FEE NO. 98-041108, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 76°29'26" WEST A DISTANCE OF 750.61 FEET TO A POINT IN THE NORTHEASTERLY RIGHT-OF-WAY OF BEAVERCREEK ROAD (MARKET ROAD NO. 11) (COUNTY ROAD NO. 398), SAID POINT BEING 30' NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, THE CENTERLINE OF SAID ROAD; THENCE ALONG SAID NORTHEASTERLY RIGHT-OF-WAY, NORTH 59°27'26" WEST A DISTANCE OF 206.63 FEET TO THE COMMON NORTHEASTERLY RIGHT-OF-WAY INTERSECTION OF SAID BEAVERCREEK ROAD AND MOLALLA AVENUE (FORMERLY STATE HIGHWAY NO. 213), SAID POINT BEING 35' NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, SAID CENTERLINE OF MOLALLA AVENUE; THENCE CONTINUING ALONG THE NORTHEASTERLY RIGHT-OF-WAY OF SAID MOLALLA AVENUE, ALONG THE ARC OF A 5694.58 FOOT RADIUS CURVE TO THE RIGHT A DISTANCE OF 66.39 FEET, THROUGH A CENTRAL ANGLE OF 00°40'05" (THE LONG CHORD OF WHICH BEARS NORTH 27°43'34" WEST A DISTANCE OF 66.39 FEET); THENCE NORTH 27°23'32" WEST A DISTANCE OF 229.17 FEET TO THE TRUE POINT OF BEGINNING.

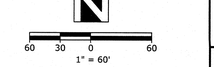
CONTAINING AN AREA OF 284,038 SQUARE FEET, OR 6.521 ACRES, MORE OR LESS.

REFERENCES

(1) PS-3291
(2) PS-24613
(3) PS-22135
(4) PS-27403
(5) PARTITION PLAT NO. 1996-14
(6) PS-18026
(7) PS-26512
(8) PS-23880
(9) PARTITION PLAT NO. 1992-49
(10) PS-24728
(11) PS-27729
(12) PS-28185
(13) PS-16481
(14) OREGON STATE HIGHWAY DEPARTMENT DRG. NO. 8B-12-9 DEC. 1958
(15) PS-27047
(16) BT BOOK 12, PAGE 6
(17) LP 060 SUPPLEMENTAL
(18) PS-25313
(19) PS-24286
(20) HILLTOP ACRES, PLAT BOOK 37 PAGE 26
(21) PS-18187
(22) PS-26713
(23) SN29636
(24) SN2004-377
(25) SN2010-176
(26) SN2008-034

LEGEND

● = FOUND SURVEY MONUMENT AS NOTED
◥ = FOUND 5/8" IRON ROD W/ORANGE PLASTIC CAP MARKED "CES NW, INC." PER S.N. 29636
BS W/WASHER = BRASS SCREW WITH WASHER
L = LENGTH ALONG ARC
W/YPC = WITH YELLOW PLASTIC CAP
DOC. NO. = DOCUMENT NUMBER, CLACKAMAS COUNTY RECORDS
FTC = FROM TRUE CORNER
NR = RECORD NOT LOCATED
PS = PRIVATE SURVEY NUMBER AS FILED, CLACKAMAS COUNTY SURVEYOR'S OFFICE
SN = SURVEY NUMBER AS FILED, CLACKAMAS COUNTY SURVEYOR'S OFFICE
FEE NO. RECORDING NUMBER, CLACKAMAS COUNTY RECORDER
###.## = DENOTES MEASURED DISTANCE
(###.##')(#) = DENOTES RECORD DISTANCE PER REFERENCE NUMBER
###.##'(#) = DENOTES MEASURED AND RECORD DISTANCE(HELD) PER REFERENCE NUMBER
[###](#) = DENOTES FOUND MONUMENT NUMBER AND REFERENCE NUMBER



SHEET INDEX

SHEET 1 - VICINITY MAP, BOUNDARY SURVEY & SURVEYORS CERT
SHEET 2 - ZONING & EXCEPTIONS
SHEET 3 - SITE TOPOGRAPHIC FEATURES, UTILITIES & ELEVATIONS
SHEET 4 - STORM & SANITARY SEWER
SHEET 5 - TREE SURVEY

REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON DECEMBER 13, 2007 RYAN H. GODSEY 65604
RENEWS: 6/30/13

OREGON CITY
PROJECT NO. 3051-00

PACLAND
6400 SE LAKE ROAD, SUITE 300
PORTLAND, OR 97222

CES NW
13190 SW 68TH PKWY, STE 150
TIGARD, OREGON 97223
(503)968-6655 www.cesnw.com

ALTA SURVEY

REVISIONS

2689-ALTA.DWG

DATE: 07-09-12
CHECKED BY: RHG
2689
283
DRAWN BY:
PROJECT NO. 3051-00:

BOUNDARY SURVEY

SHEET 1
OF 5

ALTA/ACSM SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2
EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON
REFERENCE: STEWART TITLE PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 1
ORDER NO. 1016646 DATED APRIL 27, 2012

SPECIAL EXCEPTIONS

6. CITY LIENS, IF ANY, OF THE CITY OF OREGON CITY.

7. PERSONAL PROPERTY TAXES, IF ANY

8. COVENANTS, CONDITIONS, RESTRICTIONS AND EASEMENTS IN DECLARATION OF RESTRICTIONS, AND ANY AMENDMENTS THERETO:
RECORDED: JUNE 3, 1981
RECORDING NO.: 81015230
(PLOTTED BUILDING RESTRICTION)

9. AN EASEMENT CREATED BY JUDGEMENT, AND THE TERMS AND CONDITIONS THEREOF:
ENTERED: DECEMBER 20, 1996
SUIT NO.: CV96-09-321
IN FAVOR OF: THE CITY OF OREGON CITY
FOR: RIGHT OF WAY
AFFECTS: THE WESTERLY PORTION OF SAID PREMISES
(PLOTTED RIGHT-OF-WAY EASEMENT)

10. EASEMENT AND THE TERMS AND CONDITIONS THEREOF:
GRANTEE: LES SCHWAB PROFIT SHARING TRUST
PURPOSE: INGRESS AND EGRESS
AFFECTS: REFERENCE SAID DOCUMENT FOR PARTICULARS
RECORDED: OCTOBER 1, 2004
RECORDING NO.: 2004091594
(NOT PLOTTED - EASEMENT AREA NOT CLEARLY DEFINED)

11. ANY UNRECORDED LEASEHOLDS, RIGHT OF VENDORS AND HOLDERS OF SECURITY INTEREST ON PERSONAL PROPERTY INSTALLED UPON SAID PROPERTY, AND RIGHT OF TENANTS TO REMOVE TRADE FIXTURES AT THE EXPIRATION OF THE TERM.

12. EVIDENCE OF THE INDEMNITY AND AUTHORITY OF THE OFFICES OF WAL-MART STORES, INC., A DELAWARE CORPORATION TO EXECUTE THE FORTHCOMING INSTRUMENT MUST BE SUBMITTED.

ZONING

MUC-2 - MIXED-USE CORRIDOR
OREGON CITY OREGON - MUNICIPAL CODE CHAPTER 17.29

SETBACKS 17.29.060 DIMENSIONAL STANDARDS

MAXIMUM ALLOWABLE SETBACKS:	
FRONT YARD	5'*
INTERIOR SIDE YARD	NONE
CORNER SIDE YARD ABUTTING STREET	25'**
REAR YARD	NONE
REAR YARD	NONE
MINIMUM REQUIRED INTERIOR AND REAR YARD SETBACKS IF ABUTTING A RESIDENTIAL ZONE	25'***
MAXIMUM BUILDING SQUARE FOOTAGE	NO MAXIMUM
MAXIMUM BUILDING HEIGHT	60'

*MAY BE EXPANDED WITH SITE PLAN AND DESIGN REVIEW REQUIREMENTS OF SECTION 17.62.055
**PROVIDED THE SITE PLAN AND DESIGN REVIEW REQUIREMENTS OF SECTION 17.62.055 ARE MET
***PLUS ONE FOOT ADDITIONAL YARD SETBACK FOR EVERY TWO FEET OF BUILDING HEIGHT OVER 35'

CITY OF OREGON CITY
PLANNING DEPARTMENT
221 MOLALLA AVENUE, SUITE 200
OREGON CITY, OR 97045
503-722-3789

NO REPRESENTATION IS MADE FOR THE ACCURACY OR COMPLETENESS OF SAID THIRD PARTY INFORMATION. THIS FIRM IS NOT AN EXPERT IN THE INTERPRETATION OF COMPLEX ZONING ORDINANCES. COMPLIANCE IS BEYOND THE SCOPE OF THIS SURVEY. ANY USER OF SAID INFORMATION IS URGED TO CONTACT THE LOCAL AGENCY DIRECTLY.



60 30 0 60
1" = 60'

REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
DECEMBER 13, 2007
RYAN H. GODSEY
65604
RENEWS: 6/30/13

OREGON CITY
PROJECT NO. 3051-00

PACLAND
6400 SE LAKE ROAD, SUITE 300
PORTLAND, OR 97222

CES|NW
13190 SW 68TH PKWY, STE 150
TIGARD, OREGON 97223
(503)968-6655 www.cesnw.com

ALTA SURVEY

REVISIONS

2689-ALTA.DWG

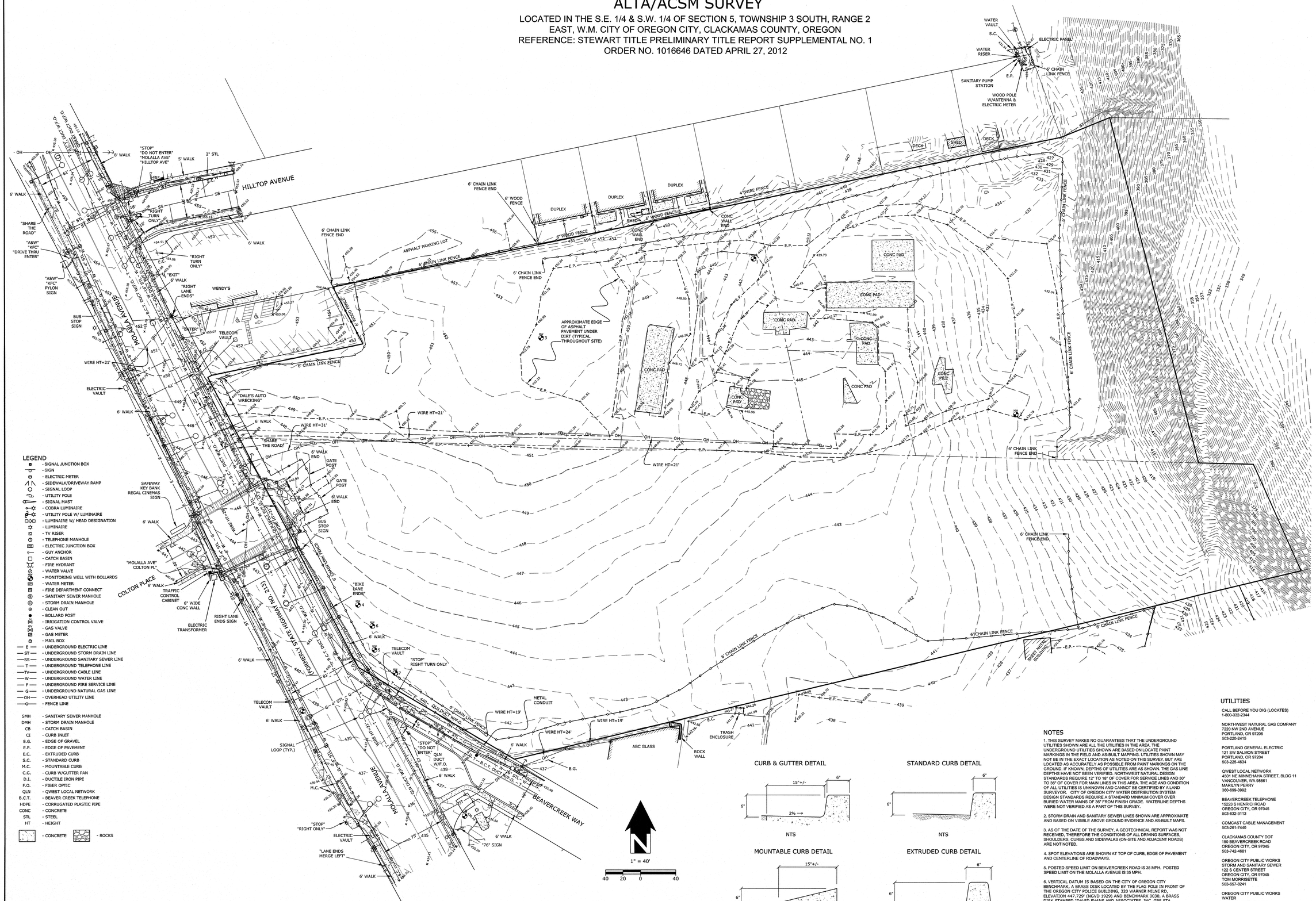
PROJECT NO. 3051-00: 2689
DRAWN BY: JBJ
DATE: 07-09-12
CHECKED BY: RHG

TITLE EXCEPTIONS

SHEET 2
OF 5

ALTA/ACSM SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON
REFERENCE: STEWART TITLE PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 1 ORDER NO. 1016646 DATED APRIL 27, 2012



LEGEND

- SIGNAL JUNCTION BOX
- SIGN
- ELECTRIC METER
- SIDEWALK/DRIVEWAY RAMP
- SIGNAL LOOP
- UTILITY POLE
- SIGNAL MAST
- COBRA LUMINAIRE
- UTILITY POLE W/ LUMINAIRE
- LUMINAIRE W/ HEAD DESIGNATION
- LUMINAIRE
- TV RISER
- TELEPHONE MANHOLE
- ELECTRIC JUNCTION BOX
- GUY ANCHOR
- CATCH BASIN
- FIRE HYDRANT
- WATER VALVE
- MONITORING WELL WITH BOLLARDS
- WATER METER
- FIRE DEPARTMENT CONNECT
- SANITARY SEWER MANHOLE
- STORM DRAIN MANHOLE
- CLEAN OUT
- BOLLARD POST
- IRRIGATION CONTROL VALVE
- GAS VALVE
- GAS METER
- MAIL BOX
- E — UNDERGROUND ELECTRIC LINE
- ST — UNDERGROUND STORM DRAIN LINE
- SS — UNDERGROUND SANITARY SEWER LINE
- T — UNDERGROUND TELEPHONE LINE
- TV — UNDERGROUND CABLE LINE
- W — UNDERGROUND WATER LINE
- F — UNDERGROUND FIRE SERVICE LINE
- G — UNDERGROUND NATURAL GAS LINE
- OH — OVERHEAD UTILITY LINE
- FENCE LINE

SMH	SANITARY SEWER MANHOLE
DMH	STORM DRAIN MANHOLE
CB	CATCH BASIN
CI	CURB INLET
E.G.	EDGE OF GRAVEL
E.P.	EDGE OF PAVEMENT
E.C.	EXTRUDED CURB
S.C.	STANDARD CURB
M.C.	MOUNTABLE CURB
C.G.	CURB W/GUTTER PAN
D.I.	DUCTILE IRON PIPE
F.O.	FIBER OPTIC
QLN	QWEST LOCAL NETWORK
B.C.T.	BEAVER CREEK TELEPHONE
HDPE	CORRUGATED PLASTIC PIPE
CONC	CONCRETE
STL	STEEL
HT	HEIGHT

- CONCRETE
- ROCKS

CURB & GUTTER DETAIL

NTS

STANDARD CURB DETAIL

NTS

MOUNTABLE CURB DETAIL

NTS

EXTRUDED CURB DETAIL

NTS

NOTES

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4. SPOT ELEVATIONS ARE SHOWN AT TOP OF CURB, EDGE OF PAVEMENT AND CENTERLINE OF ROADWAYS.

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OREGON CITY PUBLIC WORKS
WATER
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OREGON CITY, OR 97045
SCOTT KATRENA
503-657-8241

REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
DECEMBER 15, 2007
RYAN H. GODSEY
65604
RENEWS: 6/30/13

OREGON CITY
PROJECT NO. 3051-00

PACLAND
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CES|NW
13190 SW 68TH PKWY, STE 150
TIGARD, OREGON 97223
(503)968-6655 www.cesnw.com

ALTA SURVEY

REVISIONS	DATE:	CHECKED BY:
7-13-12 UPDATED TO REFLECT COMMENTS	07-09-12	RHG

2689-ALTA.DWG

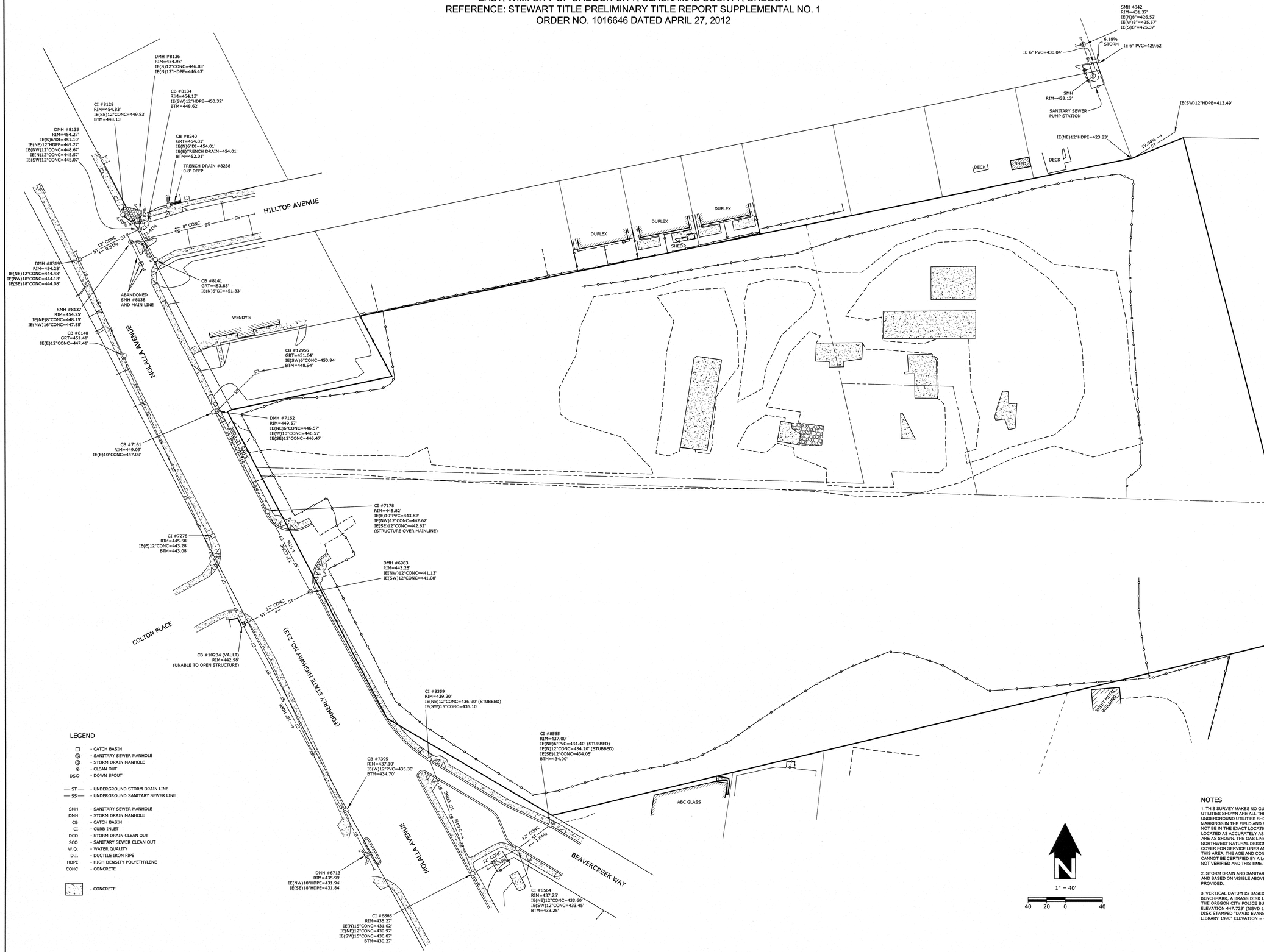
TOPOGRAPHIC SURVEY

PROJECT NO. 3051-00:	2689
DRAWN BY:	JBJ

SHEET 3
OF 5

ALTA/ACSM SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON
REFERENCE: STEWART TITLE PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 1
ORDER NO. 1016646 DATED APRIL 27, 2012


DMH #8136
RIM=454.93'
IE(S)12"CONC=446.83'
IE(N)12"HDPE=446.43'
CB #8134
RIM=454.12'
IE(SW)12"HDPE=450.32'
BTM=448.62'
CI #8128
RIM=454.83'
IE(SE)12"CONC=449.83'
BTM=448.13'
DMH #8135
RIM=454.27'
IE(S)6"DI=451.10'
IE(NE)12"HDPE=449.27'
IE(NW)12"CONC=448.67'
IE(N)12"CONC=445.57'
IE(SW)12"CONC=445.07'
CB #8240
GRT=454.81'
IE(N)6"DI=454.01'
IE(E)TRENCH DRAIN=454.01'
BTM=452.01'
TRENCH DRAIN #8238
0.8' DEEP
HILLTOP AVENUE
8" CONC
12" CONC
DMH #8319
RIM=454.28'
IE(NE)12"CONC=444.48'
IE(NW)18"CONC=444.18'
IE(SE)18"CONC=444.08'
CB #8141
GRT=453.83'
IE(N)6"DI=451.33'
ABANDONED SMH #8138 AND MAIN LINE
WENDY'S
SMH #8137
RIM=454.25'
IE(NE)8"CONC=448.15'
IE(NW)16"CONC=447.55'
CB #8140
GRT=451.41'
IE(E)12"CONC=447.41'
MOLALLA AVENUE
CB #12956
GRT=451.64'
IE(SW)6"CONC=450.94'
BTM=448.94'
DMH #7162
RIM=449.57'
IE(NE)6"CONC=446.57'
IE(W)10"CONC=446.57'
IE(SE)12"CONC=446.47'
CB #7161
RIM=449.09'
IE(E)10"CONC=447.09'
CI #7178
RIM=445.82'
IE(E)10"PVC=443.62'
IE(NW)12"CONC=442.62'
IE(SE)12"CONC=442.62'
(STRUCTURE OVER MAINLINE)
CI #7278
RIM=445.58'
IE(E)12"CONC=443.28'
BTM=443.08'
DMH #6983
RIM=443.28'
IE(NW)12"CONC=441.13'
IE(SW)12"CONC=441.08'
COLTON PLACE
CB #10234 (VAULT)
RIM=442.98'
(UNABLE TO OPEN STRUCTURE)
(FORMERLY STATE HIGHWAY NO. 213)
CI #8359
RIM=439.20'
IE(NE)12"CONC=436.90' (STUBBED)
IE(SW)15"CONC=436.10'
CB #7395
RIM=437.10'
IE(W)12"PVC=435.30'
BTM=434.70'
CI #8565
RIM=437.00'
IE(NE)6"PVC=434.40' (STUBBED)
IE(N)12"CONC=434.20' (STUBBED)
IE(SE)12"CONC=434.05'
BTM=434.00'
BEAVERCREEK WAY
DMH #6713
RIM=435.99'
IE(NW)18"HDPE=431.94'
IE(SE)18"HDPE=431.84'
CI #6863
RIM=435.27'
IE(N)15"CONC=431.02'
IE(NE)12"CONC=430.97'
IE(SW)15"CONC=430.87'
BTM=430.27'
CI #8564
RIM=437.25'
IE(NE)12"CONC=433.60'
IE(SW)12"CONC=433.45'
BTM=433.25'
ABC GLASS
SMH 4842
RIM=431.37'
IE(N)8"=426.52'
IE(W)8"=425.57'
IE(S)8"=425.37'
IE 6" PVC=430.04'
6.18% STORM
IE 6" PVC=429.62'
SMH
RIM=433.13'
SANITARY SEWER PUMP STATION
IE(SW)12"HDPE=413.49'
IE(NE)12"HDPE=423.83'
19.04%
DECK
SHED
DUPLEX
SHED
SHED
SHED

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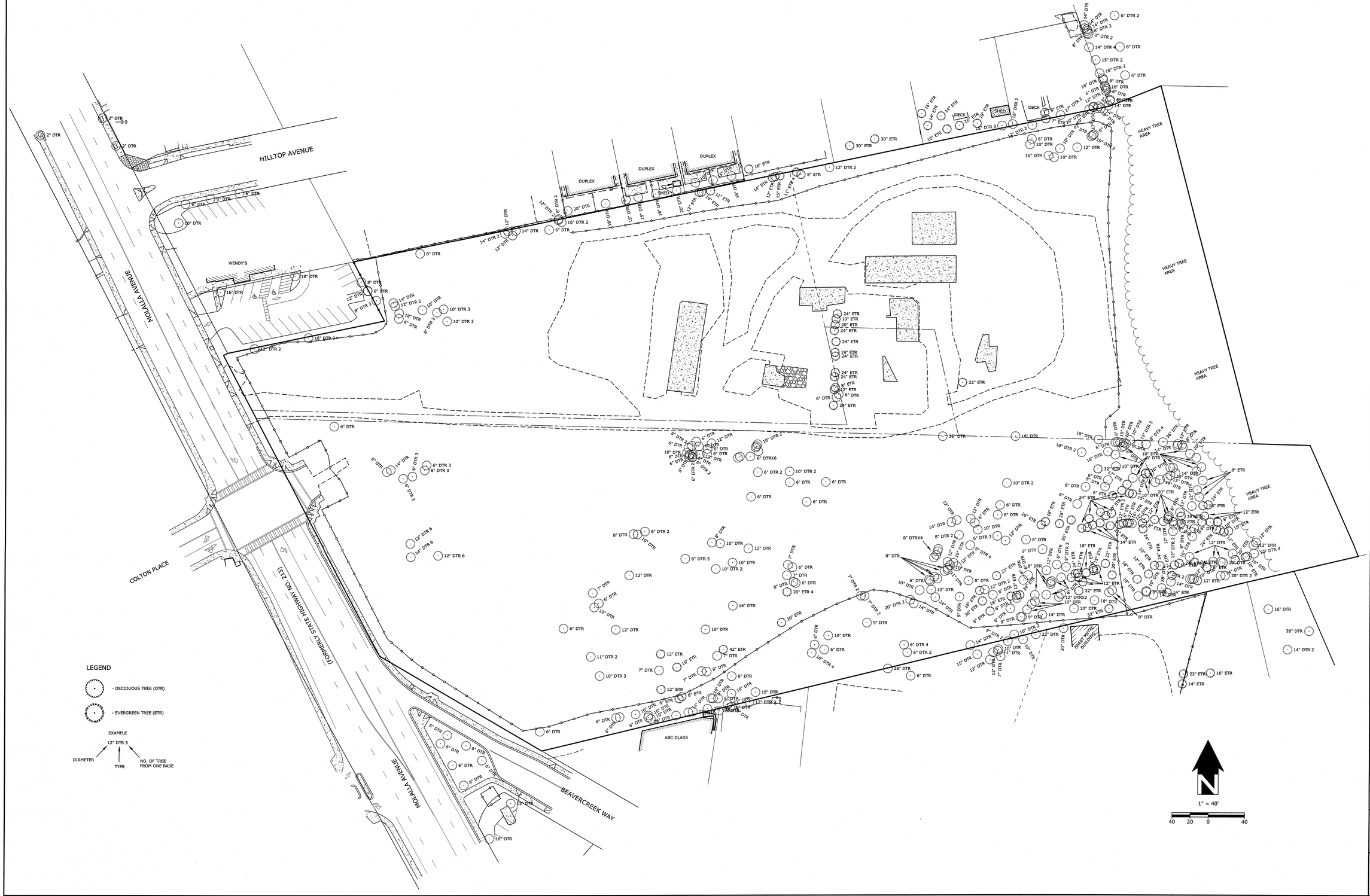

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OREGON
DECEMBER 13, 2007
RYAN H. GODSEY
65604
RENEWS: 6/30/13

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PROJECT NO. 3051-00

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TIGARD, OREGON 97223
(503)968-6655 www.cesnw.com

ALTA SURVEY

REVISIONS

2689-ALTA.DWG

TREE SURVEY

PROJECT NO. 3051-00: 2689
DRAWN BY: JBJ
DATE: 07-09-12
CHECKED BY: RHG

SHEET 5
OF 5

TOPOGRAPHIC SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2
EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON

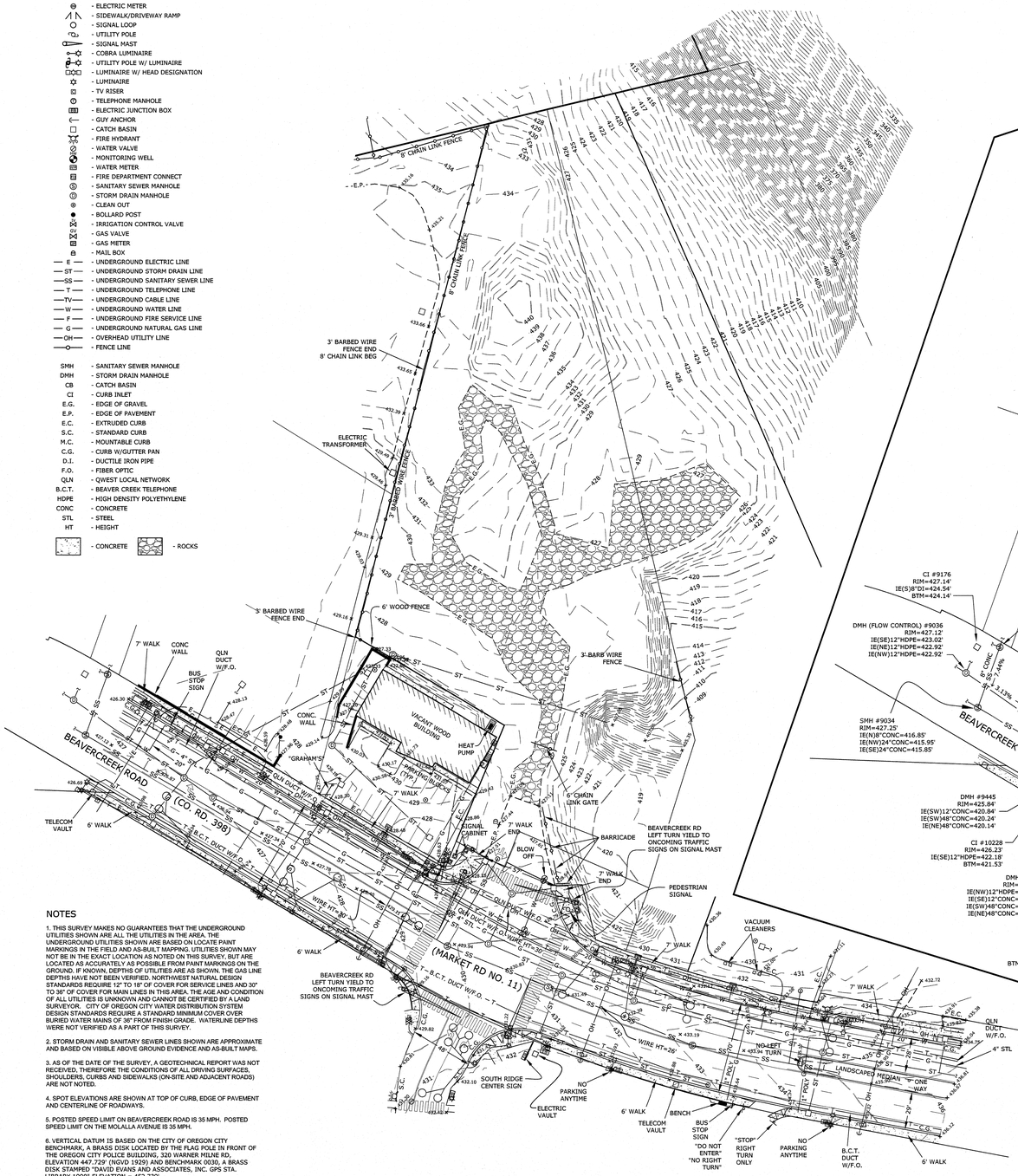
TOPOGRAPHIC SURVEY

LEGEND

- SIGN
- ELECTRIC METER
- SIDEWALK/DRIVEWAY RAMP
- SIGNAL LOOP
- UTILITY POLE
- SIGNAL MAST
- COBRA LUMINAIRE
- UTILITY POLE W/ LUMINAIRE
- LUMINAIRE W/ HEAD DESIGNATION
- LUMINAIRE
- TV RISER
- TELEPHONE MANHOLE
- ELECTRIC JUNCTION BOX
- GUY ANCHOR
- CATCH BASIN
- FIRE HYDRANT
- WATER VALVE
- MONITORING WELL
- WATER METER
- FIRE DEPARTMENT CONNECT
- SANITARY SEWER MANHOLE
- STORM DRAIN MANHOLE
- CLEAN OUT
- BOLLARD POST
- IRRIGATION CONTROL VALVE
- GAS VALVE
- GAS METER
- MAIL BOX
- E — UNDERGROUND ELECTRIC LINE
- ST — UNDERGROUND STORM DRAIN LINE
- SS — UNDERGROUND SANITARY SEWER LINE
- T — UNDERGROUND TELEPHONE LINE
- TV — UNDERGROUND CABLE LINE
- W — UNDERGROUND WATER LINE
- F — UNDERGROUND FIRE SERVICE LINE
- G — UNDERGROUND NATURAL GAS LINE
- OH — OVERHEAD UTILITY LINE
- FENCE LINE

SMH	- SANITARY SEWER MANHOLE
DMH	- STORM DRAIN MANHOLE
CB	- CATCH BASIN
CI	- CURB INLET
E.G.	- EDGE OF GRAVEL
E.P.	- EDGE OF PAVEMENT
E.C.	- EXTRUDED CURB
S.C.	- STANDARD CURB
M.C.	- MOUNTABLE CURB
C.G.	- CURB W/GUTTER PAN
D.I.	- DUCTILE IRON PIPE
F.O.	- FIBER OPTIC
QLN	- QWEST LOCAL NETWORK
B.C.T.	- BEAVER CREEK TELEPHONE
HDPE	- HIGH DENSITY POLYETHYLENE
CONC	- CONCRETE
STL	- STEEL
HT	- HEIGHT

- CONCRETE
- ROCKS



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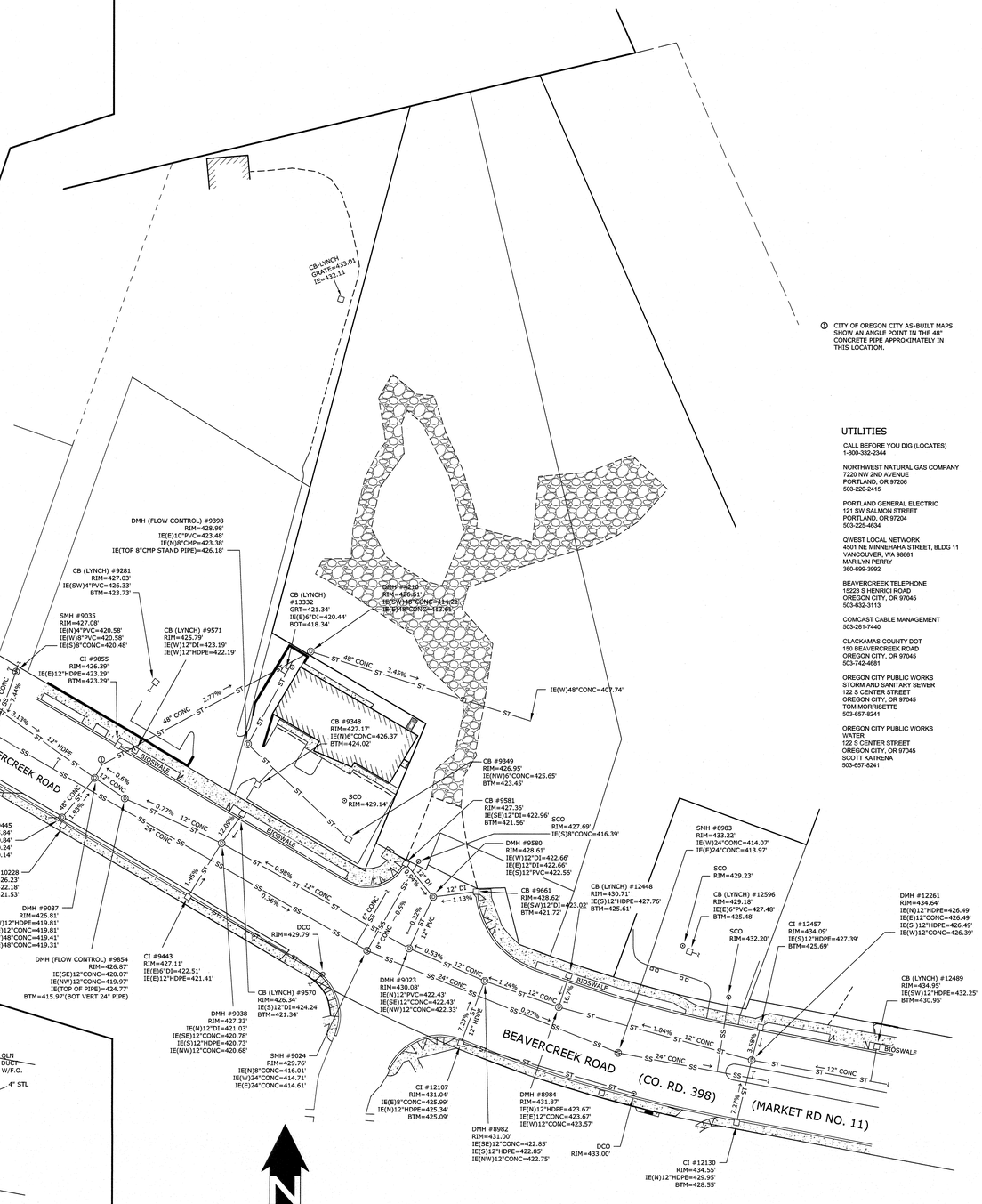
STORM AND SANITARY SEWER



① CITY OF OREGON CITY AS-BUILT MAPS SHOW AN ANGLE POINT IN THE 48" CONCRETE PIPE APPROXIMATELY IN THIS LOCATION.

UTILITIES

CALL BEFORE YOU DIG (LOCATES)
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RENEWS: 6/30/13

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REVISIONS	DATE:	CHECKED BY:
7-13-12 REVISED ADA RAMP PER COMMENTS	07-09-12	KNG

2689-ALTA.DWG

TOPOGRAPHIC SURVEY

PROJECT NO. 3051-00: 2689
DRAWN BY: JBO

SHEET 1
OF 3

TOPOGRAPHIC SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2
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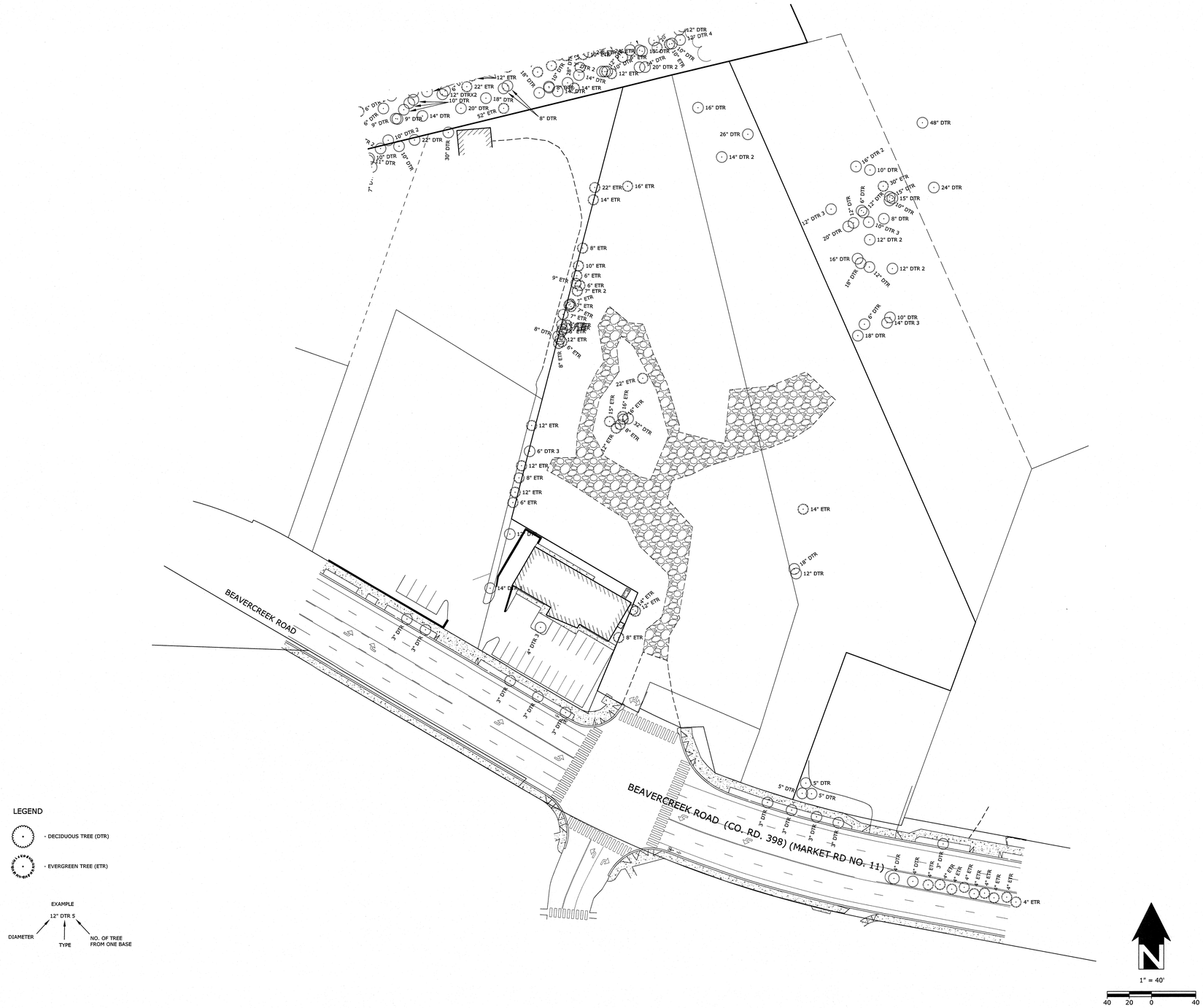

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TOPOGRAPHIC SURVEY

REVISIONS

2689-ALTA.DWG

PROJECT NO. 3051-00: 2689
DATE: 07-09-12
DRAWN BY: JBJ
CHECKED BY: RHG

TREE SURVEY

SHEET 2 OF 3

TOPOGRAPHIC SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON

SPECIAL EXCEPTIONS AS SHOWN ON PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 2, ORDER NUMBER 01049-4020, DATED JUNE 13, 2012

6. CITY LIENS, IF ANY, OF THE CITY OF OREGON CITY.

7. ACCORDING TO THE RECORD, THE SUBJECT PROPERTY APPEARS TO LIE WITHIN THE BOUNDARIES OF THE OREGON CITY URBAN RENEWAL/NEIGHBORHOOD DEVELOPMENT DISTRICT OF THE CITY OF OREGON CITY.

8. EASEMENT AND THE TERMS AND CONDITIONS THEREOF:
   GRANTEE: METRO, A MUNICIPAL CORPORATION
   PURPOSE: ACCESS EASEMENT
   AFFECTS: TAX LOT 500 AND THE NORTHERLY PORTION OF TAX LOT 401
   RECORDED: MAY 21, 1998
   FEE NO.: 98044597
(15' WIDE ACCESS EASEMENT - LOCATION NOT CLEARLY DEFINED)

9. EASEMENT AND THE TERMS AND CONDITIONS THEREOF:
   GRANTEE: STEVEN N. MOLNER
   PURPOSE: PRIVATE UTILITY EASEMENT
   AFFECTS: PORTION OF TAX LOT 401
   RECORDED: SEPTEMBER 10, 1999
   FEE NO.: 99089214
(PLOTTED)

10. ORDINANCE NO. 00-1013 AND THE TERMS AND CONDITIONS THEREOF:
    RECORDED: MAY 18, 2000
    RECORDING NO.: 2000032147
(NOT SURVEY RELATED)

11. ANY UNRECORDED LEASEHOLDS, RIGHT OF VENDORS AND HOLDERS OF SECURITY INTEREST ON PERSONAL PROPERTY INSTALLED UPON SAID PROPERTY, AND RIGHT OF TENANTS TO REMOVE TRADE FIXTURES AT THE EXPIRATION OF THE TERM.

12. THE ATTACHED COMMERCIAL TITLE AFFIDAVIT MUST BE COMPLETED IN FULL, NOTARIZED, AND SUBMITTED TO THE COMPANY FOR REVIEW PRIOR TO CLOSING.

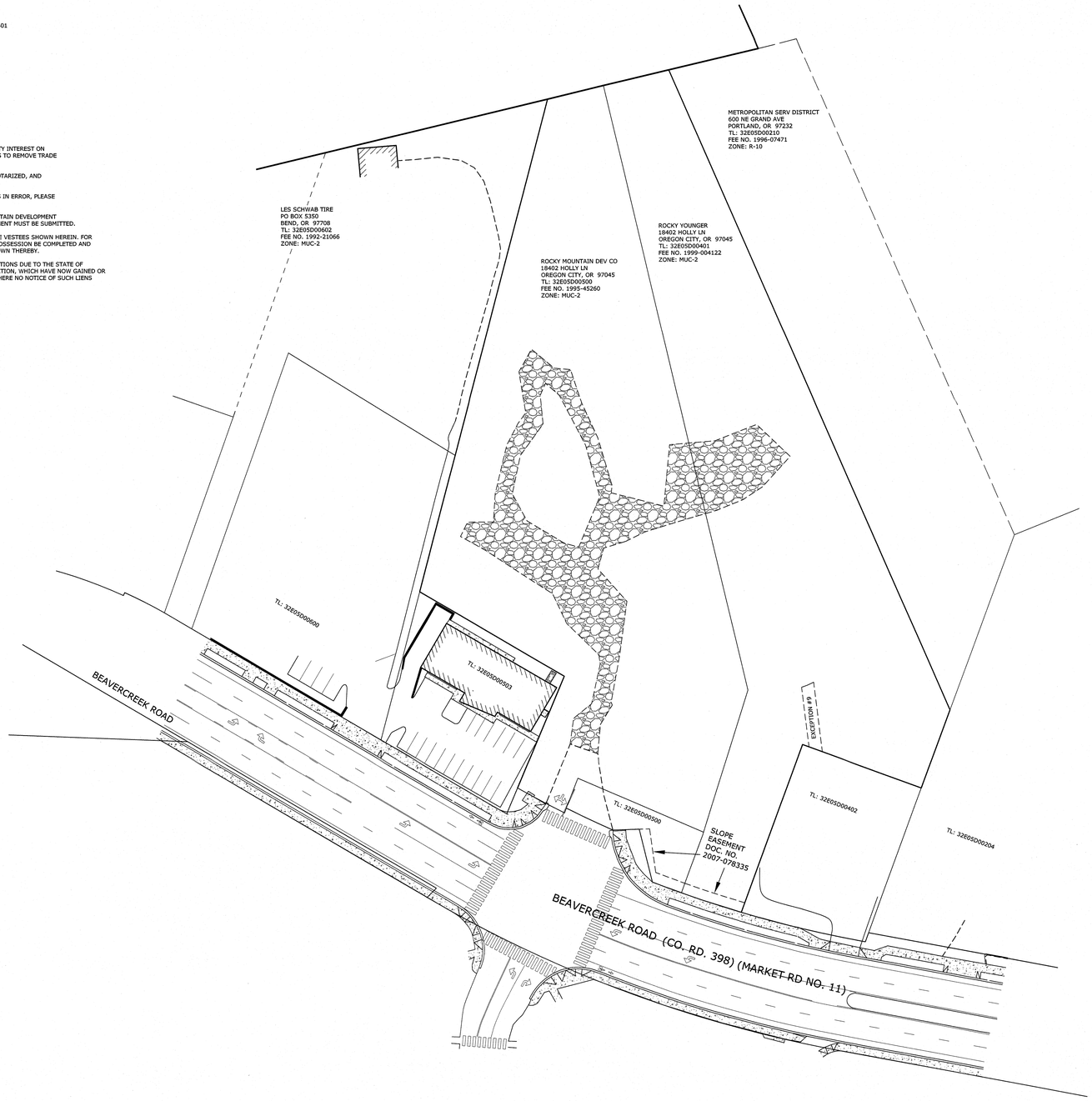
13. WE FIND NO TRUST DEEDS OF RECORD FOR THIS PROPERTY. IF THE COMPANY IS IN ERROR, PLEASE NOTIFY YOUR TITLE OFFICER IMMEDIATELY.

14. EVIDENCE OF THE IDENTITY AND AUTHORITY OF THE OFFICERS OF ROCKY MOUNTAIN DEVELOPMENT COMPANY, AS OREGON CORPORATION TO EXECUTE THE FORTHCOMING INSTRUMENT MUST BE SUBMITTED.

15. PARTIES IN POSSESSION, OR CLAIMING TO BE IN POSSESSION, OTHER THAN THE VESTEES SHOWN HEREIN. FOR PURPOSE OF ALTA EXTENDED COVERAGE, WE WILL REQUIRE AN AFFIDAVIT OF POSSESSION BE COMPLETED AND RETURNED TO US. EXCEPTION MAY BE TAKEN TO SUCH MATTERS AS MAY BE SHOWN THEREBY.

16. STATUTORY LIENS FOR LABOR OR MATERIALS, INCLUDING LIENS FOR CONTRIBUTIONS DUE TO THE STATE OF OREGON FOR UNEMPLOYMENT COMPENSATION AND FOR WORKMEN'S COMPENSATION, WHICH HAVE NOW GAINED OR HEREAFTER MAY GAIN PRIORITY OVER THE LIEN OF THE INSURED MORTGAGE WHERE NO NOTICE OF SUCH LIENS APPEAR OF RECORD.

TL = TAX LOT NUMBER, CLACKAMAS COUNTY



N

1" = 40'

40 20 0 40

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REVISIONS

2689-ALTA.DWG

PROJECT NO. 3051-00: 2689
DRAWN BY: JBJ
DATE: 07-09-12
CHECKED BY: RHG

EASEMENTS

SHEET 3
OF 3

APPENDIX F
Storm Drainage Analysis

Oregon City Commercial Masterplan

1367 Molalla Avenue

Storm Drainage Analysis

Preliminary
Not For
Construction

Prepared By:

LANGAN

10135 SE Sunnyside Rd
Suite 200
Clackamas, OR 97015

t 503.659.9500
f 503.659.2227
navixeng.com

NOVEMBER 2025

Tessa Mens, P.E.
Scott Franklin, P.E.

Table of Contents

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Stormwater Drainage Report

1. Executive Summary 3
    a. Project Description
    b. Design Criteria
    c. Proposed Drainage System
    d. Conclusion
2. Project Location 5
3. Site Drainage Analysis 6
    a. Existing Conditions
    b. Proposed Development
    c. Soils
    d. Drainage Basin Areas
    e. Modeling
4. Conclusion 11

Appendices

Appendix A **Geotechnical Report**

Appendix B **Drainage Basin Map**

Appendix C **HydroCAD Report**

Appendix D **WES BMP Sizing Tool Report**

Executive Summary

Project Description
The proposed project is located at 1367 Molalla Avenue, in the City of Oregon City, Clackamas County, Oregon. The site is located on Tax lots 32E05DB03300, 32E05DB03400, 32E05DB03200, 32E05DB03201, 32E05D00500, 32E05D00501, and 32E05D00602. The site is under the jurisdiction of Oregon City Public Works and the Clackamas County Water Environment Services (WES).

The existing property is approximately 12.86 acres (13.67 acres including the public access road) of scrub vegetation with isolated groups of trees and remnants of previously developed wrecking yard, gas station, and tavern.

The west portion of the existing site drains primarily on to the adjacent properties to the south. The east portion of the existing site drains primarily on to the adjacent properties to the east and northeast.

The proposed project includes a retail store (Parcel A), and a multi-family use (Parcel B), together with a public road through the site to provide access and utility service to each parcel (Parcel C), and a Quick Service Restaurant (QSR) (Parcel D). Parcels A, B, and D will receive interim rough grading, with finished conditions pending Detailed Development Plan approval for each of the parcels. The public access road includes a Right-of-Way (ROW) dedication at various widths and a 5-foot Public Utility Easement (PUE) along portions of the frontage of the parcels.

Design Criteria
The purpose of this report is to describe the project's stormwater management strategy and to show that the design meets the agency guidelines.

The standard stormwater requirements provided by Oregon City Public Works require detention, treatment, and infiltration. However, due to the presence of silty clay and a steep slope on the east side of the site, infiltration is not feasible on site.

This project utilizes the WES BMP Sizing Tool for designing the on-site stormwater facilities. The BMP Sizing Tool provides stormwater management design that will control flow durations ranging from 42% of the 2-year to the 10-year storm runoff as determined by the continuous model simulation integrated into the tool. Using this design methodology will provide the required treatment and flow control for the site, without the need for infiltration.

Proposed Drainage System
This project proposes to introduce a network of underground pipes, catch basins, curbs and gutters, to collect surface water runoff associated with the on-site and off-site public improvements. The proposed stormwater facilities will consist of lined rain gardens and lined detention ponds for water quality treatment and flow control. Stormwater detention will be required for both on-site private improvements and off-site public improvements. Space for detention of off-site public improvements is limited, and the detention facility cannot be installed within the right-of-way near the ultimate point of connection to the existing public storm system within the Natural Resource Overlay District (NROD) area in TL 500. Accordingly, the on-site stormwater facility will be sized to over-detain the on-site stormwater to compensate for public stormwater runoff as confirmed during the project's pre-application conference. The stormwater facilities will over detain and over treat these drainage basins to

account for the off-site public access road stormwater that will not be routed to the stormwater facilities.

Stormwater from Parcels A, B and C (Parcel C is the proposed public right-of-way within the main development area of TL3200, 3201, 3300, & 3400) will be routed to storm facilities in the southeast portion of the site, just north of the proposed public road, within the ROW. Stormwater for Parcel D will be routed to storm facilities within Parcel D. Parcel D stormwater will bypass the main storm facility after having received its own water quality and detention treatment. After being treated and detained, stormwater will be discharged to an existing storm pipe that discharges ultimately to Newell Creek. Outflows from the stormwater facilities will be regulated by flow control structures designed to release a peak flow rate not to exceed pre-developed runoff flow rates described above.

Conclusion

The proposed stormwater management systems for this project have been designed in accordance with regulatory criteria described above and consistent with sound engineering practice. This design has incorporated stormwater detention and stormwater quality BMP's. Therefore, no significant adverse impacts to the downstream stormwater system are expected because of the proposed development.

Project Location



Location:	***1367 Molalla Avenue***
Section/Township/Range:	***Sec 16 T3S, R2E, W.M.***
Parcel/Tax Lots:	***32E05DB03300, 32E05DB03400, 32E05DB03200, 32E05DB03201, 32E05D00500, 32E05D00501, and 32E05D00602***
Property Size:	***12.86 Acres (13.67 acres including the public access road)***
City, County, State:	***Oregon City, Clackamas County, Oregon***
Governing Agency:	***City of Oregon City***
Design Criteria:	***Oregon City Public Works Stormwater and Grading Design Standards***
Zone:	***MUC-2; Mixed-Use Corridor***

Site Drainage Analysis

Existing Conditions

The project site is located at 1367 Molalla Avenue, in the City of Oregon City, Clackamas County, Oregon. Tax lots 3300, 3201, & 3200 were previously developed as a wrecking yard between approximately 1953 and 2001/2002, with wrecking yard vehicle and structure removal occurring into 2005. Remnant surface features such as broken asphalt and foundations/concrete pads from prior wrecking yard operations are still visible in aerial photos of these parcels after 2005. A gasoline station and tavern formerly operated in the southwest portion of Tax Lot 3400. Each of these prior uses have been demolished and have been described in various Phase I & II Environmental Site Assessments. The southeast portion of TL 3400 and areas down-slope of the top of bluff on TL 3200 are covered in trees, while much of the remainder of the on-site properties exist in scrub vegetation or isolated groups of trees.

The public 18-inch storm line runs to the West of the subject property on the west side of Molalla Boulevard, and to the South of the subject property towards the North side of Beavercreek Road. There is an existing 48-inch stormwater outfall that discharges to Newell Creek. Our proposed stormwater runoff will utilize the existing outfall to Newell Creek.

Proposed Development

The proposed development includes one Quick Service Restaurant (QSR), a retail store, and a multi-family use, together with a public road through the site to provide access and utility service to each parcel. Stormwater from Parcels A, B and C will be routed to a lined rain garden which will then discharge to a lined detention pond for treatment of the 1-inch 24-hour water quality design storm and detention for the 10-year 24-hour storm event. The storm facilities for Parcels A, B and C will be a public storm facility within the public access road ROW. Stormwater from Parcel D will be routed to an on-site, private stormwater facility within Parcel D. The Parcel D storm facility will also consist of a lined rain garden discharging to a lined detention pond for treatment of the 1-inch 24-hour water quality design storm and detention for 42% of the 2-year to the 10-year 24-hour storm event. Following on-site treatment, runoff from Parcel D will bypass the public stormwater management system. The treated and detained stormwater from all the storm facilities will be routed through the off-site public access road to the existing discharge outfall to Newell Creek.

The public stormwater facility will over detain and over treat the on-site drainage basins to account for the off-site public access road stormwater that will not be routed to the stormwater facilities.

Soils

According to the NRCS Web Soil Survey, this site is composed mostly of Jory silty clay loam. Based on a geotechnical engineering report provided by Terracon Consultants, dated September 12th, 2022, the existing soil at the site consists of a surface layer of red clay surface soil. According to the Terracon report, groundwater was encountered from 4 to 20 feet below the surface. The Terracon report states that the groundwater observed in their borings appear to represent perched groundwater and does not

appear to be continuous in nature and groundwater fluctuations occur. See Appendix A of this report for additional information regarding soils and groundwater.

Drainage Basin Areas

The proposed Parcels A, B, and D, together with the public road are assumed in the full-build condition for the purposes of this analysis so that the various stormwater management facilities can be sized correctly. Parcels A, B, and D will undergo future Detailed Development Plan review in the future and will address any design changes from the assumptions in this report. While Parcel D will provide its own on-site storm facility with its DDP application, we've evaluated approximate sizing for this facility to determine impacts to the storm system downstream of Parcel D.

This project will consist of 5 separate drainage basins, as shown in the Drainage Basin Map in Appendix B. The project will create 377,077 sf of private impervious area and 89,144 sf of pervious area and will treat and detain 377,077 sf of impervious and 55,689 sf of pervious area. The project will create or improve 30,169 sf of public impervious and 7,003 sf of public pervious area.

On-site Private Basin 1:

This basin consists of Parcel A, the proposed retail store. The basin is approximately 1.68 acres of impervious roof, pavement, and sidewalk (PRI-1) and 0.15 acres of pervious landscape area (PRP-1). The basin will be conveyed to the public rain garden and detention pond facilities for treatment and detention, where it will be mixed with stormwater from On-site Basin 2 and On-site Basin 3. The treated and detained stormwater will then be conveyed to the point of connection with the existing 48-inch public storm pipe prior to its existing discharge into a tributary of Newell Creek. The approximately 5,770 sf of existing pervious area on the west side of the parcel that currently drains off-site onto Molalla Ave will be reduced to 1,451 sf of pervious area draining off-site. This area will be graded and stabilized, but will not be treated or detained, as it is infeasible to collect, is not pollution generating, and will continue to naturally drain off site. Please see the Drainage Basin Map in Appendix B.

On-site Private Basin 2:

This basin consists of Parcel B, the proposed multi-family use. The basin is approximately 4.12 acres of impervious roof, pavement, and sidewalk (PRI-2) and 0.53 acres of pervious landscape area (PRP-2). The basin will be conveyed to the public rain garden and detention pond facilities for treatment and detention, where it will be mixed with stormwater from On-site Basin 1 and On-site Basin 3. The treated and detained stormwater will then be conveyed to the point of connection with the existing 48-inch public storm pipe prior to its existing discharge into a tributary of Newell Creek. The approximately 228,279 sf of existing pervious area on the east side of the parcel that currently drains east will be reduced to 16,275 sf of pervious area draining east. This area will be graded and stabilized, but will not be treated or detained, as it is infeasible to collect, is not pollution generating, and will continue to naturally drain off site. The east portion of Parcel B is a Geologic Hazard Area (steep slopes). The limits of disturbance do not get closer than 35 feet from the top of the steep slope near the edge of the Geologic Hazard Area. This portion of the site will remain as is, other than a natural surface pedestrian pathway, and existing drainage patterns here will continue.

On-site Private Basin 3:

This basin consists of Parcel D, the proposed QSR. The basin is approximately 1.23 acres of impervious roof, pavement, storm facilities, and sidewalk (PRI-3) and 0.40 acres of pervious landscape area (PRP-3).

The basin will be conveyed to a private rain garden and detention pond, located within Parcel D, for treatment and detention. The treated and detained stormwater will then bypass the public stormwater facility treating Basins 1, 2, & 3 and connect to the proposed storm system downstream from the public stormwater facility where it will then be conveyed to the point of connection with the existing 48-inch public storm pipe prior to its existing discharge into a tributary of Newell Creek. The approximately 182,811 sf of existing pervious area on the southwest side of the site that currently drains south will be reduced to 15,729 sf of pervious area draining off-site. This area will not be treated or detained, as it is infeasible to collect, is not pollution generating, and will continue to naturally drain off site.

The private stormwater management facility in Basin 4 will be designed concurrently with the detailed development of Parcel D. The analysis in this section is provided to show that the proposed Detailed Development Plan storm system can accommodate the future development of Parcel D. Were the Parcel D storm system to become overwhelmed by a large storm event, we recommend an overflow drainage structure be designed to capture the 100-year 24-hour storm event prior to it overtopping the planned facility and send that flow into the by-pass storm piping provided in the proposed public street. The storm pipes serving Parcel D will be sized to convey the 100-year 24-hour storm event for Basin 4/Parcel D as well.

Off-site Public Basin 1:
The proposed public access road runs through the site from Molalla Avenue to the southeast corner of the site. From the southeast corner of the site, the public access road snakes down to Beavercreek Road. This second portion of the public access road is off-site. The basin is approximately 0.69 acres of impervious pavement and sidewalk (PUI-1) and 0.16 acres of pervious landscape area (PUP-1). Space for detention of off-site public improvements is limited, and the detention facility cannot be installed within the right-of-way near the ultimate point of connection to the existing public storm system within the Natural Resource Overlay District (NROD) area in TL 500. Accordingly, the on-site public stormwater facilities will over detain and over treat the on-site basins to account for the off-site public access road stormwater that will not be routed to the stormwater facilities.

Stormwater in this basin will be captured in catch basins and conveyed to the existing outfall location adjacent to the off-site public access road, that discharges to Newell Creek.

Were this system to become overwhelmed by a large storm event that it was unable to convey or to become clogged, the catch basins would begin to overflow and flow down the off-site public access road to the south, avoiding the steep slope just east of the site and public access road, and overflow near the existing discharge point. To guard against such an overflow, inlets and inlet leads in this low point will be oversized to minimize the chances of overflow.

On-site Public Basin 2:
This basin consists of Parcel C, the on-site public access road. The basin is approximately 1.61 acres of impervious pavement, storm facilities, and sidewalk (PUI-2) and 0.28 acres of pervious landscape area (PUP-2). The basin will be conveyed to the public rain garden and detention pond facilities for treatment and detention, where it will be mixed with stormwater from On-site Basin 1 and On-site Basin 2. The treated and detained stormwater will then be conveyed to point of connection with the existing 48-inch public storm pipe prior to its existing discharge into a tributary of Newell Creek.

The public stormwater facility lies inside a small basin that, if it were to fill up, would overtop into the adjacent street at elevation 433 feet. A HydroCAD model was run (see Appendix C) to model this basin's capacity during a 100-year 24-hour storm event. During this storm event, the water surface elevation within this basin peaks at 428.93 feet. Therefore, the stormwater facility basin will contain the 100-year 24-hour storm event and any overflow into the street or steep slopes to the east is not expected to occur.

For analysis and sizing of BMPs, the project development area is broken into ten Drainage Management Areas (DMAs), as defined in the WES BMP Sizing Tool. The area and condition of the ten DMAs are shown in Table 1 below. See Appendix B for the Basin Map.

Table 1 –Drainage Management Areas

On-Site Basin Areas Draining to Public Storm Facilities			
Basin	**Area (sf)**	**Pre-developed Condition**	**Post-developed Condition**
PRI-1	73,175	Pervious - Forested	Impervious - Roof/Pavement
PRP-1	6,613	Pervious - Forested	Pervious - Landscape
PRI-2	180,369	Pervious - Forested	Impervious - Roof/Pavement
PRP-2	20,596	Pervious - Forested	Pervious - Landscape
PUI-2	70,148	Pervious - Forested	Impervious - Pavement
PUP-2	15,527*	Pervious - Forested	Pervious - Landscape
On-Site Basin Area Draining to Private Storm Facilities			
PRI-3	53,385	Pervious - Forested	Impervious – Roof/Pavement
PRP-3	12,953*	Pervious - Forested	Pervious - Landscape
Total On-site DMA*	***437,421***		
Off-Site Basin Area			
PUI-1	30,169	Pervious - Forested	Impervious - Pavement
PUP-1	7,003	Pervious - Forested	Pervious - Landscape
Total Off-site DMA	***37,172***		
Total DMA's*	***473,203***		

**DMA's do not include the stormwater facility area (BMP's)*

Modeling

The WES BMP Sizing Tool was utilized to assist with BMP sizing and calculations for the water quality, 2-year and 10-year storm events. Stormwater treatment facility's flow control structures were designed using the WES BMP Sizing Tool, for those events as well. Refer to BMP Sizing Report attached in Appendix D.

Flow control structure diagrams are shown in the figures below:

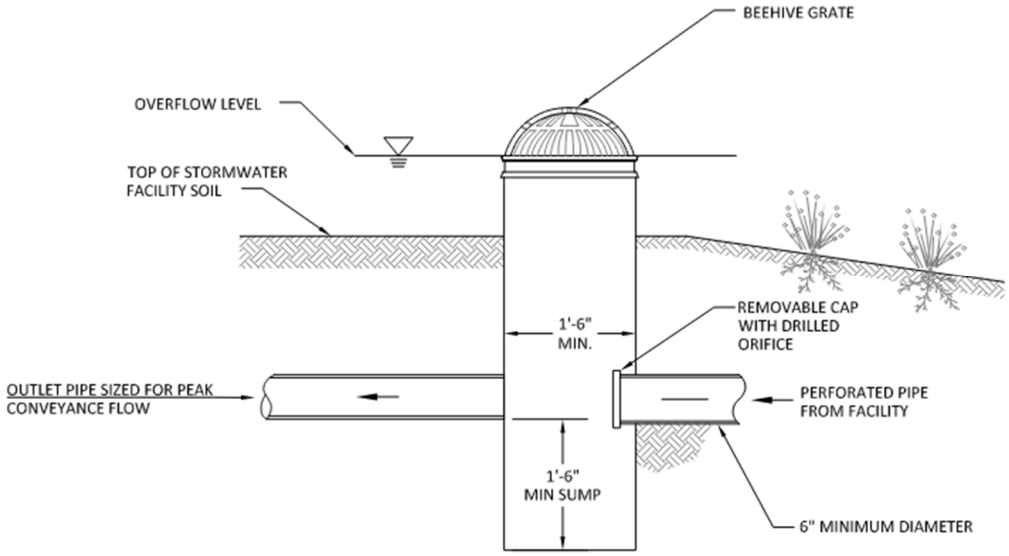
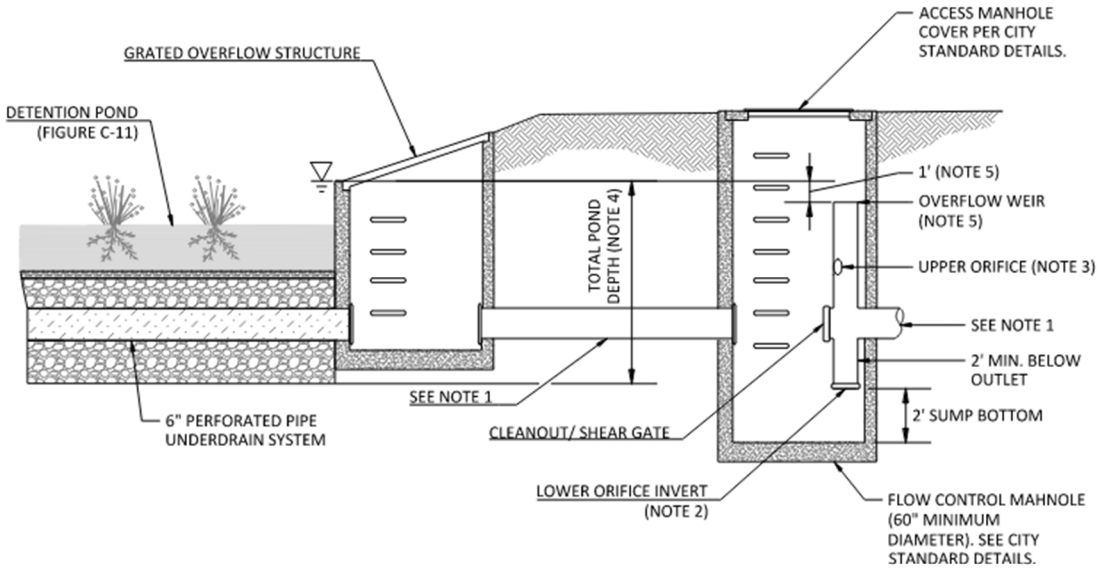


Figure 1 - Rain Garden Flow Control Structure



NOTES:

1. PIPE SIZED FOR PEAK DESIGN STORM AS DETERMINED BY ENGINEER .
2. LOWER ORIFICE: THE INVERT ELEVATION OF THE LOWER ORIFICE MUST BE AT, OR BELOW, THE POND BOTTOM (BOTTOM OF THE 3 FEET OF DRAIN ROCK & GROWING MEDIA).
3. UPPER ORIFICE: THE UPPER ORIFICE SHOULD BE AT AN ELEVATION 2/3 OF THE TOTAL POND DEPTH ABOVE THE POND BOTTOM.
4. TOTAL POND DEPTH, PER FACILITY SIZING MODEL, INCLUDES GROWING MEDIA, SEPARATION LAYER, AND DRAIN ROCK AS SHOWN ON FIGURE C-11.).
5. OVERFLOW WEIR: 1' BELOW MAXIMUM WATER ELEVATION OR TOP OF TOTAL POND DEPTH.

Figure 2 - Detention Pond Flow Control Structure

The required storm facility sizes and proposed facility sizes, according to the BMP Sizing Tool, are shown in Table 2.

Table 2 –Storm Facility Sizing

Rain Garden Storm Facilities		
Storm Facility	**Required Minimum Surface Area (sf)**	**Proposed Surface Area (sf)**
Public Rain Garden (lined)	5,681.0	6,000.0
Private Rain Garden (lined)	934.8	1,700.0
Detention Pond Storm Facilities		
Storm Facility	**Adequate Size?***	**Proposed Facility Volume (cf)**
Public Detention Pond (Lined)	Yes	2,911.8
Private Detention Pond (Lined)	Yes	1,027.7

**According to the BMP Sizing Tool (See Appendix D)*

Conclusion

The proposed stormwater management system for this project has been designed in accordance with regulatory criteria described above and is consistent with sound engineering practice. This design has incorporated stormwater quality treatment and detention BMPs to the maximum extent practicable. Therefore, no significant adverse impacts to surrounding surface water are expected as a result of the proposed improvements.

APPENDIX A

GEOTECHNICAL REPORT

Geotechnical Engineering Report

Oregon City Development
Oregon City, Clackamas County, Oregon
September 12, 2022
Terracon Project No. 82215043

Prepared for:
The Wolff Company LLC
Scottsdale, AZ

Prepared by:
Terracon Consultants, Inc.
Portland, Oregon

September 12, 2022

The Wolff Company LLC
6710 E. Camelback Road, Suite 100
Scottsdale, AZ 85251

Attn: Chris Rossman
P: (503) 544.9595
E: jsakamoto@awolff.com
mdarr@awolff.com

Re: Geotechnical Engineering Report
Oregon City Development
1367 Molalla Avenue
Oregon City, Clackamas County, Oregon
Terracon Project No. 82215043

Dear Mr. Rossman:

We have completed a Geotechnical Engineering evaluation for the above referenced project. Our services were performed in accordance with our Master Services Agreement dated November 20, 2017, and the Task Order dated June 22, 2021, and our Change Orders dated December 9, 2021, and June 10, 2022.

This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning slope stability, earthwork and the design and construction of foundations, floor slabs, and pavements for the proposed project.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.

Ryan T. Houser, RG, CEG
Project Geologist

Kristopher T. Hauck, P.E.
Senior Principal | Office Manager

REPORT TOPICS

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FIGURES 34

Note: This report was originally delivered in a web-based format. For more interactive features, please view your project online at client.terracon.com.

FIGURES

ATTACHMENTS

2012 ENGINEERING GEOLOGY REPORT
EXPLORATION AND TESTING PROCEDURES
PHOTOGRAPHY LOG
EXPLORATION RESULTS
SUPPORTING INFORMATION

Note: Refer to each individual Attachment for a listing of contents.

Geotechnical Engineering Report

Oregon City Development
1367 Molalla Avenue
Oregon City, Clackamas County, Oregon

Terracon Project No. 82215043
September 12, 2022

INTRODUCTION

This report presents the results of our subsurface exploration and geotechnical engineering services performed for the proposed apartment complex, retail pads, and related pavements and utilities to be located at 1367 Molalla Avenue in Oregon City, Clackamas County, Oregon. The purpose of these services is to provide information and geotechnical engineering recommendations relative to:

- Subsurface soil conditions
- Groundwater conditions
- Site preparation and earthwork
- Demolition considerations
- Excavation considerations
- Slope stability considerations
- Foundation design and construction
- Floor slab design and construction
- Seismic site class per IBC
- Lateral earth pressures
- Pavement design and construction
- Slope hazard mitigation

The geotechnical engineering Scope of Services for this project included the advancement of one drilled boring and installation of a piezometer to monitor groundwater levels. Previous investigations at the site included advancement of 29 drilled borings and excavation of 68 test pits to depths ranging from approximately 3 to 50 feet below existing site grades. Logs of current and previous explorations are included in the **Exploration Results** section.

Maps showing the site and exploration locations are shown on **Figure 1 - Site Location** and **Figures 2 through 4 - Exploration Plans** in the **Figures** section. The results of the laboratory testing performed on soil samples obtained from the site during the field exploration are included on the boring logs and/or as separate graphs in the **Exploration Results** section.

SITE CONDITIONS

The following description of site conditions is derived from our site visit in association with the field exploration and our review of publicly available topographic maps.

Item	Description
Parcel Information	The project is located at 1367 Molalla Avenue in Oregon City, Clackamas County, Oregon. The site consists of 4 tax lots totaling approximately 12.86 acres. The approximate center of the site is located at the following coordinates: ■ Latitude: 45.3356° N ■ Longitude: 122.5881° W
Existing Improvements	Former buildings were removed, although several retaining walls, foundations, and floor slabs remained as of our last site visit in 2022.
Current Ground Cover	The majority of the site was covered with grass, blackberry bushes, and scattered trees. The eastern edge of the site was densely vegetated with trees and blackberry bushes.
Existing Topography	The majority of the site consisted of three graded benches that stepped down to the east. Each bench was nearly level to gently sloping and were separated by graded slopes up to about 10 feet high with gradients up to about 3 horizontal to 1 vertical (3H:1V). The eastern edge of the site drops steeply down at inclinations in the range of 1½H:1V to ½H:1V to the east toward Newell Creek. The overall slope system height is on the order of 200 feet in vertical drop. We understand that this steep slope area contains active and ancient landslide complexes and has been studied extensively by Portland State University geologists and other researchers.

We also collected photographs at the time of our field exploration program. Representative photos are provided in our **Photography Log**.

PROJECT DESCRIPTION

Our initial understanding of the project was provided in our proposal and was discussed during project planning. Several iterations of collaboration has transpired since the project was initiated, and our final understanding of the project conditions is as follows:

Item	Description
Information Provided	The following documents were provided to us: ■ "Site Plan," Sheet 1.11, prepared by Studio 15 Architecture, Inc., dated June 4, 2021. ■ "Preliminary Existing Conditions Survey," prepared by S&F Land Services, dated June 2021. ■ Oregon City Multi-Family Concept Grading Pavement Plans, Sheets C1.0, C2.0, C2.1, C3.0, C3.1, C4.00," prepared by Kimley-Horn, dated May 27, 2022. We were also provided the geotechnical report for the original planned structure.
Project Description	The proposed development is shown on the attached **Exploration Plans** (**Figures 2 through 4**), and includes construction of: ■ 15 multi-story (2 to 3) apartment buildings with a total of 236 dwelling units. Some of the buildings will incorporate ground level parking structures with apartments above. ■ Covered parking areas (carports). ■ 2 "pad-ready" development pads along the Molalla Avenue frontage for single story retail development. ■ A clubhouse building ■ Swimming pool Associated paved parking and drive lane areas
Building Construction	The proposed apartment and clubhouse buildings will be wood-framed with a slab-on-grade ground floor.
Finished Floor Elevation	The proposed apartment complex will be developed close to existing site grades. Final finish floor elevations are undetermined at this time.
Maximum Loads (Assumed)	■ Columns: 40 kips ■ Walls: 4 kips per linear foot (klf) ■ Slabs: 150 pounds per square foot (psf)
Below-Grade Structures	Development will include construction of a subsurface utility vault that will incorporate restrained retaining walls.
Free-Standing Retaining Walls	Development may include construction of free-standing retaining walls to accommodate grade changes along the eastern edge of the site and for the southeast road extension. We understand retaining walls up to 11 feet in height may be constructed.

Item	Description
Pavements	Paved driveway and parking will be constructed on the perimeter of the site. The Site Plan indicates parking will include 423 parking spaces. Both rigid (concrete) and flexible (asphalt) pavement sections will be incorporated into the final design. Anticipated traffic is as follows: ■ Autos/light trucks: 1,393 vehicles per day ■ Light delivery and trash collection vehicles: 20 vehicles per week ■ Tractor-trailer trucks: <5 vehicles per week The pavement design period is 20 years.
Estimated Start of Construction	Summer 2023

EXISTING GEOTECHNICAL REPORTS

Our Scope of Services is based on our understanding of the project as described by The Wolff Company and the expected subsurface conditions as described below. Terracon previously completed the following reports for the project site:

- "Preliminary Results of Slope Stability Evaluation, Proposed Retail Project, Molalla Avenue and Beavercreek Road, Oregon City, Oregon," prepared by Zipper Zeman Associates (ZZA, now Terracon since 2005), dated July 3, 2002.
- "Subsurface Exploration and Geotechnical Engineering Evaluation, Proposed Retail Project, Molalla Avenue and Beavercreek Road, Oregon City, Oregon," prepared by ZZA, dated February 13, 2004.
- "Preliminary Engineering Geology and Soil Engineering Report, Proposed Retail Development, Molalla Avenue and Beavercreek Road Oregon City, Oregon," prepared by Terracon, dated October 8, 2012.

GEOTECHNICAL CHARACTERIZATION

Geology

The site is located in the northern Willamette Valley geologic province, which consists of a structural trough between the Coastal Range and the Cascade Range. This basin is underlain by thick deposits of sand and gravel washed into it during the Pliocene epoch when the climate in the area was very dry. These granular deposits are locally covered by the Boring lavas (Qtb) in northwest Clackamas County.

Based on the *Oregon Geologic Data Standard v. 2.1* and Oregon Department of Geology and Mineral Industries *Geologic Map of the Oregon City 7.5' Quadrangle, Clackamas County, Oregon, 2009* this site is located within a geologic unit mapped as Tbc-Basalt of Canemah defined as flow or flows of grey medium-grained, olivine basalt. The Oregon Department of Geology and Mineral Industries (DOGAMI), Bulletin 99, *Geologic Map of the Canby and Oregon City Quadrangles, Oregon 1979*, maps the site as consisting of Boring lavas (Qtb), which it describes as Pliocene-Pleistocene lavas, light-gray, open-textured olivine basalt; flow structures common; includes some pyroclastic material of local extent; widely spaced joint pattern. Lavas and breccias have weathered to a residual red clay surface soil. Vertical exposures are susceptible to mass movement and deep bedrock sliding because of failure of underlying material (see the description below with clay materials within the Troutdale unit).

The Boring Lava deposits overly the Troutdale (Tpt), which are described as Pliocene sandstone and conglomerate; indurated beds and lenses of well-sorted sand and cobbly gravel with up to 30 percent quartzite clasts. Some sand originally composed of volcanic glass have altered to an impermeable high shrink-swell clay. The clay can be unstable and cause overlying competent units to fail by landslide. The publications indicate that on slopes where this clay layer daylights, one generally encounters a spring. Also, if layers dip out of the slope, it can become a failure plane for a slump or slump-earthflow when the pore water pressure has built up to a critical value on top of the clay layer.

Based on the *Map of Landslide Geomorphology of Oregon City, Oregon, and Vicinity Interpreted from Lidar Imagery and Aerial Photographs, O-06-27, 2006* and the *Landslide Inventory Map of the Northwest Quarter of the Oregon City Quadrangle, Clackamas County, Oregon, IMS-26, 2009,* a mapped landslide was identified adjacent to the site to the east. The landslide is identified as a prehistoric or ancient landslide (movement greater than 150 years ago). This is defined by landslide features that are slightly eroded and there is no evidence of historic (recent in last 150 years) movement. In some cases, the observed landslide features have been greatly eroded and/or covered with deposits that result in smoothed and subdued morphology.

The borings completed for this report and the previously referenced 2004 ZZA report are generally consistent with the above geologic mapping for the Boring Lavas/Basalt of Canemah, although the basalt has become deeply weathered in certain areas. The Troutdale unit was not encountered to the maximum depth of the borings at approximately 90½ feet below the ground surface. Although direct evidence of landslide features were not readily observed during our exploration programs for the 2004 report, we did observe the general headscarp area of the ancient landslide area during our 2012 and 2021 slope reconnaissances with the aid of the recent Lidar-based landslide maps.

Seismic Hazards

Seismic hazards resulting from earthquake motions can include slope stability, liquefaction, and surface rupture due to faulting or lateral spreading. Liquefaction is the phenomenon wherein soil strength is dramatically reduced when subjected to vibration or shaking.

We reviewed the Statewide Geohazards Viewer (HazVu) published by the Oregon Department of Geology and Mineral Studies (DOGAMI) and available online[1]. The viewer categorizes the expected earthquake shaking from light, moderate, strong, very strong, severe and violent; and the landslide susceptibility from low, moderate, high, and very high.

- Earthquake Liquefaction Hazard: Non-Liquefiable
- Expected Earthquake Shaking: Very Strong
- Landslide Susceptibility (due to earthquake): Low (Landsliding Unlikely) on the majority of the site, with Moderate (Landsliding Possible) to Very High (Existing Slide) on the eastern margin of the site. See **Engineering Geology Update** section for additional discussion.

Faults

The United States Geological Survey (USGS) Quaternary Fault and Fold Database of the United States published a report containing descriptions of nearby faults. Faults in the project vicinity include the Bolton fault (No.874), the Oatfield fault (No.875), and the Portland Hills fault (No.877). Published information pertaining to each fault or fault zone is provided in the following tables:

Bolton fault (Class B) No. 874

Information	Description
Length	9 km
Strike (degrees)	N53°W
Sense of Movement	Reverse
Dip Direction	SW
Slip-rate Category	Less than 0.2 mm/yr
Most recent prehistoric deformation	Undifferentiated Quaternary (<1.6 Ma)
Distance from Fault	1 km NE

[1] Statewide Geohazards Viewer (HazVu) published by the Oregon Department of Geology and Mineral Industries (DOGAMI) https://gis.dogami.oregon.gov/hazvu/

Oatfield fault (Class A) No. 875

Information	Description
Length	29 km
Strike (degrees)	N41W
Sense of Movement	Reverse, Right lateral
Dip Direction	NE
Slip-rate Category	Less than 0.2 mm/yr
Most recent prehistoric deformation	Undifferentiated Quaternary (<1.6 Ma)
Distance from Fault	2 km NNE

Portland Hills fault (Class A) No. 877

Information	Description
Length	49 km
Strike (degrees)	N37°W
Sense of Movement	Reverse, Right lateral
Dip Direction	SW
Slip-rate Category	Less than 0.2 mm/yr
Most recent prehistoric deformation	Undifferentiated Quaternary (<1.6 Ma)
Distance from Fault	5 km NE

Based on our review of the available fault information, the depth to bedrock, and the site's proximity to the nearest known faults, it is our opinion that the risk of surface rupture due to ground faulting is low.

Groundwater Conditions

We observed our explorations while drilling and after completion for the presence and level of groundwater. The water levels observed in the explorations are provided on the boring logs in **Exploration Results**, and are summarized below.

Boring Number	Approximate Ground Surface Elevation (feet) [1]	Observation Date	Approximate Depth to Groundwater/ Seepage while Drilling/Excavating (feet) [1]
02-B-3	447	October 29, 2001	19
02-B-22	451	March 7, 2002	20
02-MW-1	445	October 31, 2001	14
02-MW-1	445	November 2, 2001	8
02-MW-3	456	October 31, 2001	16
02-MW-3	456	November 2, 2001	17.5
02-MW-4	447	October 31, 2001	15
02-MW-4	447	November 2, 2001	11.2
02-MW-5	445	October 31, 2001	15
02-MW-5	445	November 2, 2001	11.5
02-TP-8	445	November 1, 2001	11
02-TP-43	426	March 4, 2002	9
02-TP-1A	435	March 1, 2002	9
02-TP-8A	442	March 1, 2002	6½
02-TP-12A	452	March 2, 2002	4
02-TP-20A	452	March 2, 2002	9½
21-B-1[2]	429	December 2021 – July 1, 2022	(not encountered)

1. Based on elevations obtained from the site topographic plan. Elevations may differ from those presented on the attached logs, which were based on a previous topographic map of the site.
2. A vibrating wire piezometer was installed at a depth of 30¾ feet below the ground surface (bgs), at the top of the basaltic bedrock.

Groundwater observations presented above appear to represent perched groundwater and does not appear to be continuous in nature. Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff and other factors not evident at the time the borings were performed. Therefore, groundwater levels during construction or at other times in the life of the structure may be higher or lower than the levels indicated on the boring logs. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

A vibrating wire piezometer was installed in Boring 21-B-1 near the top of the descending slope at the east end of the site. The instrument was placed immediately above the basaltic andesite within the boring at a depth of approximately 30 feet bgs. As of the date of this report, groundwater

was not recorded by this instrument. Groundwater levels will continue to be measured within this boring throughout 2022.

GeoModel

We have developed a general characterization of the subsurface conditions based upon our review of the subsurface exploration, laboratory data, geologic setting and our understanding of the project. This characterization, termed GeoModel, forms the basis of our geotechnical calculations and evaluation of site preparation and foundation options. Conditions encountered at each exploration point are indicated on the individual logs. The individual logs can be found in the **Exploration Results** section and the GeoModel can be found on **Sections A-A', B-B', and C-C'** (Figures 10 through 12) in the **Figures** section of this report. As part of our analyses, we identified the following model layers within the subsurface profile.

Model Layer	Layer Name	General Description
1	**Existing Fill**	Topsoil, Asphalt, Silty Sand Fill, Clayey Silt Fill, Poorly Graded Gravel Fill, Gravelly Silt Fill placed during previous grading at the site
2	**Residual Soil (Native)**	Silt with trace Clay, Clayey Sand with Gravel, contains a variable amount of basaltic andesite boulders and cobbles
3	**Boring Lava**	Basaltic Andesite, fresh to slightly weathered, slightly fractured to very fractured

ENGINEERING GEOLOGY UPDATE

Terracon previously prepared an engineering geology report for the site, the results of which were presented in our referenced October 8, 2012, report. A copy of the 2012 report is attached at the end of this report. As part of our current scope of work, Terracon performed an engineering geology reconnaissance of the site slopes to document current site conditions. In addition, we reviewed aerial photographs, geologic maps, and geologic hazard maps produced since completion of our 2012 report, as detailed in the following sections.

RESEARCH

Geologic and Geologic Hazards Maps Review

Terracon reviewed the following geologic and geologic hazard maps that include the project site that have become available since our 2012 reports were issued:

- 2012 Oregon Department of Geology and Mineral Industries (DOGAMI) Open-File Report O-12-02, Lidar-based surficial geologic map and database of the greater Portland, Oregon, area, Clackamas, Columbia, Marion, Multnomah, Washington, and Yamhill Counties, Oregon,

and Clark County, Washington, by Lina Ma, Ian P. Madin, Serin Duplantis, and Kendra J. Williams

- 2013 DOGAMI Open-File Report O-13-08, Landslide hazard and risk study of northwestern Clackamas County, Oregon, by William J. Burns, Katherine A. Mickelson, Cullen B. Jones, Sean G. Pickner, Kaleena L. B. Hughes, and Rachel Sleeter.
- 2020 U.S. Geological Survey Scientific Investigations Map SIM-3443, Geologic map of the greater Portland metropolitan area and surrounding region, Oregon and Washington, by Wells, R.E., Haugerud, R.A., Niem, A.R., Niem, W.A., Ma, Lina, Evarts, R.C., O'Connor, J.E., Madin, I.P., Sherrod, D.R., Beeson, M.H., Tolan, T.L., Wheeler, K.L., Hanson, W.B., and Sawlan, M.G.

Based on our review, the geologic mapping presented on these maps is consistent with the mapped publications discussed in our referenced engineering geology report. The Landslide Hazard mapping (2013) indicates the eastern portion of the site, including the area of the headscarp and recommended setback, has a "high" potential for deep-seated landslides. The mapping indicates the eastern approximate quarter of the area of proposed development has a "moderate" potential for deep-seated landslides. The shallow landslide potential is "high" along the landslide scarp, and "moderate" directly above the landslide scarp. The slope between the site and the residential properties to the north also shows a "moderate" potential for shallow landslides. The landslide hazard susceptibility depicted on these maps is consistent with those discussed in the referenced reports prepared for the site. Portions of the landslide susceptibility maps showing the approximate site boundaries are attached as **Figure 6 - Deep Landslide Susceptibility Map** and **Figure 7 - Shallow Landslide Susceptibility Map** in the **Figures** section of this report.

Aerial Photograph Review

We reviewed aerial photographs taken from 2012 to 2020 showing the site to determine if significant changes to vegetation or slope configuration are apparent, which may indicate a slope failure. Our aerial photograph review did not identify any areas showing significant changes to vegetation or slope configuration on the scarp; however, two areas below the landslide headscarp showed vegetation patterns that appeared to be inconsistent with the surrounding areas. These areas were specifically visited during our site reconnaissance, which is described in the following section.

ENGINEERING GEOLOGIC RECONNAISSANCE

Terracon Consultants, Inc., Project Geologist Ryan T. Houser, CEG, performed a surface reconnaissance of the subject property and adjacent slopes on July 1, 2021.

The property was bordered to the west by Molalla Avenue, to the north by single-family and multi-family residences fronting on Hilltop Avenue, to the south by businesses fronting on Beavercreek

Road, and to the east by a forested natural area (Newell Creek Canyon Natural Area). The majority of the site consisted of three graded benches that stepped down to the east. Each bench was nearly level to gently sloping and were separated by graded slopes up to about 10 feet high with gradients up to about 3 horizontal to 1 vertical (3H:1V). Topography of the site is consistent with that shown on the existing conditions survey map provided by the client, as shown on **Figure 8 - Topographic Map** in the **Figures** section of this report. Photographs taken at the time of our reconnaissance are presented in the **Photography Log**.

The former building pad portions of the site above the headscarp were vacant and free of structures. This portion of the site appeared to be in a condition virtually identical to that described in the referenced reports. No signs of slope instability were noted on this portion of the site.

The headscarp appeared to be in a condition identical to that described in the referenced reports, with no indicators of additional failures noted during our reconnaissance. The slope was generally vegetated with fir and oak trees. The majority of the trees on the slope exhibited straight trunks. We noticed several recent treefalls on the slope, which appeared to be the result of wind and/or ice and not slope failures since the disturbed soils were limited to the root wads of the fallen trees.

The areas of variable vegetation noted during our review of aerial photographs were located near the toe of the headscarp within the natural area, as shown on **Figure 9 - Reconnaissance Plan** in the **Figures** section of this report. Both areas contained vegetation different than the surrounding trees. The soils in these areas had a higher moisture content than the slope or surrounding areas at the base of the headscarp. A spring was located at the base of the slope east of the northeastern property corner at the northern “wet soils” area shown on **Figure 9 - Reconnaissance Plan** in the **Figures** section of this report. Based on topography, these areas represent “sag ponds” that often form at the base of headscarps after a landslide. In this case, the sag ponds did not contain standing water but did maintain a higher soil moisture content than the surrounding soils that was not conducive to tree growth. The areas surrounding the sag ponds were vegetated with mature trees, with no indications of recent reactivations of the landslide.

SEISMIC CONSIDERATIONS

Seismic Design

The seismic design requirements for structures are based on the Seismic Design Category. Site Classification is required to determine the Seismic Design Category for a structure. The Site Classification is based on the upper 100 feet of the site profile defined by a weighted average value of either shear wave velocity, standard penetration resistance, or undrained shear strength in accordance with Section 20.4 of ASCE 7-16.

Description	Value
2019 Oregon Structural Specialty Code (OSSC) [1]	D[2]
Site Latitude	45.3360°N
Site Longitude	122.5880°W
S_S MCE_R Ground Motion for a Short Period [3]	0.812g
S_1 MCE_R Ground Motion for a 1-Second Period [3]	0.366g
PGA_M Site Modified Peak Ground Acceleration	0.451

1. Seismic site classification in general accordance with the *2019 Oregon Structural Specialty Code (OSSC)*, which refers to ASCE 7-16.
2. ASCE 7-16 requires a site soil profile extending to a depth of 100 feet be used for seismic site classification. Borings at this site were extended to a maximum depth of 90½ feet. The site properties below the boring depth to 100 feet were estimated based on our experience and knowledge of geologic conditions of the general area.
3. These values were obtained using online seismic design maps and tools available on the Applied Technology Council (ATC) website referenced in Section 1613.2.1 of the 2019 OSSC.

Liquefaction

Liquefaction is the phenomenon where saturated soils develop high pore-water pressures during seismic shaking and lose their strength characteristics. This phenomenon generally occurs in areas of high seismicity, where groundwater is shallow and loose granular soils or relatively low- to non-plastic fine-grained soils are present.

Based on their plasticity characteristics, the shallow high-plasticity soils are considered non-liquefiable. Based on their very stiff/dense nature, the underlying residual soil is considered non-liquefiable within the depths explored. In addition, relatively shallow, non-liquefiable basaltic andesite bedrock underlies the site. These findings are consistent with liquefaction hazard mapping for the site described above, which indicates soils at the site are non-liquefiable.

SLOPE STABILITY

Published geologic maps referenced in the attached October 8, 2012, engineering geology report and in the **Engineering Geology Update** section referenced above indicate that shallow surficial landsliding and debris flows are the primary types of slope failure in Newell Creek Canyon. In addition, recent hazard mapping indicates a moderate to high risk of deep-seated failures on the eastern portion of the site. It is our opinion that the previously discussed deep-seated failure of the mapped landslide was due to significant undercutting of lower-strength materials that underly the basalt by the ancestral Newell Creek. The resultant landslide debris covered the lower strength materials, forcing Newell Creek further to the east. In our opinion, the landslide debris and current location of Newell Creek provide a level of protection against erosion of the lower

strength materials, and a reduced risk of deep seated failures for the life of the current development.

Mechanics of Stability

Slope stability analyses take into consideration material strength, presence and orientation of weak layers, water (piezometric) pressures, surcharge loads, and the slope geometry. Mathematical computations are performed using computer-assisted simulations to calculate a Factor of Safety (FS). Minor changes to slope geometry, surface water flow and/or groundwater levels could result in slope instability. Reasonable FS values are dependent upon the confidence in the parameters utilized in the analyses performed, among other factors related to the project itself.

Geometric Analysis Results

Slope stability analyses were performed for the cross-section geometries based on the provided topographic map and publicly available topographic information. Parameters for the analyses were derived from our exploration program, experience, and laboratory tests. Stability analyses were conducted using the computer program Slope/W Version 7.16 developed by Geo-Slope International.

Unstable or Potentially Unstable Slopes

Based on the results of our field investigation, laboratory testing program, and geotechnical analysis, development of the site is considered feasible from a geotechnical viewpoint provided the conclusions and considerations provided herein are incorporated into the design and construction of the project. A horizontal acceleration of 0.225 (1/2 of the PGA_M) was entered for the seismic stability calculations.

The stability of the slopes at the cross-section locations shown on **Figure 3 –Exploration Plan East** were analyzed based on the provided topography, proposed grading, soil properties derived from our geotechnical exploration, laboratory test results and our experience with similar soil conditions. Soil and bedrock properties used in the analyses are shown below:

Material	Moist Unit Weight (pcf)	Drained Cohesion (psf)	Drained Friction Angle (degrees)
Existing Fill	120	0	27
Proposed Fill	125	0	32
Probable Slide Material	120	100	5
Residual Soil	125	250	30
Fresh Bedrock	150	500	45

Based on the analyses, the calculated FS for the critical surface identified in each section is shown below. It's important to note that these results incorporate the planned grading at this time. However, these analyses do not include any risk mitigation elements recommended later in this section.

Cross-Section	Minimum Calculated Factor-of-Safety for Slopes With Proposed Grading (no mitigation)	
	Static	Seismic
A-A'	1.65	1.06
B-B'	1.36	0.81
C-C'	1.91	1.17

The typically accepted minimum FS for static long-term slope stability supporting improvements is 1.5, and 1.15 for seismic slope stability. As shown in the table above, the proposed fill placement at the top of the slope will result in a factor of safety below the accepted minimums.

Slope Hazard Mitigation Recommendations

We evaluated multiple slope stability mitigation options including the use us deep foundations to support the proposed parking areas, the use of lightweight fill materials, and incorporating geogrid into the new structural fill areas. Based on our analyses, we recommend the proposed retaining wall incorporate a row of soldier piles to reinforce the top of the slope. The soldier piles should consist of a row of drilled shaft cast-in-place concrete piers. In addition, we recommend buildings setback a minimum of 35 feet from the top of the headscarp at the east end of the site. This line is shown on the attached **Figure 9 - Reconnaissance Map** and **Figure 3 - Exploration Plan East**. These piles should be embedded a minimum of 5 feet into the bedrock materials. Additional discussion of these recommendations is provided in **Geotechnical Overview** section. Details of the pile recommendations are provided in the **Soldier Pile Walls** section.

Incorporating these recommendations into the slope stability analyses results in the following calculated FS for the critical surfaces:

Cross-Section	Minimum Calculated Factor-of-Safety for Slopes Mitigated with Soldier Piles	
	Static	Seismic
A-A'	2.48	1.61
B-B'	2.87	1.56
C-C'	2.80	1.75

While these factors of safety appear significantly higher than the goal of design of 1.5 for static and 1.15 for seismic, these are the minimums provided the piles are embedded into the bedrock. Our analyses for piles not embedded into the bedrock did not achieve adequate factors of safety. As indicated in the preceding table, installation of soldier piles will provide sufficient increase in

the factors of safety. The slope stability results for each cross section representing the proposed grading incorporating soldier piles are included as **Figures 13 through 18** in the **Figures** section of this report.

GEOTECHNICAL OVERVIEW

Based on the results of our slope stability and engineering analyses, it is our opinion that the proposed development is feasible from the geotechnical engineering standpoint. The primary geotechnical considerations for development of the site are:

- **Existing Landslide Hazard:** As indicated above, we recommend the retaining wall at the east end of the site incorporate a row of soldier piles to aid in slope stability. The soldier piles should consist of drilled shaft cast-in-place concrete piers that are designed to provide lateral support for new fill and existing native soils (above the bedrock) west of the proposed retaining wall. Soldier pile recommendations are provided in the **Soldier Pile Walls** section. In addition, we recommend a 35-foot building setback from the top of the descending slope at the east end of the site (See **Figure 3 - Exploration Plan East**). The recommended setback is for habitable structures, so minor encroachments of parking and grading can be considered an acceptable use provided the following considerations are incorporated into final grading plans in order to minimize impact to slope stability:
  - Drainage should be controlled so that no water is discharged onto or over the descending slope.
  - Additional area loading of the top of the slope should be avoided (i.e. no additional fill that would increase weight at the top of the slope beyond that included in our slope stability model as shown on the proposed grading plan and cross sections).

- **Existing Fill Pad:** Up to about 7 feet of undocumented fill soils underlie the proposed parking and drive lane area at the east end of the site. “Undocumented” fill is fill that lacks documentation regarding its subgrade conditions or evaluation of compaction while it was placed. Due to the potential of long-term settlement of such fill, we recommend the fill be removed and replaced with properly placed and compacted structural fill as described in the **Earthwork** section. The approximate area of the fill (based on topography) is shown on **Figure 8 - Topographic Map**.

- **Previous Tank Excavations:** Several underground storage tanks related to a former gas station were removed from within the southwest corner of the site in the parking area southwest of southern building pad fronting on Molalla Avenue. The approximate location of the former gas station is shown on the **Figure 8 - Topographic Map**. We are not aware of density test or observation reports regarding the placement of backfill within the excavations remaining after removal of the tanks. Therefore, we recommend the fill be treated as “undocumented,” and that it be removed and replaced with properly placed and compacted

structural fill. The suitability of existing fill for reuse as structural fill can be evaluated during construction. As an alternative, additional test pits could be advanced into the existing fill to determine if it can be reused as structural fill.

- **Moisture Sensitivity:** The near surface, silt soils could become unstable with typical earthwork and construction traffic, especially after precipitation events. The effective drainage should be completed early in the construction sequence and maintained after construction to avoid potential issues. If possible, the grading should be performed during the warmer and drier times of the year. If grading is performed during the winter months, an increased risk for possible undercutting and replacement of unstable subgrade will persist. Additional site preparation recommendations, including subgrade improvement and fill placement, are provided in the **Earthwork** section.

The **General Comments** section provides an understanding of the report limitations.

EARTHWORK

Earthwork is anticipated to include demolition, clearing and grubbing, excavations, and fill placement. The following sections provide recommendations for use in the preparation of specifications for the work. Recommendations include critical quality criteria, as necessary, to render the site in the state considered in our geotechnical engineering evaluation for foundations, floor slabs, and pavements.

Site Preparation

Prior to placing new fill, existing vegetation and root mat should be removed. Complete stripping of the topsoil should be performed in the proposed building and parking/driveway areas. Existing pavements, foundations, subsurface structures, and utilities remaining from previous development should be removed in their entirety. Existing fill soils should be removed and replaced with controlled structural fill.

The subgrade should be proof rolled with an adequately loaded vehicle such as a fully-loaded tandem-axle dump truck. The proof rolling should be performed under the direction of the Geotechnical Engineer. Areas excessively deflecting under the proof roll should be delineated and subsequently addressed by the Geotechnical Engineer. Such areas should either be removed or modified by stabilizing with cement. Excessively wet or dry material should either be removed or moisture conditioned and recompacted.

Terracon completed an Environmental Site Assessment (ESA) report for the project under separate cover. The ESA indicates contaminated soils within portions of the former wrecking yard at the east end of the site near the top of the descending slope. Any contaminated soils removed

near the top of the descending slope during remediation practices should be replaced with properly controlled, low-permeability structural fill soils. A former fueling station was also identified on the western portion of the site. We understand that the fuel tank was previously removed and the resulting excavation was loosely backfilled with excavated soils. The contractor should be aware that earthwork activities associated with the proposed development may encounter contaminated native and/or undocumented fill soils within these areas. The ESA reports completed for the site should be thoroughly reviewed prior to the start of earthwork activities.

Existing Fill

As noted in **Geotechnical Characterization**, many of the explorations encountered existing fill to depths of up to about 7 feet. The consistency/density of the fill is highly variable. Therefore, we recommend the fill be completely removed and replaced with properly placed and compacted structural fill in proposed building and pavement areas. Removal of undocumented fill soils should extend a minimum of 10 feet beyond building and pavement areas. Once materials have been removed, the entire area should be proof rolled with heavy, rubber tire construction equipment, to aid in delineating areas of soft or otherwise unsuitable soil. Areas of soft or otherwise unsuitable material should be undercut and replaced with either new structural fill or suitable, existing on site materials. Once unsuitable materials have been remediated, and the subgrade has passed the proof roll test, the existing and undocumented fill that was removed can be evaluated for reuse as structural fill.

Subgrade Stabilization

For this site, improvement of working surfaces subgrade with Portland cement could be considered. Cement amendment of soils should be performed by a pre-qualified contractor having experience with successfully stabilizing subgrades in the project area on similar sized projects with similar soil conditions.

For planning purposes, we estimate that pavement subgrades would need to be amended with an approximate 7 to 8 percent cement by dry weight in order to provide a stabilized subgrade for both wet weather and pavement support. We recommend a cement-amendment design be prepared during the full design phase to refine this estimate for construction specifications.

Fill Material Types

Fill required to achieve design grades should be classified as select fill, structural fill and general fill. Select fill is material used below turbine foundations, whereas structural fill is material used above or within 10 feet of foundation structures and within roadways or constructed slopes. General fill is material used to achieve grade outside of these structural areas. Fill materials used should meet the following material property requirements:

Soil Type[1]	Specification	Acceptable Parameters (for Structural Fill)
Common Fill	2021 ODOT Standard Specifications for Construction (ODOT SSC) Section 00330.13 Selected General Backfill[2]	All locations across the site, except beneath footing pads Dry weather only
Granular Common Fill	ODOT SSC Section 0030.13 Selected General Backfill[3]	All locations across the site. Dry weather only
Select Fill	ODOT SSC Section 00330.14 Selected Granular Backfill[4]	All locations across the site. Wet and Dry weather acceptable.
Crushed Aggregate Base (CAB)	ODOT SSC Section 02630.10 Dense Graded Aggregate (2”-0 to 1”-0) with the modification that less than 8% pass the No. 200 sieve as determined by ASTM D 422.	Finished base course materials for roadways and footing subgrades.
Lean Concrete (Mud-Mat)	ODOT SSC 00442 with the exception that minimum 28-day strength shall be 500 psi. Higher strength minimums may be specified by the Structural Engineer as needed.	All locations underneath mat foundations and spread foundations.

1. Controlled, compacted fill should consist of approved materials that are free (free = less than 3% by weight) of organic matter and debris (i.e. wood sticks greater than ½ inch in diameter). Frozen material should not be used, and fill should not be placed on a frozen subgrade. A sample of each material type should be submitted to the geotechnical engineer for evaluation.
2. Material should have a liquid limit less than 40 and plasticity index of less than 10.
3. Material should have less than 50% passing the No. 200 sieve and be non-plastic in nature.
4. Material should have a maximum aggregate size of 2 inches and no more than 8% passing the No. 200 sieve by weight determined by ASTM D 422.
5. Decomposed bedrock and basalt bedrock can be used as fill/backfill provided it is properly processed to a “soil-like consistency” to meet the USCS Classifications presented above with no pieces larger than 2 inches.
6. The contractor shall select the appropriate material for use based on the current and forecasted weather conditions at the time of construction.

Fill Compaction Requirements

Recommended compaction and moisture content criteria for structural fill materials are as follows:

Material Type and Location	Minimum Compaction Requirement (%)	Range of Moisture Contents for Compaction	
		Minimum	Maximum
Common Fill	**Per the Modified Proctor Test (ASTM D 1557)**		
All locations where used	95	-2%	+2%
Select Fill & CAB	**Per the Modified Proctor Test (ASTM D 1557)**		

Material Type and Location	Minimum Compaction Requirement (%)	Range of Moisture Contents for Compaction	
		Minimum	Maximum
All locations where used (e.g. beneath foundations, slabs, pavements)	95	-4%	+2%

Utility Trench Backfill

For low permeability subgrades, utility trenches are a common source of water infiltration and migration. Utility trenches penetrating beneath the buildings should be effectively sealed to restrict water intrusion and flow through the trenches, which could migrate below the buildings. The trench should provide an effective trench plug that extends at least 5 feet from the face of building exteriors. The plug material should consist of cementitious flowable fill or low permeability clay. The trench plug material should be placed to surround the utility line. If used, the clay trench plug material should be placed and compacted to comply with the water content and compaction recommendations for structural fill stated previously in this report.

Grading and Drainage

All grades must provide effective drainage away from the buildings during and after construction and should be maintained throughout the life of the structure. Water retained next to the buildings can result in soil movements greater than those discussed in this report. Greater movements can result in unacceptable differential floor slab and/or foundation movements, cracked slabs and walls, and roof leaks. The roofs should have gutters/drains with downspouts that discharge onto splash blocks at a distance of at least 10 feet from the buildings.

Exposed ground should be sloped and maintained at a minimum 5% away from the buildings for at least 10 feet beyond the perimeter of the buildings. Locally, flatter grades may be necessary to transition ADA access requirements for flatwork. After building construction and landscaping have been completed, final grades should be verified to document effective drainage has been achieved. Grades around the structure should also be periodically inspected and adjusted, as necessary, as part of the structure's maintenance program. Where paving or flatwork abuts the structure, a maintenance program should be established to effectively seal and maintain joints and prevent surface water infiltration.

Earthwork Construction Considerations

Shallow excavations for the proposed structures are anticipated to be accomplished with conventional construction equipment. Upon completion of filling and grading, care should be taken to maintain the subgrade water content prior to construction of floor slabs. Construction traffic over the completed subgrades should be avoided. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. Water collecting over or

adjacent to construction areas should be removed. If the subgrade freezes, desiccates, saturates, or is disturbed, the affected material should be removed, or the materials should be scarified, moisture conditioned, and recompacted prior to floor slab construction.

As a minimum, excavations should be performed in accordance with OSHA 29 CFR, Part 1926, Subpart P, “Excavations” and its appendices, and in accordance with any applicable local, and/or state regulations.

Construction site safety is the sole responsibility of the contractor who controls the means, methods, and sequencing of construction operations. Under no circumstances shall the information provided herein be interpreted to mean Terracon is assuming responsibility for construction site safety, or the contractor's activities; such responsibility shall neither be implied nor inferred.

Construction Observation and Testing

The earthwork efforts should be monitored under the direction of the Geotechnical Engineer. Monitoring should include documentation of adequate removal of vegetation and topsoil, proof rolling, and mitigation of areas delineated by the proof roll to require mitigation.

Each lift of compacted fill should be tested, evaluated, and reworked, as necessary, until approved by the Geotechnical Engineer prior to placement of additional lifts. Each lift of fill should be tested for density and water content at a frequency of at least one test for every 2,500 square feet of compacted fill in the building areas and 5,000 square feet in pavement areas. One density and water content test should be performed for every 50 linear feet of compacted utility trench backfill. In areas of foundation excavations, the bearing subgrade should be evaluated under the direction of the Geotechnical Engineer. If unanticipated conditions are encountered, the Geotechnical Engineer should prescribe mitigation options.

In addition to the documentation of the essential parameters necessary for construction, the continuation of the Geotechnical Engineer into the construction phase of the project provides the continuity to maintain the Geotechnical Engineer’s evaluation of subsurface conditions, including assessing variations and associated design changes.

SHALLOW FOUNDATIONS

If the site has been prepared in accordance with the requirements noted in the **Earthwork** section, the following design parameters are applicable for shallow foundations.

Design Parameters – Compressive Loads

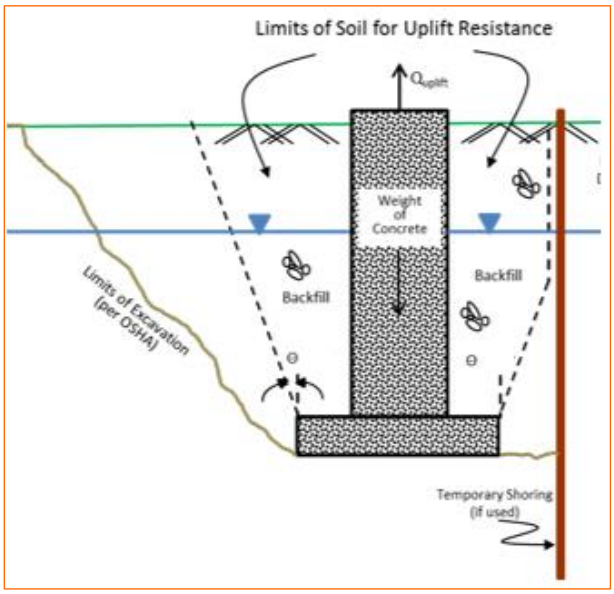
Item	Description
Maximum Net Allowable Bearing Pressure[1,2]	2,000 psf
Required Bearing Stratum[3]	Structural fill or undisturbed native residual soil
Minimum Foundation Dimensions	Columns: 24 inches Continuous: 18 inches
Ultimate Passive Resistance[4] **(equivalent fluid pressures)**	150 pcf (cohesive backfill) 360 pcf (granular backfill)
Ultimate Coefficient of Sliding Friction[5]	0.30 (native silt soils) 0.50 (granular structural fill material)
Minimum Embedment below Finished Grade[6]	Exterior footings in unheated areas: 12 inches Exterior footings in heated areas: 12 inches Interior footings in heated areas: 12 inches
Estimated Total Settlement from Structural Loads[2]	Less than about 1 inch
Estimated Differential Settlement[2,7]	About ⅔ of total settlement

1. The maximum net allowable bearing pressure is the pressure in excess of the minimum surrounding overburden pressure at the footing base elevation. An appropriate factor of safety has been applied. Values assume that exterior grades are no steeper than 20% within 10 feet of structure.
2. Values provided are for maximum loads noted in **Project Description**.
3. Unsuitable or soft soils should be overexcavated and replaced per the recommendations presented in the **Earthwork**.
4. Use of passive earth pressures require the sides of the excavation for the spread footing foundation to be nearly vertical and the concrete placed neat against these vertical faces or that the footing forms be removed and compacted structural fill be placed against the vertical footing face.
5. Can be used to compute sliding resistance where foundations are placed on suitable soil/materials. Should be neglected for foundations subject to net uplift conditions.
6. Embedment necessary to minimize the effects of frost and/or seasonal water content variations. For sloping ground, maintain depth below the lowest adjacent exterior grade within 5 horizontal feet of the structure.
7. Differential settlements are as measured over a span of 50 feet.

Design Parameters - Uplift Loads

Uplift resistance of spread footings can be developed from the effective weight of the footing and the overlying soils. As illustrated on the subsequent figure, the effective weight of the soil prism defined by diagonal planes extending up from the top of the perimeter of the foundation to the ground surface at an angle, θ, of 20 degrees from the vertical can be included in uplift resistance. The maximum allowable uplift capacity should be taken as a sum of the effective weight of soil plus the dead weight of the foundation, divided by an appropriate factor of safety. A maximum

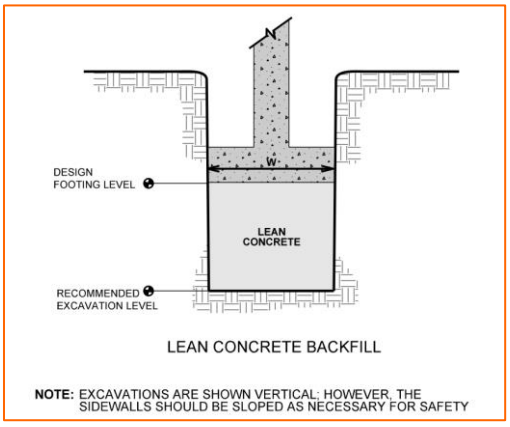
total unit weight of 100 pcf should be used for the backfill. This unit weight should be reduced to 40 pcf for portions of the backfill or natural soils below the groundwater elevation.



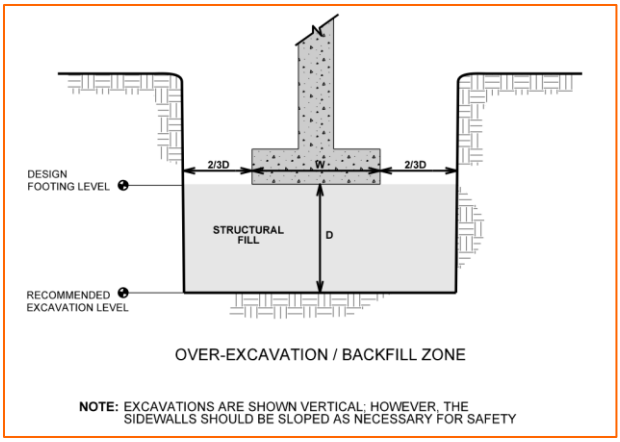
Foundation Construction Considerations

As noted in **Earthwork**, the footing excavations should be evaluated under the direction of the Geotechnical Engineer. The base of all foundation excavations should be free of water and loose soil, prior to placing concrete. Concrete should be placed soon after excavating to reduce bearing soil disturbance. Care should be taken to prevent wetting or drying of the bearing materials during construction. Excessively wet or dry material or any loose/disturbed material in the bottom of the footing excavations should be removed/reconditioned before foundation concrete is placed.

If unsuitable bearing soils are encountered at the base of the planned footing excavation, the excavation should be extended deeper to suitable soils, and the footings could bear directly on these soils at the lower level or on lean concrete backfill placed in the excavations. This is illustrated on the sketch below.



Overexcavation for structural fill placement below footings should be conducted as shown below. The overexcavation should be backfilled up to the footing base elevation, with structural fill placed, as recommended in the **Earthwork** section.



FLOOR SLABS

Depending upon the finished floor elevation, unsuitable, undocumented fills may be encountered at the floor slab subgrade levels. These soils should be replaced with structural fill so the floor slab is supported on suitable natural soils or newly placed structural fill.

Design parameters for floor slabs assume the requirements for **Earthwork** have been followed. Specific attention should be given to positive drainage away from the structure and positive drainage of the aggregate base beneath the floor slab.

Floor Slab Design Parameters

Item	Description
Floor Slab Support [1]	Minimum 6 inches of free-draining (less than 6% passing the U.S. No. 200 sieve) crushed aggregate compacted to at least 95% of ASTM D 698 [2, 3]
Estimated Modulus of Subgrade Reaction [2]	100 pounds per square inch per inch (psi/in) for point loads

1. Floor slabs should be structurally independent of building footings or walls to reduce the possibility of floor slab cracking caused by differential movements between the slab and foundation.
2. Modulus of subgrade reaction is an estimated value based upon our experience with the subgrade condition, the requirements noted in **Earthwork**, and the floor slab support as noted in this table. It is provided for point loads. For large area loads the modulus of subgrade reaction would be lower.
3. Free-draining granular material should have less than 5% fines (material passing the No. 200 sieve). Other design considerations such as cold temperatures and condensation development could warrant more extensive design provisions.

The use of a vapor retarder should be considered beneath concrete slabs on grade covered with wood, tile, carpet, or other moisture sensitive or impervious coverings, or when the slab will support equipment sensitive to moisture. When conditions warrant the use of a vapor retarder, the slab designer should refer to ACI 302 and/or ACI 360 for procedures and cautions regarding the use and placement of a vapor retarder.

Saw-cut control joints should be placed in the slab to help control the location and extent of cracking. For additional recommendations refer to the ACI Design Manual. Joints or cracks should be sealed with a water-proof, non-extruding compressible compound specifically recommended for heavy duty concrete pavement and wet environments.

Where floor slabs are tied to perimeter walls or turn-down slabs to meet structural or other construction objectives, our experience indicates differential movement between the walls and slabs will likely be observed in adjacent slab expansion joints or floor slab cracks beyond the length of the structural dowels. The Structural Engineer should account for potential differential settlement through use of sufficient control joints, appropriate reinforcing or other means.

Mitigation measures, as noted in **Existing Fill** within the **Earthwork** section, are critical to the performance of floor slabs. In addition to the mitigation measures, the floor slab can be stiffened by adding steel reinforcement, grade beams and/or post-tensioned elements.

Floor Slab Construction Considerations

Finished subgrade, within and for at least 10 feet beyond the floor slab, should be protected from traffic, rutting, or other disturbance and maintained in a relatively moist condition until floor slabs are constructed. If the subgrade should become damaged or desiccated prior to construction of floor

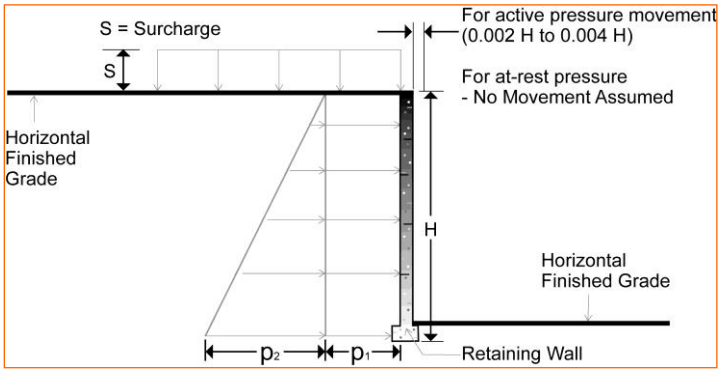
slabs, the affected material should be removed and structural fill should be added to replace the resulting excavation. Final conditioning of the finished subgrade should be performed immediately prior to placement of the floor slab support course.

The Geotechnical Engineer should approve the condition of the floor slab subgrades immediately prior to placement of the floor slab support course, reinforcing steel, and concrete. Attention should be paid to high traffic areas that were rutted and disturbed earlier, and to areas where backfilled trenches are located.

LATERAL EARTH PRESSURES

Design Parameters

Structures with unbalanced backfill levels on opposite sides should be designed for earth pressures at least equal to values indicated in the following table. Earth pressures will be influenced by structural design of the walls, conditions of wall restraint, methods of construction and/or compaction and the strength of the materials being restrained. Two wall restraint conditions are shown in the diagram below. Active earth pressure is commonly used for design of free-standing cantilever retaining walls and assumes wall movement. The “at-rest” condition assumes no wall movement and is commonly used for basement walls, loading dock walls, or other walls restrained at the top. The recommended design lateral earth pressures do not include a factor of safety and do not provide for possible hydrostatic pressure on the walls (unless stated).



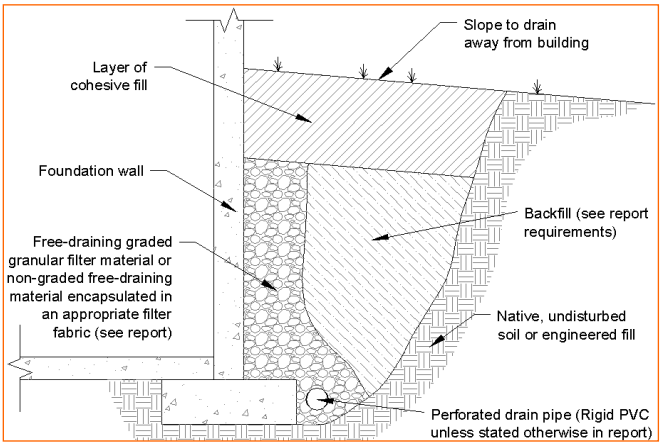
Lateral Earth Pressure Design Parameters				
Earth Pressure Condition [1]	Coefficient for Select Fill Backfill [2]	Surcharge Pressure [3, 4, 5] p_1 (psf)	Effective Fluid Pressures (psf) [2, 4, 5]	
			Unsaturated [6]	Submerged [6]
Active (Ka)	0.31	(0.27)S	(35)H	0.27
At-Rest (Ko)	0.47	(0.43)S	(55)H	0.43
Passive (Kp)	3.25	---	(480)H	3.69

1. For active earth pressure, wall must rotate about base, with top lateral movements 0.002 H to 0.004 H, where H is wall height. For passive earth pressure, wall must move horizontally to mobilize resistance.
2. Uniform, horizontal backfill, compacted to at least 95% of the ASTM D 1557 maximum dry density, rendering a maximum unit weight of 120 pcf.
3. Uniform surcharge, where S is surcharge pressure.
4. Loading from heavy compaction equipment is not included.
5. No safety factor is included in these values.
6. To achieve “Unsaturated” conditions, follow guidelines in Subsurface Drainage for Below-Grade Walls section below. “Submerged” conditions are recommended when drainage behind walls is not incorporated into the design.

Backfill placed against structures should consist of granular soils or low plasticity cohesive soils. For the granular values to be valid, the granular backfill must extend out and up from the base of the wall at an angle of at least 45 and 60 degrees from vertical for the active and passive cases, respectively.

Subsurface Drainage for Below-Grade Walls

A perforated rigid plastic drain line installed behind the base of walls and extends below adjacent grade is recommended to prevent hydrostatic loading on the walls. The invert of a drain line around a below-grade building area or exterior retaining wall should be placed near foundation bearing level. The drain line should be sloped to provide positive gravity drainage to daylight or to a sump pit and pump. The drain line should be surrounded by clean, free-draining granular material having less than 5% passing the No. 200 sieve, such as No. 57 aggregate. The free-draining aggregate should be encapsulated in a filter fabric. The granular fill should extend to within 2 feet of final grade, where it should be capped with compacted cohesive fill to reduce infiltration of surface water into the drain system.



As an alternative to free-draining granular fill, a pre-fabricated drainage structure may be used. A pre-fabricated drainage structure is a plastic drainage core or mesh which is covered with filter fabric to prevent soil intrusion, and is fastened to the wall prior to placing backfill.

SOLDIER PILE WALLS

Based on the slope stability analyses and the proposed development plan, we recommend that the retaining wall along the east end of the proposed fill pad be supported on deep foundations consisting of a row of cast in place concrete piles. Based on our analyses, the piles should be spaced no more than 8 feet apart. The piles should be embedded a minimum of 5 feet into the basalt bedrock encountered at the site, and should be designed to retain the proposed structural fill (under the parking and drive lanes), and underlying native residual soils to the surface of the bedrock. Based on our explorations, the surface of the bedrock ranges from about 20 to 33 feet below site grades along the wall alignment. This depth will likely have more variation during construction to the variable thickness of the fill present at the site.

Lateral Earth Pressures

Based on slope stability analyses attached to this report, we recommend the piles be designed to retain the soils from the proposed finished grade to the surface of the basalt bedrock. The parameters defined in the table below should be utilized in the design of the drilled shafts to determine required embedment depth and spacing, taking into consideration a minimum spacing between piles of 8 feet along the top of the slope and a minimum embedment of 5 feet into the bedrock. Additional embedment into the bedrock may be necessary to provide adequate resistance to overturning.

The design of lateral earth stabilization piers is conventionally accomplished using empirical relationships and apparent earth pressure distributions. These earth pressure distributions or envelopes do not represent the precise distribution of earth pressures but rather constitute

hypothetical pressures from loads can be calculated which would not likely be exceeded in the event of a landslide.

Design of these systems could be based on either “active” or “at-rest” lateral earth pressures, depending on the degree of deformation that can be tolerated. Piers which are free to deform on the order of 0.001 to 0.002 times the height of the exposed potential height is considered to be capable of mobilizing active earth pressures. This lateral deformation is likely to be accomplished by vertical settlement of up to roughly 0.002 times the height of the piers, which may extend back from the side of the slide face a distance equal to roughly the height of the exposed height. A greater amount of lateral deformation could allow greater vertical settlements. Since there are structural elements within the zone considered to be at risk during a potential slide, we believe it is appropriate to design utilizing at-rest earth pressures.

An assumed “at-rest” earth pressure condition theoretically assumes no movement of the soil behind the stabilization piers; however, some settlement should realistically be anticipated due to construction practices and/or the fact that it is not possible to construct a perfectly stiff system and the space between the piers are reliant on soil arching for support should be piers be exposed.

Material	Equivalent Fluid Weight		Strength Parameters (Drained)	
	At Rest (pcf)	Allowable Passive (pcf)	Drained Cohesion (psf)	Drained Friction Angle (degrees)
Existing Fill	120	320	0	27
Proposed Fill	125	407	0	32
Residual Soil	125	375	250	30
Fresh Bedrock	150	874	500	45

In the table above, the at-rest pressures act on the pile spacing above the bedrock and on the pier diameter below that depth. The passive pressures act on twice the pier diameter. We recommend a minimum pier embedment of at least 5 feet into competent basalt bedrock.

Construction Considerations

If soldier piles are installed prior to removal of the existing debris-laden undocumented fill, caving conditions should be expected in the fill materials. Therefore, drilled shaft excavations may require the use of temporary casing and drilling fluid to maintain integrity of the excavation walls and bottom. Groundwater was not encountered within the anticipated depth of drilling, but isolated perched zones may be encountered within the residual soil or at the top of the underlying bedrock, particularly following periods of heavy rainfall. Thick drilling fluid and/or casing may be required to offset the groundwater and caving conditions. Following completion of the excavation and prior

to installing reinforcement or concrete the bottom of the shaft must be cleaned of any soft or loose material.

Caving of the sidewalls and/or heaving of the shaft bottoms may occur during wet weather conditions. We recommend that the contractor be prepared to use casing and/or slurry installation methods in the event that wall sloughing, caving, or heave occurs. The contractor should also be equipped to clean out the bottom of the shafts if loose soil is observed or suspected.

If less than 3 inches of water is present in the bottom of the excavation, groundwater seepage into the excavation is at a rate of no more than 12 inches per hour and the shaft diameter is greater than or equal to 3 feet; concrete may be placed by free-fall. Under free-fall placement, deposit concrete through the center of the reinforcement cage by a method which prevents segregation of aggregates and splashing of concrete on the reinforcement cage. Place concrete so that the free-fall is vertical down the center of the shaft without hitting the sides, the steel reinforcing bars or steel cage bracing.

If the drilled shaft does not meet the above requirements, we recommend placing concrete from the bottom of the holes with a tremie pipe to form a continuous column and prevent aggregate separation. Concrete should be placed with a higher than average slump into the excavation through a tremie pipe extending to the bottom of the excavation. An uninterrupted supply and placement of concrete should be performed to produce a monolithic pier. Use clean, watertight tremie pipes large enough in diameter to allow the free flow of concrete. The tremie pipes should be placed within one to two feet above the bottom of the excavation prior to the commencement of concrete placement. Maintain a minimum 5 feet embedment of the tremie pipe in the concrete during concrete placement.

The bottom of the shaft must be observed or tested to verify that all loose material has been removed and dense granular soil is exposed. The contractor should review the conditions encountered and reported on the boring logs and in this report and provide appropriate equipment to excavate the shafts to the design depths at this site.

Reinforcing steel and concrete should be placed inside the temporary casing. The casing should be pulled as the concrete is placed to provide final contact between the soil and the concrete. A minimum head of 5 feet of concrete should be maintained above the lower edge of the casing as it is pulled to prevent intrusion of soil during extraction.

PAVEMENTS

General Pavement Comments

Pavement designs are provided for the traffic conditions and pavement life conditions as noted in **Project Description** and in the following sections of this report. A critical aspect of pavement performance is site preparation. Pavement designs noted in this section must be applied to the site which has been prepared as recommended in the **Earthwork** section.

Pavement Design Parameters

Design of Asphaltic Concrete (AC) pavements are based on the procedures outlined in the American Association of State Highway and Transportation Officials (AASHTO), 1993. Design of Portland Cement Concrete (PCC) pavements are based upon American Concrete Institute (ACI) 330; Guide for Design and Construction of Concrete Parking Lots.

A subgrade CBR of 9 (from attached laboratory testing) was used for the AC pavement designs, and a modulus of subgrade reaction (k) of 100 pci was used for the PCC pavement designs where subgrade stabilization consisting of CAB or cement treated soil is employed. The values were empirically derived based upon our experience with the fine-grained subgrade soils and our understanding of the quality of the subgrade as prescribed by the **Site Preparation** conditions as outlined in **Earthwork**. A modulus of rupture of 580 psi was used for pavement concrete.

Pavement Section Thicknesses with Subgrade Stabilization

As a minimum, we suggest the following pavement section be considered:

Asphaltic Concrete Design		
Layer	Thickness (inches)	
	Light Duty [1]	Heavy Duty [1]
AC [2]	3	4
Aggregate Base [3]	7	8

1. See **Project Description** for more specifics regarding Light Duty and Medium Duty traffic.
2. All materials should meet the Oregon Department of Transportation (ODOT) Standard Specifications for Construction (2018).
   - Asphaltic Surface - ODOT Type A Asphaltic Cement Concrete: Section 00744
   - Asphaltic Base - ODOT Type B Asphaltic Cement Concrete, Class I: Section 00745
3. A minimum 1.5-inch surface course should be used on ACC pavements.

Portland Cement Concrete Design		
Layer	Thickness (inches)	
	Light Duty [1]	Heavy Duty [3]
PCC [2]	5	6
Aggregate Base [3]	7	8

1. See **Project Description** for more specifics regarding traffic classifications.
2. All materials should meet the current State Department of Transportation ODOT) Standard Specifications for Highway and Construction (2018).
   - Concrete Pavement - ODOT Portland Cement Concrete Type C: Section 00756
3. In areas of anticipated heavy traffic, fire trucks, delivery trucks, or concentrated loads (e.g. dumpster pads), and areas with repeated turning or maneuvering of heavy vehicles.

We understand that typical fire departments require that the proposed pavement sections at the site will support a fire emergency truck once the apartment complex is constructed. Typically, we estimate total fire-truck load of 80,000 pounds for a three axle (single tire) truck. Based on these assumptions and the proposed loading conditions, we computed the ultimate bearing capacity of the pavement sections relative to a 20 percent increase of the factored load of the fire truck. From a bearing failure standpoint, the Truck Loading Section pavements are estimated to be adequate for support of the fire truck vehicle (with a factor of safety of 2.5). Pavement areas may experience some localized cracking from these large fire truck vehicle loads but are not expected to experience bearing failure of the pavement section. Based on this analysis, it is our opinion that pavement will provide adequate support for the temporary use of an emergency fire truck at the site.

Pavement Drainage

Pavements should be sloped to provide rapid drainage of surface water. Water allowed to pond on or adjacent to the pavements could saturate the subgrade and contribute to premature pavement deterioration. In addition, the pavement subgrade should be graded to provide positive drainage within the granular base section. The subgrade and the pavement surface should have a minimum ¼ inch per foot slope to promote drainage. Appropriate sub-drainage or connection to a suitable daylight outlet should be provided to remove water from the base layer.

Pavement Maintenance

The pavement sections represent minimum recommended thicknesses and, as such, periodic maintenance should be anticipated. Therefore, preventive maintenance should be planned and provided for through an on-going pavement management program. Maintenance activities are intended to slow the rate of pavement deterioration and to preserve the pavement investment. Maintenance consists of both localized maintenance (e.g., crack and joint sealing and patching) and global maintenance (e.g., surface sealing). Preventive maintenance is usually the priority when implementing a pavement maintenance program. Additional engineering observation is

recommended to determine the type and extent of a cost-effective program. Even with periodic maintenance, some movements and related cracking may still occur and repairs may be required. Pavement performance is affected by its surroundings. In addition to providing preventive maintenance, the civil engineer should consider the following recommendations in the design and layout of pavements:

- Final grade adjacent to paved areas should slope down from the edges at a minimum 2%.
- Subgrade and pavement surfaces should have a minimum 2% slope to promote proper surface drainage.
- Install below pavement drainage systems surrounding areas anticipated for frequent wetting.
- Install joint sealant and seal cracks immediately.
- Seal all landscaped areas in or adjacent to pavements to reduce moisture migration to subgrade soils.
- Place compacted, low permeability backfill against the exterior side of curb and gutter.
- Place curb, gutter and/or sidewalk directly on clay subgrade soils rather than on unbound granular base course materials.

GENERAL COMMENTS

Our analysis and opinions are based upon our understanding of the project, the geotechnical conditions in the area, and the data obtained from our site exploration. Natural variations will occur between exploration point locations or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. Terracon should be retained as the Geotechnical Engineer, where noted in this report, to provide observation and testing services during pertinent construction phases. If variations appear, we can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

Our Scope of Services does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

Our services and any correspondence or collaboration through this system are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices with no third-party beneficiaries intended. Any third-party access to services or correspondence is solely for information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client, and is not intended for

third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly impact excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing. Site safety, and cost estimating including, excavation support, and dewatering requirements/design are the responsibility of others. If changes in the nature, design, or location of the project are planned, our conclusions and recommendations shall not be considered valid unless we review the changes and either verify or modify our conclusions in writing.

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FIGURE 1 - SITE LOCATION

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September 12, 2022 ■ Terracon Project No. 82215043

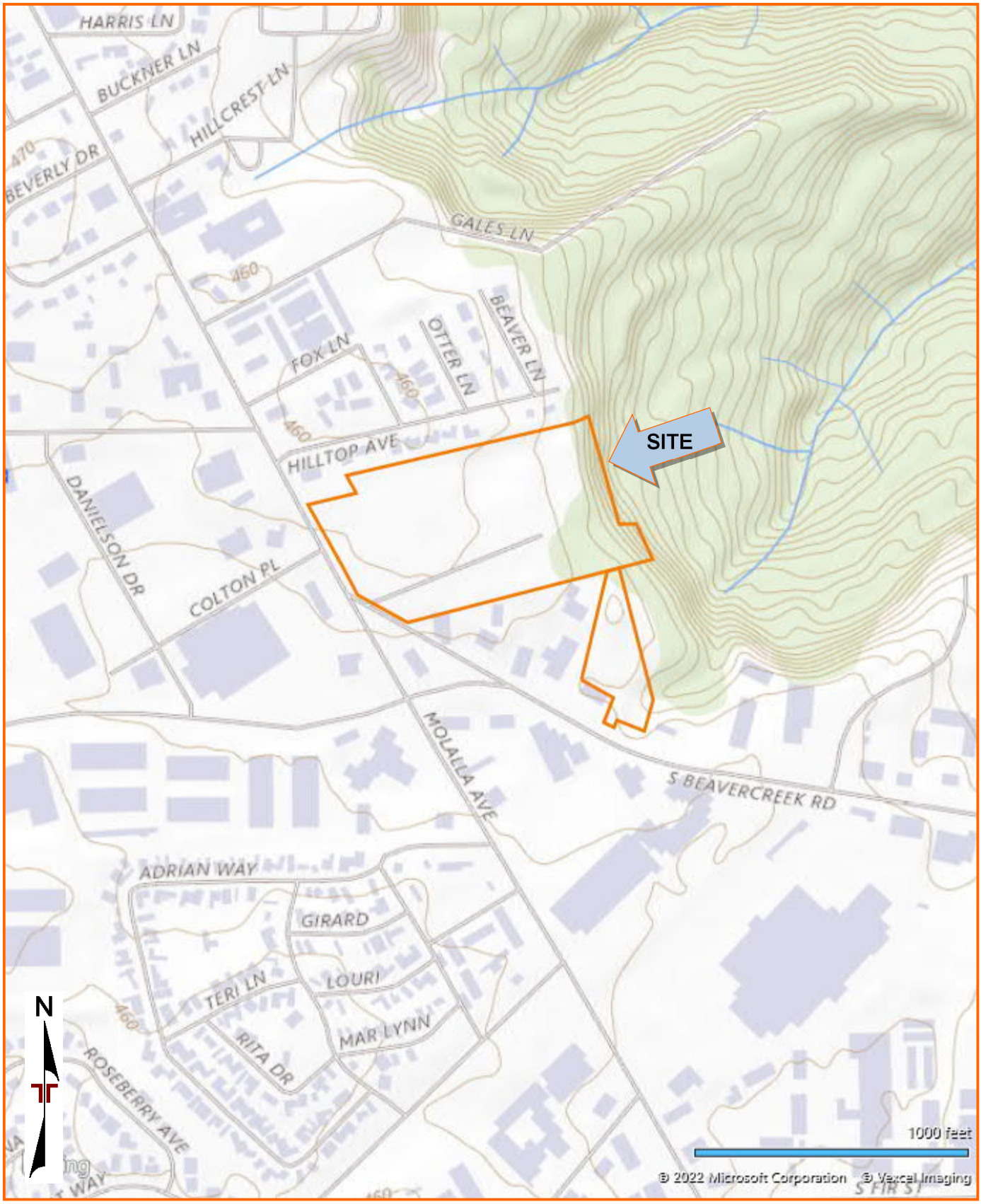

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

TOPOGRAPHIC MAP IMAGE COURTESY OF THE U.S. GEOLOGICAL SURVEY QUADRANGLES INCLUDE: OREGON CITY, OR (1/1/1985).

FIGURE 2 - EXPLORATION PLAN WEST

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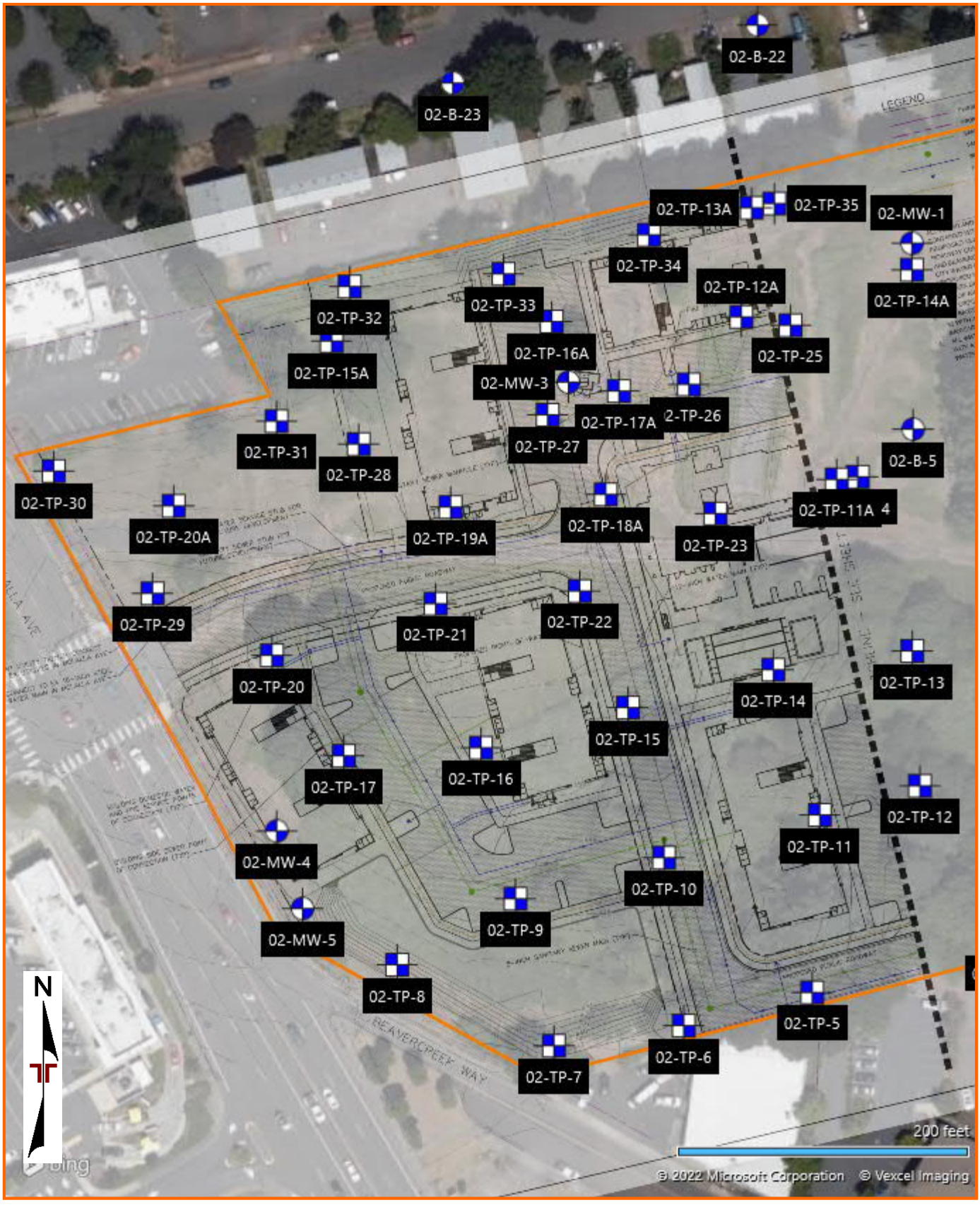

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FIGURE 3 - EXPLORATION PLAN EAST

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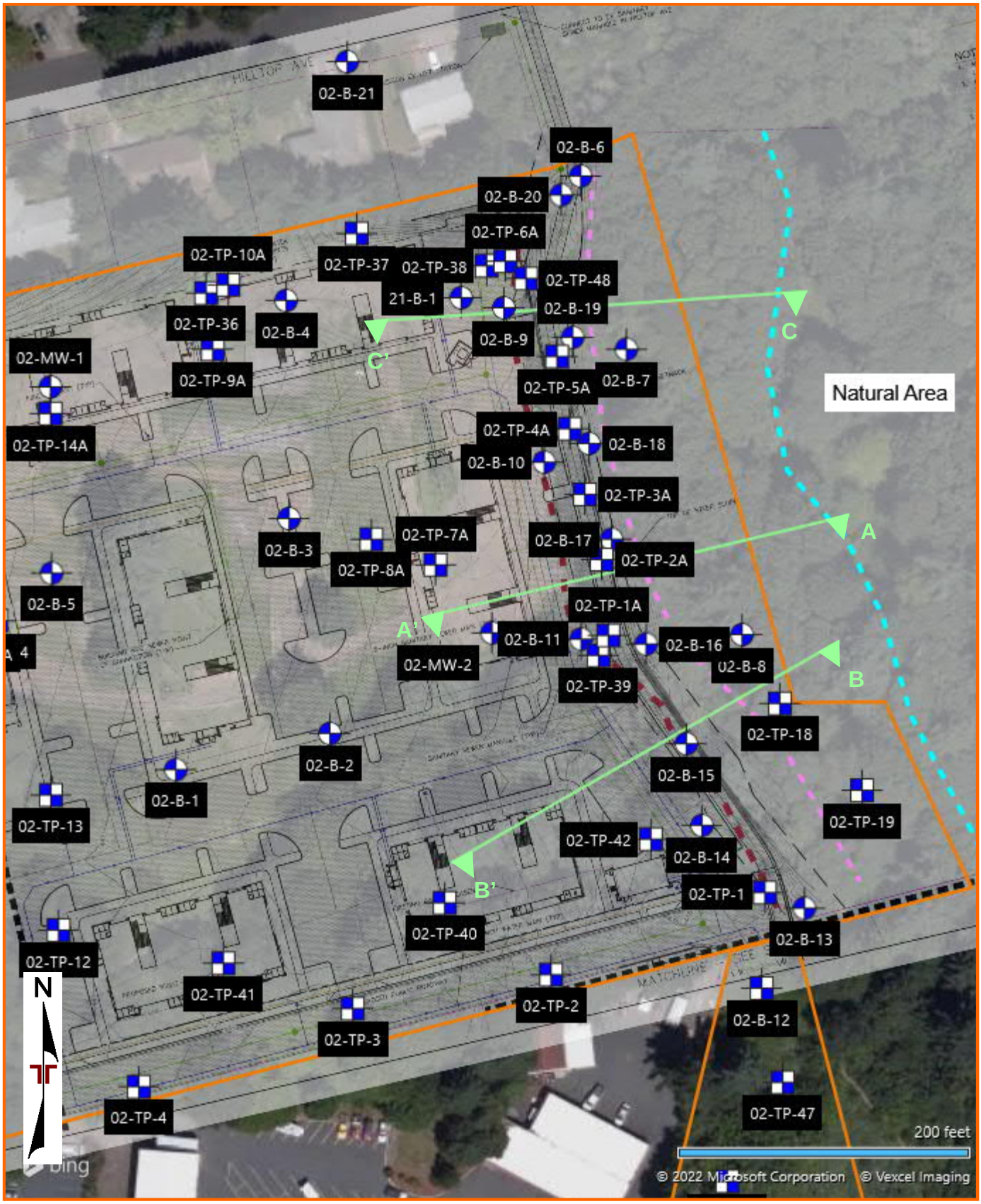

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FIGURE 4 – EXPLORATION PLAN SOUTH

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September 12, 2022 ■ Terracon Project No. 82215043

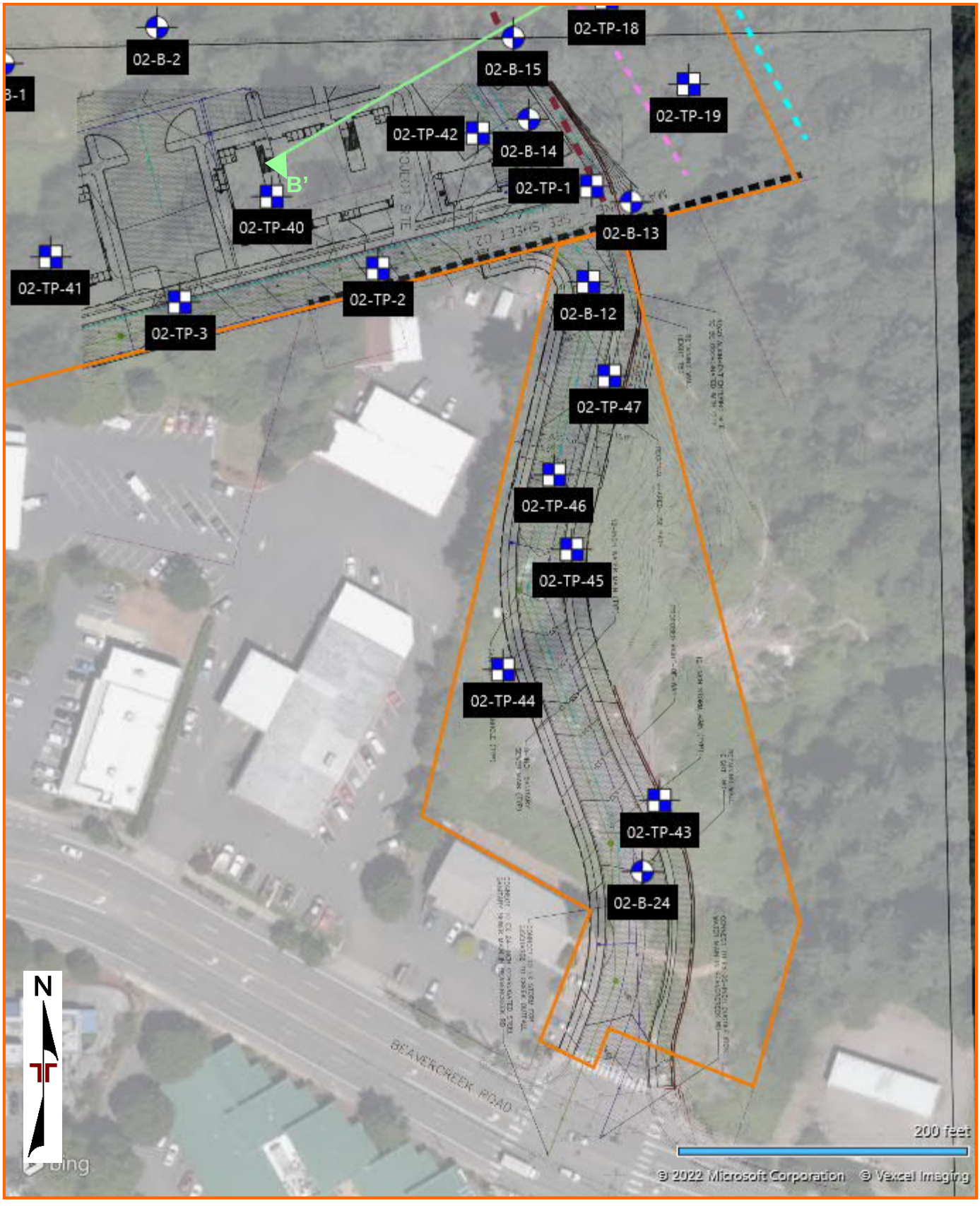

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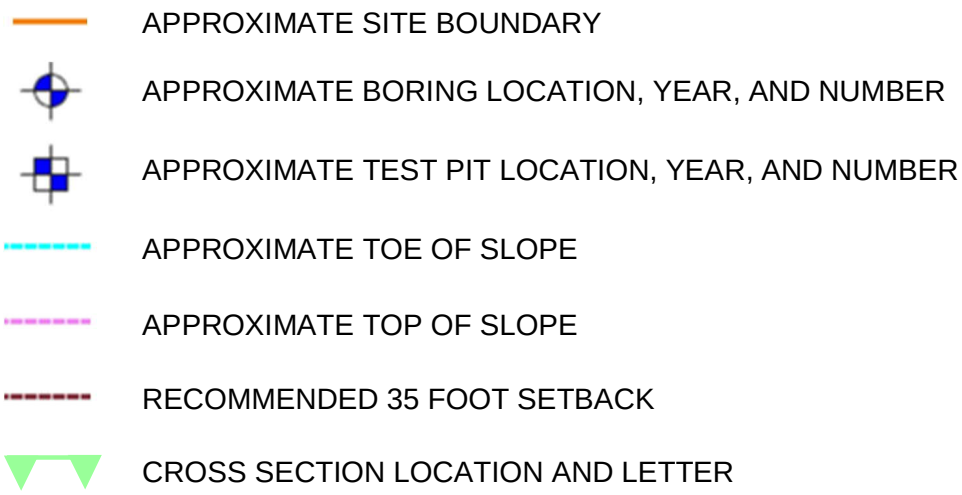
FIGURE 5 - EXPLORATION PLAN LEGEND
Oregon City Development ■ Oregon City, OR
September 12, 2022 ■ Terracon Project No. 82215043

LEGEND



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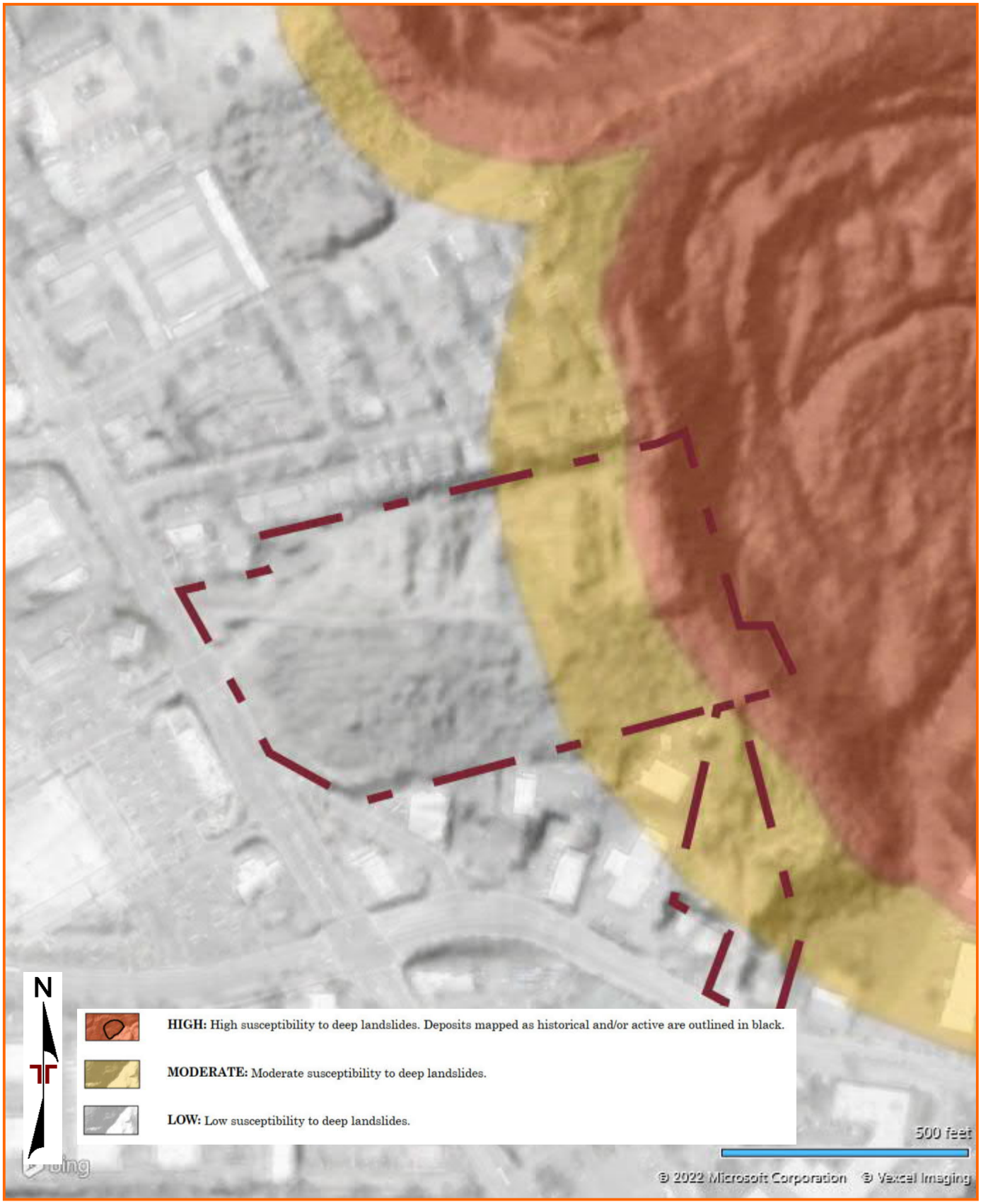


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Excerpted from 2013 DOGAMI Open-File Report O-13-08, Landslide hazard and risk study of northwestern Clackamas County, Oregon



Figur
DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Excerpted from 2013 DOGAMI Open-File Report O-13-08, Landslide hazard and risk study of northwestern Clackamas County, Oregon

FIGURE 8 - TOPOGRAPHIC MAP

Oregon City Development ■ Oregon City, OR
September 12, 2022 ■ Terracon Project No. 82215043

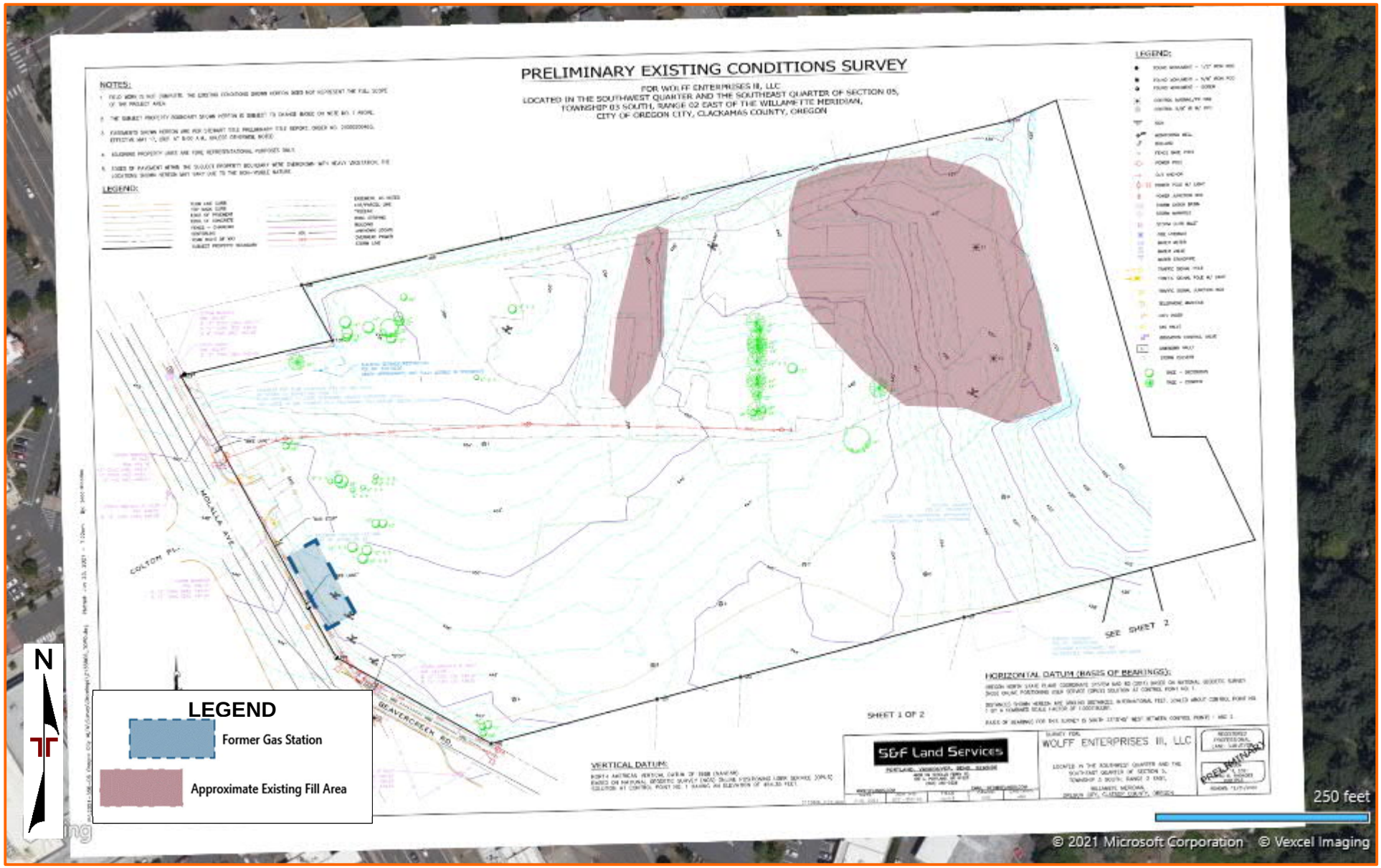


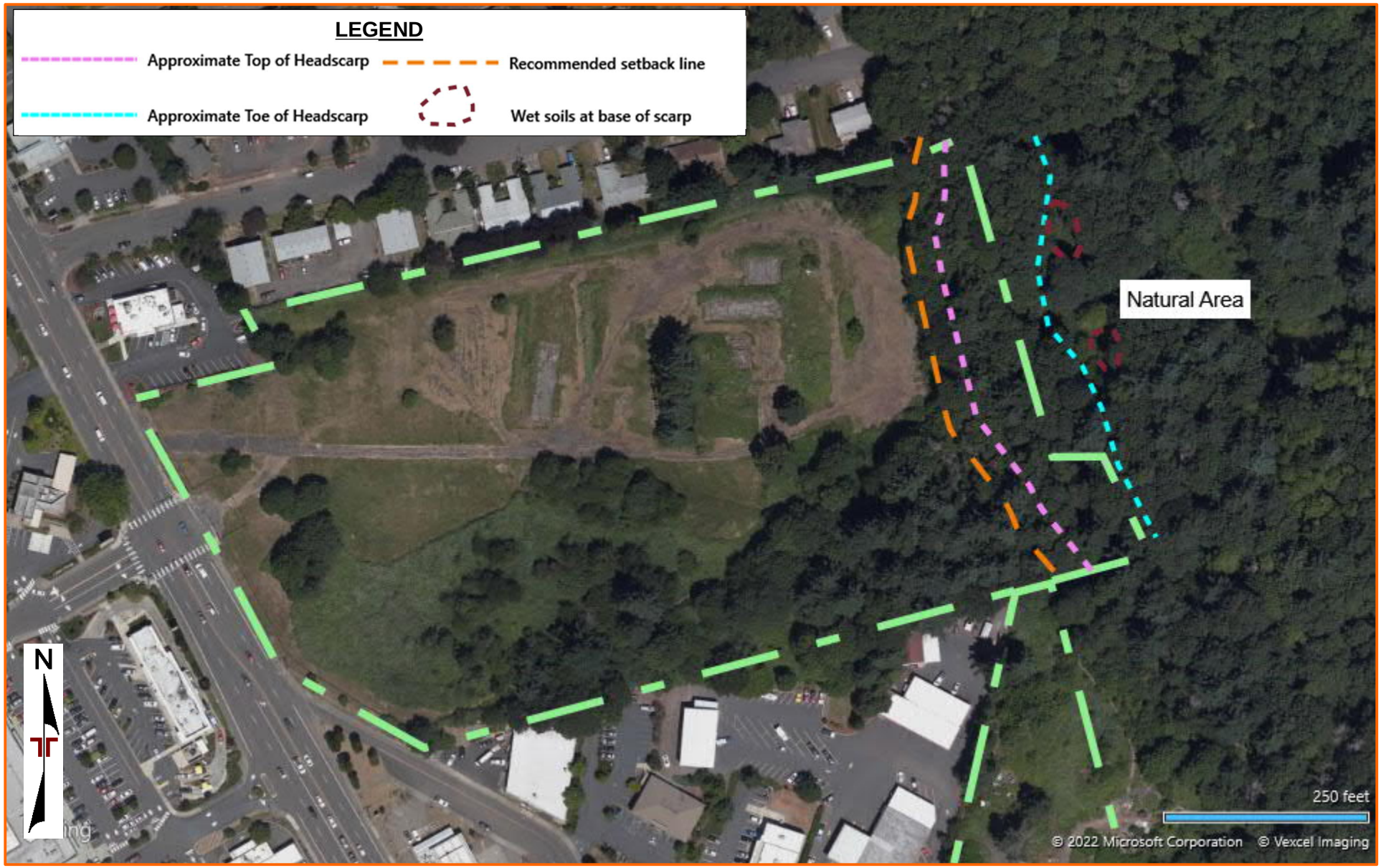
DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP BASED ON PRELIMINARY EXISTING CONDITIONS SURVEY BY S&F LAND SERVICES, DATED JUNE 2021, AND MODIFIED BY TERRACON

FIGURE 9 - RECONNAISSANCE PLAN

Oregon City Development ■ Oregon City, OR

September 12, 2022 ■ Terracon Project No. 82215043



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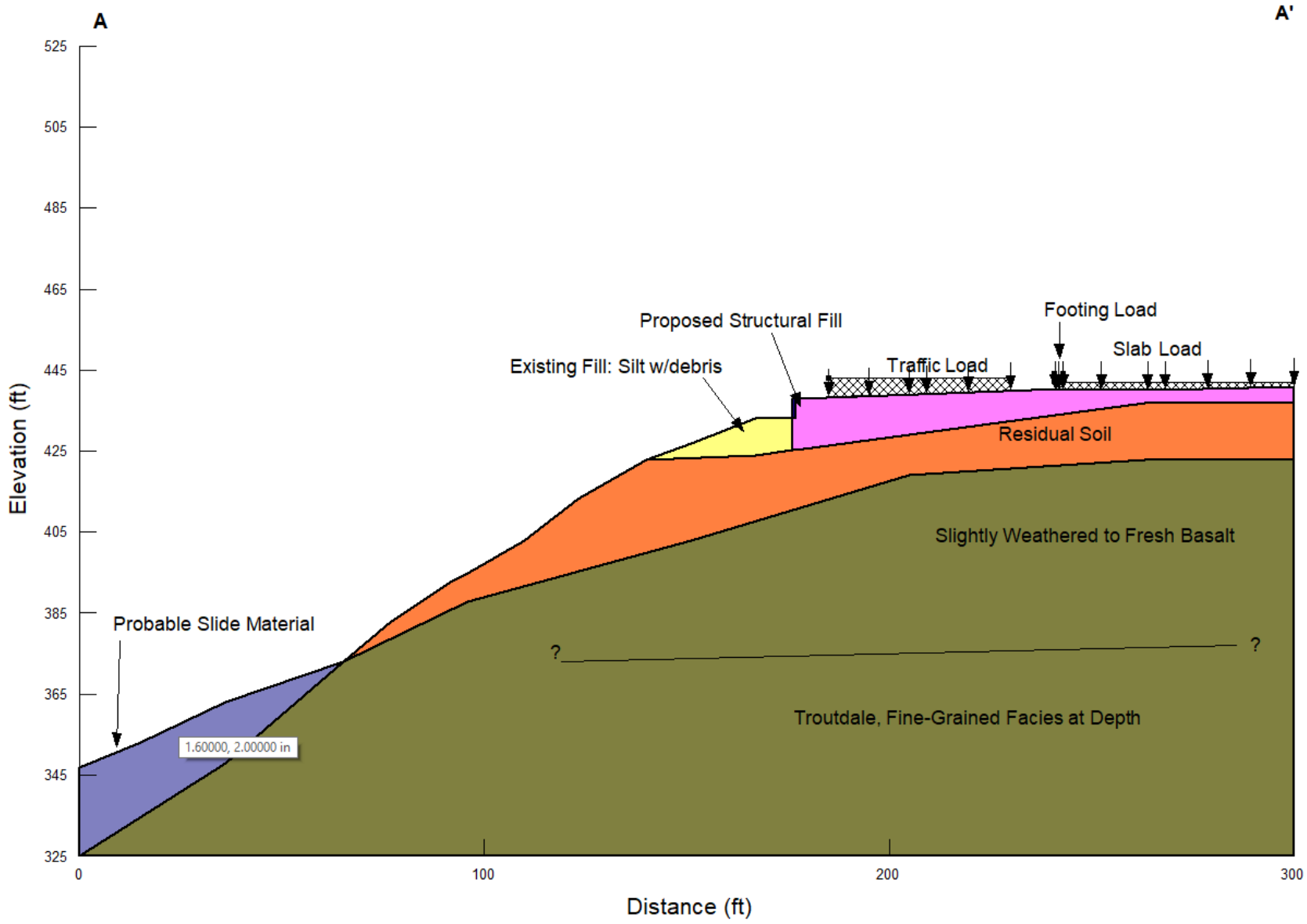
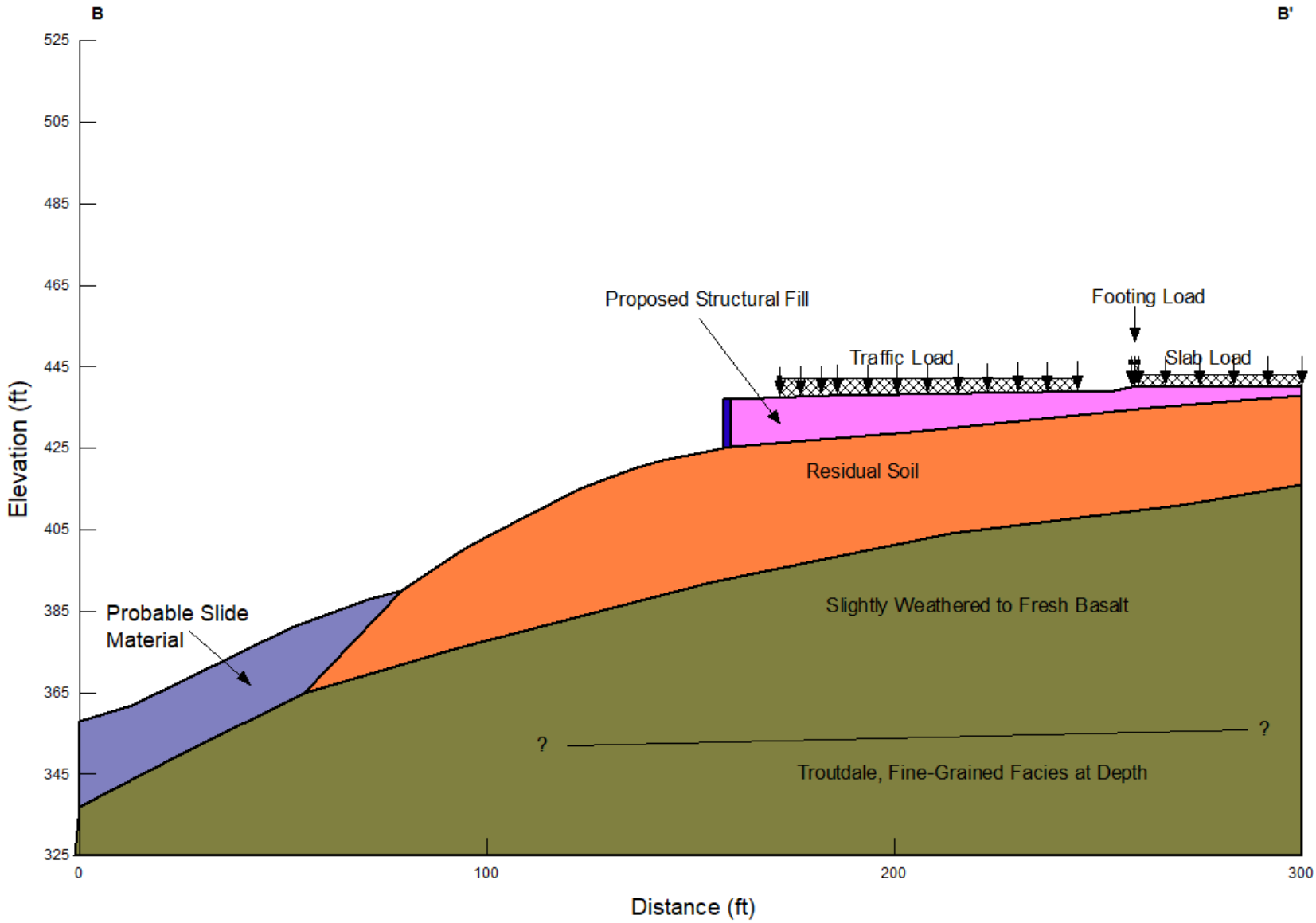
AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS



Project Manager: RTH	Project No. 82215043	Terracon Consulting Engineers & Scientists	GEOLOGIC CROSS SECTION A-A'
Drawn by: RTH	Scale: N.T.S.	700 NE 55th Avenue Portland, OR 97203	OREGON CITY DEVELOPMENT Molalla Avenue and Beavercreek Road Oregon City, Oregon
Checked by: KTH	File Name: CrossSectA	PH. (503) 659-3281 FAX. (503) 659-1287	Figure 10
Approved by: KTH	Date: September 2022		



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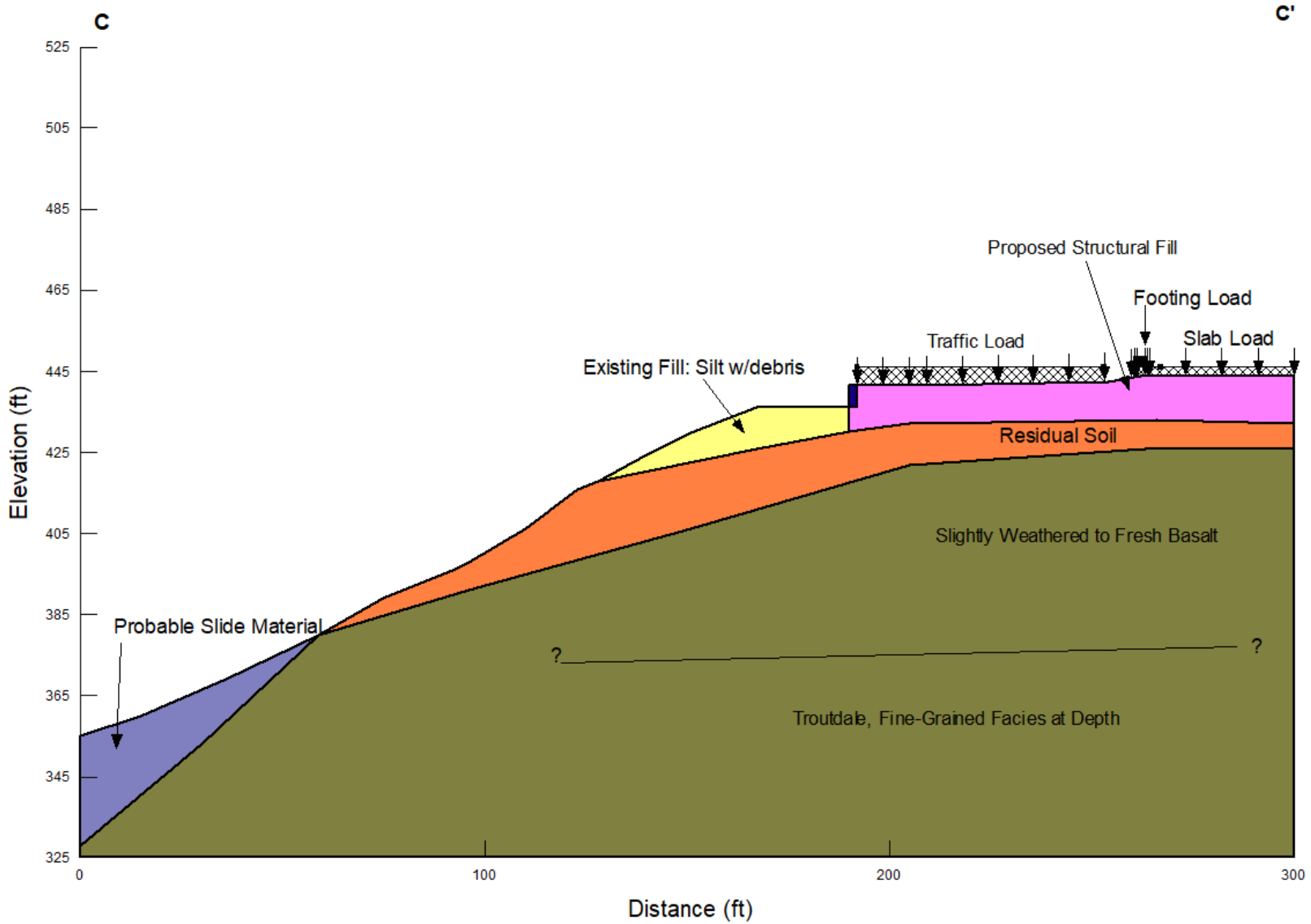
Checked by: KTH	File Name: CrossSectB	PH. (503) 659-3281 FAX. (503) 659-1287	Figure 11
Approved by: KTH	Date: September 2022		



Project Manager: RTH	Project No. 82215043	Terracon Consulting Engineers & Scientists	GEOLOGIC CROSS SECTION C-C'
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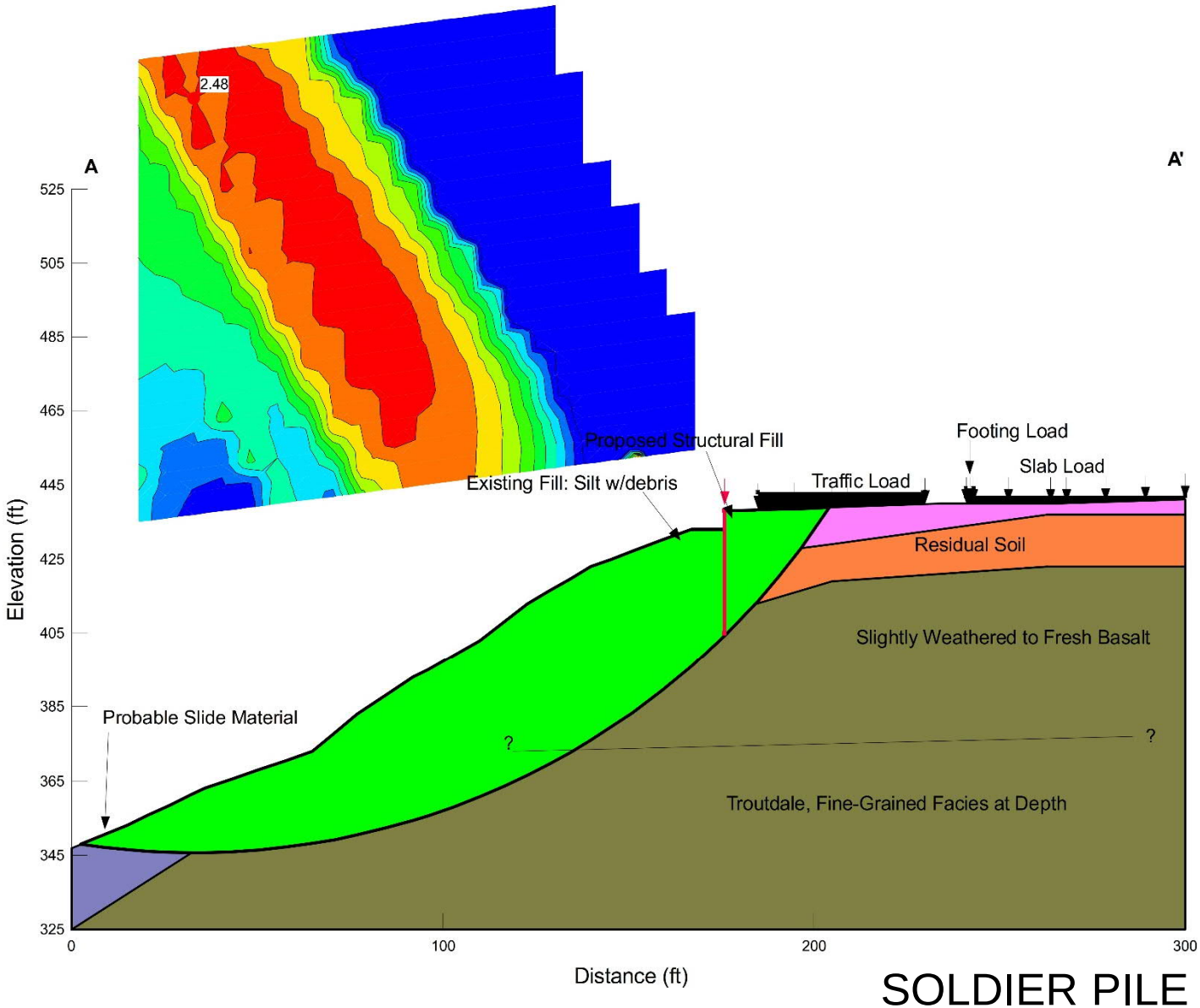
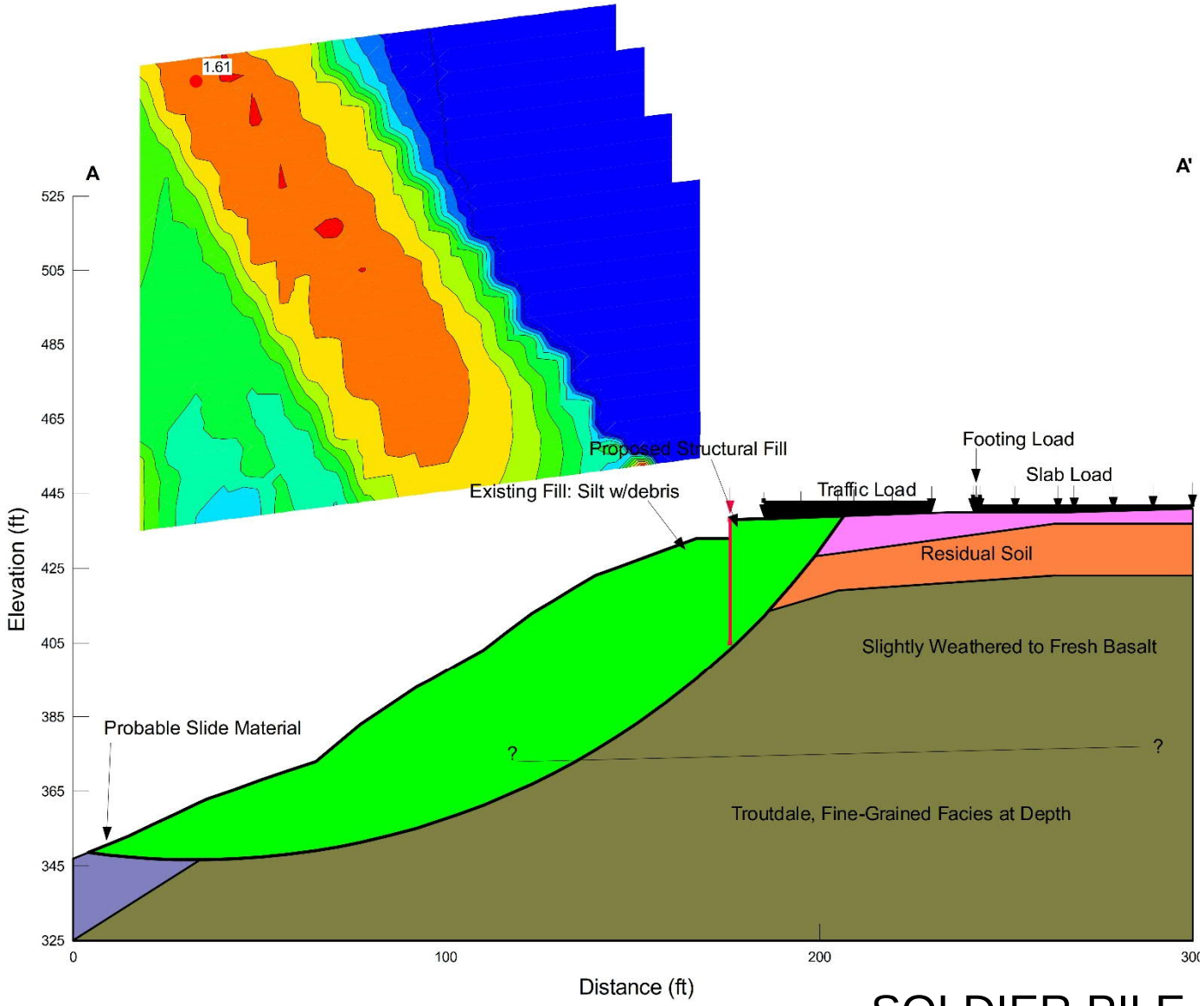
Checked by: KTH	File Name: CrossSectC	PH. (503) 659-3281 FAX. (503) 659-1287	Figure 12
Approved by: KTH	Date: September 2022		



SOLDIER PILE

Project Manager: RTH	Project No. 82215043	Terracon Consulting Engineers & Scientists	STATIC SLOPE STABILITY CROSS SECTION A-A'
Drawn by: RTH	Scale: N.T.S.	700 NE 55th Avenue Portland, OR 97203	OREGON CITY DEVELOPMENT Molalla Avenue and Beavercreek Road Oregon City, Oregon
Checked by: KTH	File Name: CrossSectA	PH. (503) 659-3281 FAX. (503) 659-1287	Figure 13
Approved by: KTH	Date: September 2022		



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Project Manager: RTH	Project No. 82215043	Terracon Consulting Engineers & Scientists	SEISMIC SLOPE STABILITY CROSS SECTION A-A'
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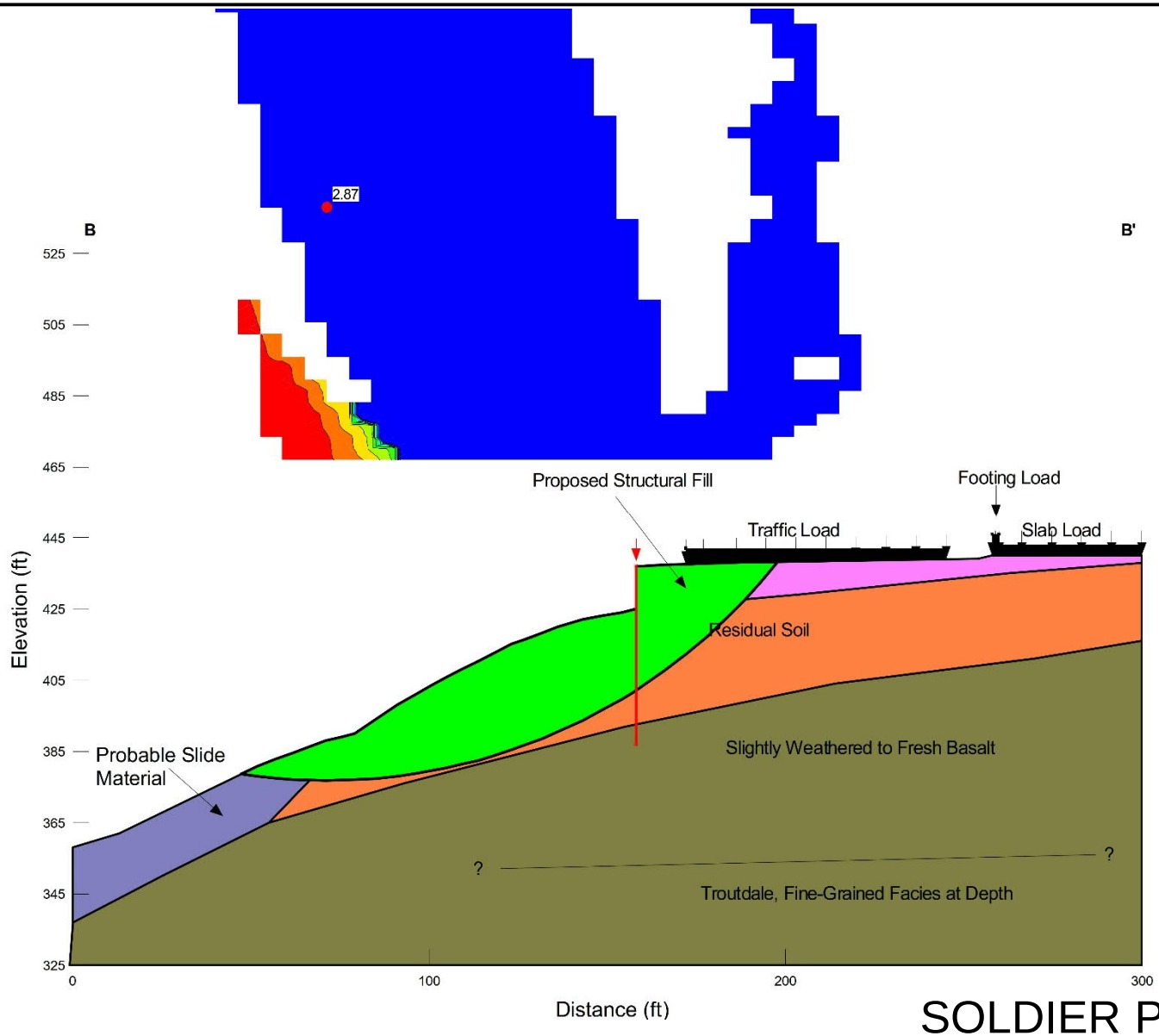
Checked by: KTH	File Name: CrossSectA	PH. (503) 659-3281 FAX. (503) 659-1287	Figure 14
Approved by: KTH	Date: September 2022		



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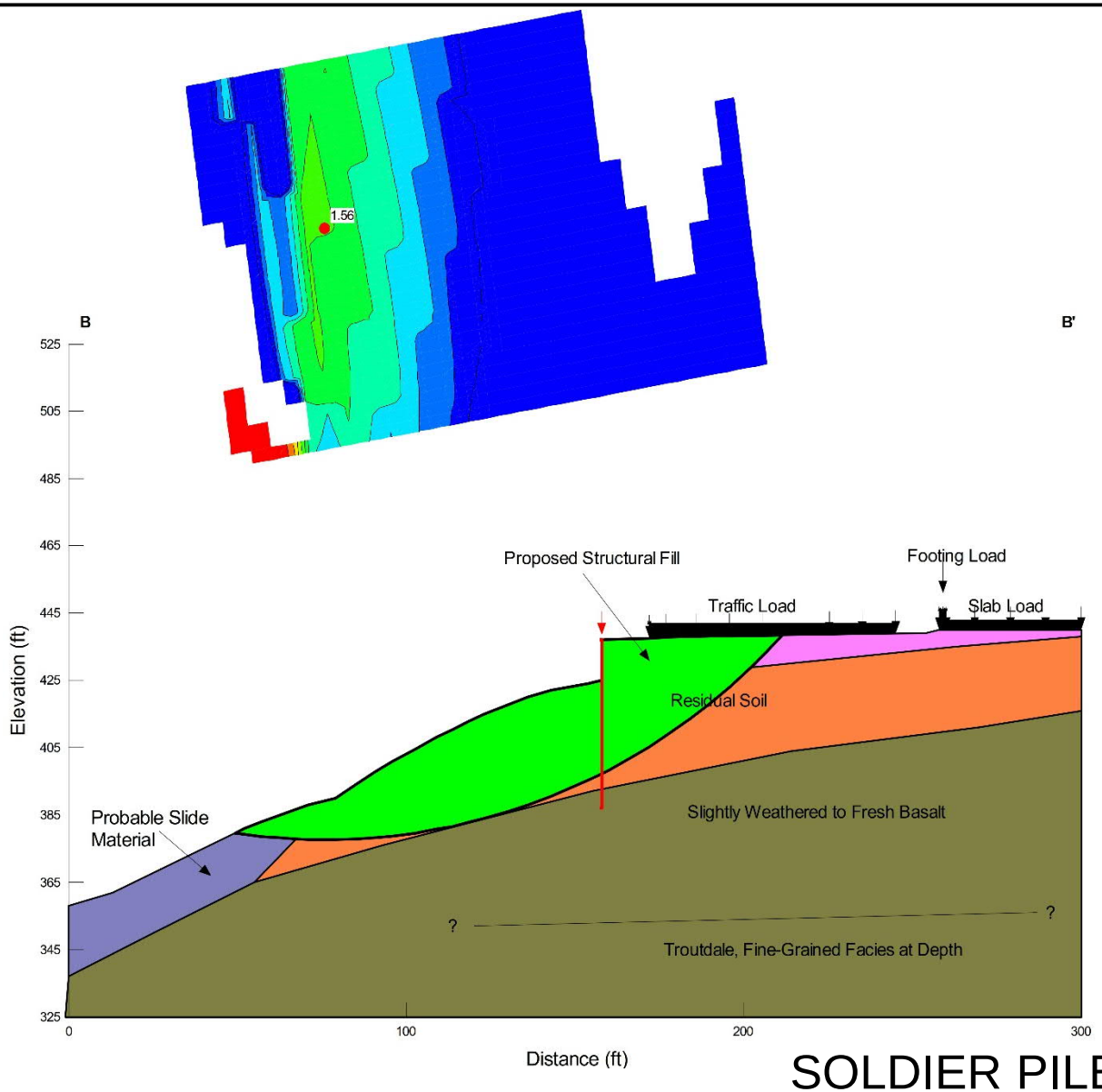
Project Manager: RTH	Project No. 82215043	Terracon Consulting Engineers & Scientists	STATIC SLOPE STABILITY CROSS SECTION B-B'
Drawn by: RTH	Scale: N.T.S.	700 NE 55th Avenue Portland, OR 97203	OREGON CITY DEVELOPMENT Molalla Avenue and Beavercreek Road Oregon City, Oregon
Checked by: KTH	File Name: CrossSectB	PH. (503) 659-3281 FAX. (503) 659-1287	Figure 15
Approved by: KTH	Date: September 2022		



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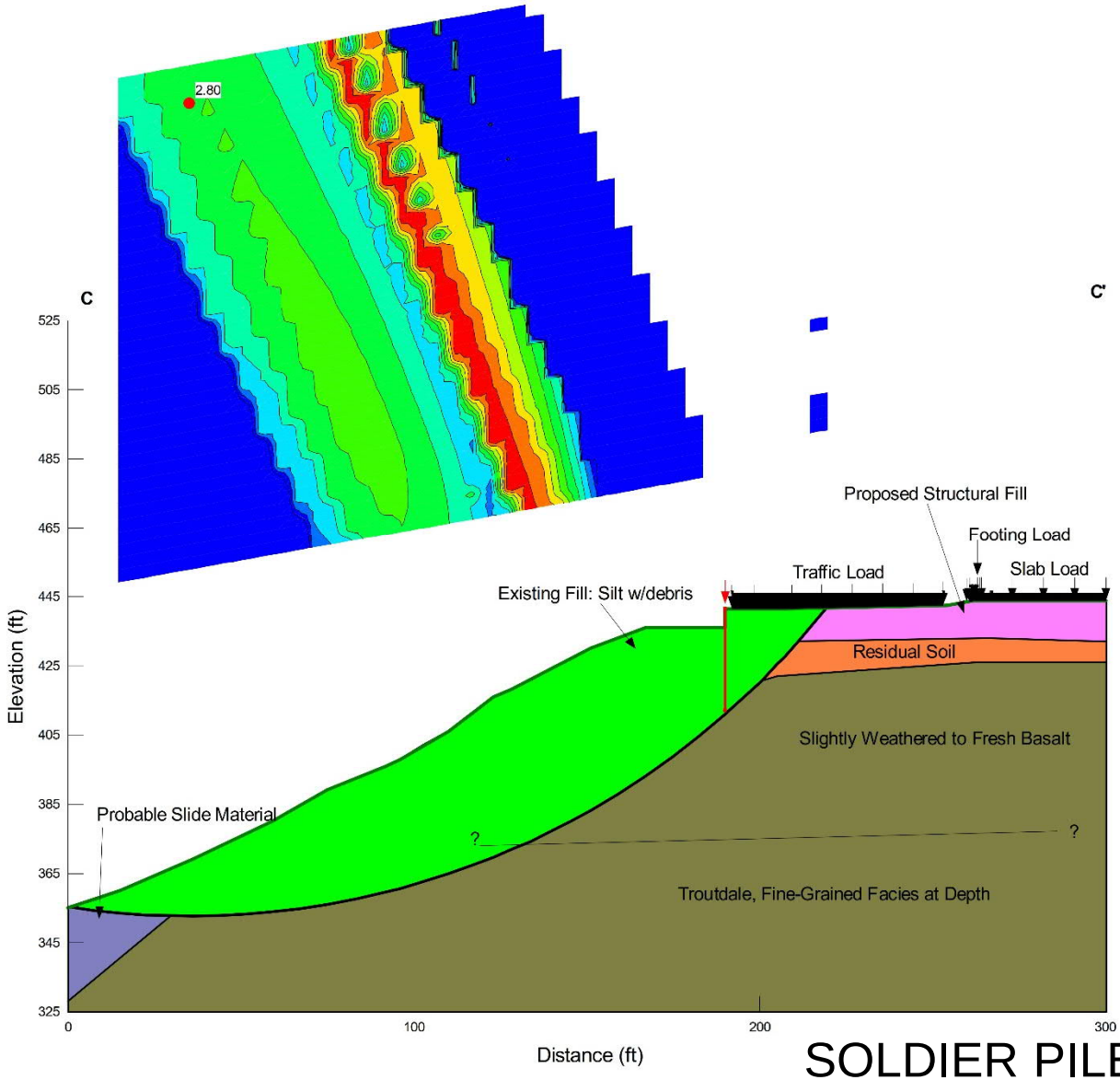
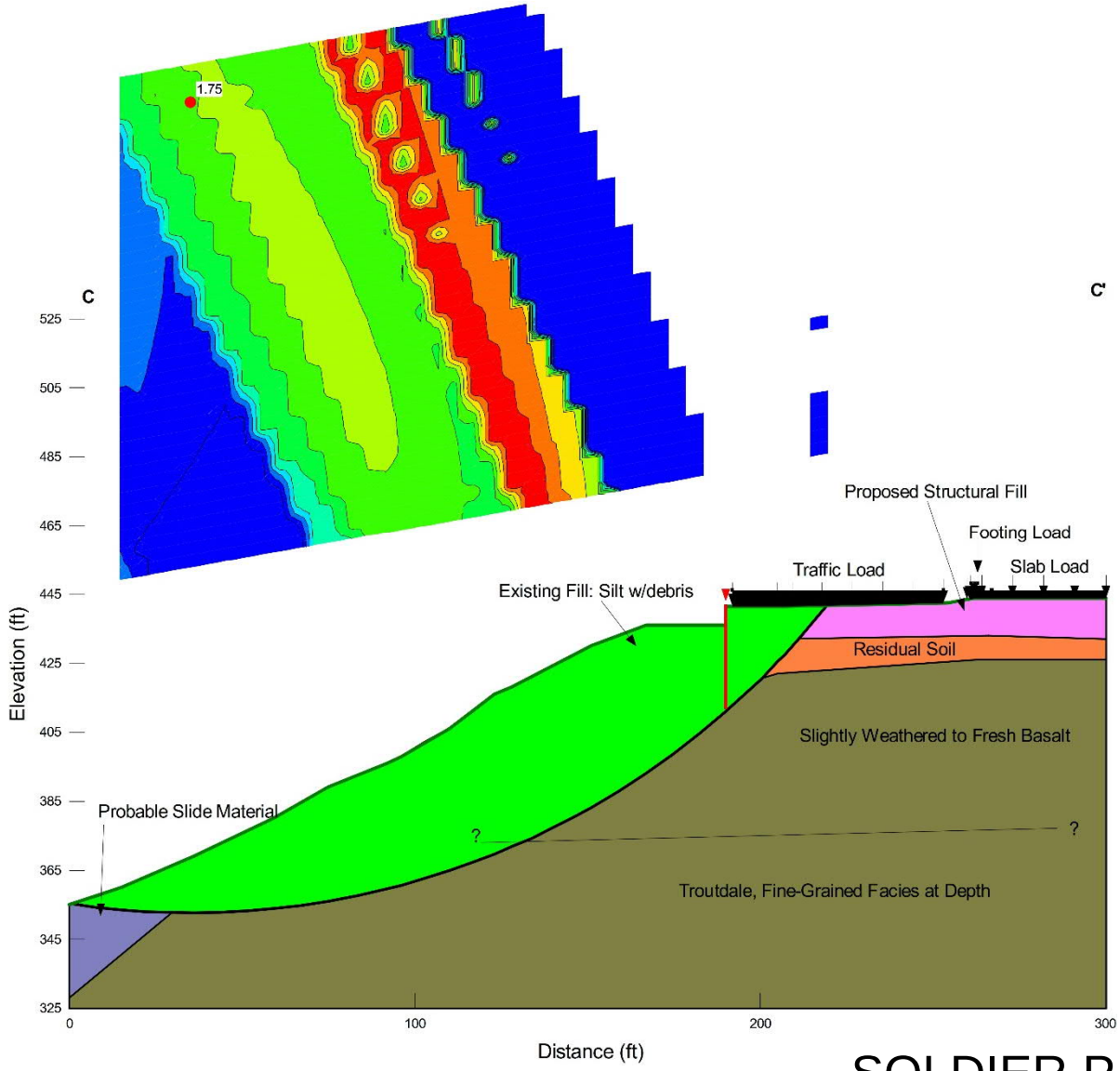
Project Manager: RTH	Project No. 82215043	Terracon Consulting Engineers & Scientists	SEISMIC SLOPE STABILITY CROSS SECTION B-B'
Drawn by: RTH	Scale: N.T.S.	700 NE 55th Avenue Portland, OR 97203	OREGON CITY DEVELOPMENT Molalla Avenue and Beavercreek Road Oregon City, Oregon
Checked by: KTH	File Name: CrossSectB	PH. (503) 659-3281 FAX. (503) 659-1287	Figure 16
Approved by: KTH	Date: September 2022		



SOLDIER PILE

Project Manager: RTH	Project No. 82215043	Terracon Consulting Engineers & Scientists	STATIC SLOPE STABILITY CROSS SECTION C-C'
Drawn by: RTH	Scale: N.T.S.	700 NE 55th Avenue Portland, OR 97203	OREGON CITY DEVELOPMENT Molalla Avenue and Beavercreek Road Oregon City, Oregon
Checked by: KTH	File Name: CrossSectC	PH. (503) 659-3281 FAX. (503) 659-1287	Figure 17
Approved by: KTH	Date: September 2022		



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Project Manager: RTH	Project No. 82215043	Terracon Consulting Engineers & Scientists	SEISMIC SLOPE STABILITY CROSS SECTION C-C'
Drawn by: RTH	Scale: N.T.S.	700 NE 55th Avenue Portland, OR 97203	OREGON CITY DEVELOPMENT Molalla Avenue and Beavercreek Road Oregon City, Oregon
Checked by: KTH	File Name: CrossSectC	PH. (503) 659-3281 FAX. (503) 659-1287	Figure 18
Approved by: KTH	Date: September 2022		

ATTACHMENTS

ENGINEERING GEOLOGY REPORT

Contents:

October 8, 2012, Preliminary Engineering Geology and Soil Engineering Report

Preliminary Engineering Geology and Soil Engineering Report

Proposed Retail Development
Molalla Avenue and Beavercreek Road
Oregon City, Oregon

October 8, 2012
Project No. 82125030

Prepared for:
PACLAND

Prepared by:
Terracon Consultants, Inc.
Portland, Oregon

Offices Nationwide Established in 1965
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Terracon

Geotechnical ■ Environmental ■ Construction Materials ■ Facilities

October 8, 2012

PACLAND
6400 SE Lake Road, Suite 300
Portland, Oregon 97222

Attn: Mr. Jeff Vanderdasson, P.E.

Re: Preliminary Engineering Geology and Soil Engineering Report
Proposed Retail Development
Molalla Avenue and Beavercreek Road
Oregon City, Oregon
Terracon Project No. 82125030

Dear Mr. Vanderdasson:

Terracon Consultants, Inc. (Terracon) is pleased to present our *Preliminary Engineering Geology and Soil Engineering Report* for the Proposed Retail Development project in Oregon City, Oregon. Our services were completed in general accordance with our *Proposal for Geotechnical Engineering Services – Revised* (P82110035R1), dated July 20, 2012. Email authorization to proceed with our services was provided by PACLAND on July 20, 2012. This report presents our preliminary conclusions regarding the stability of the slopes and soils from the proposed development.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report, or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.

GEOTECHNICAL REGISTERED PROFESSIONAL ENGINEER 82194 OREGON Nov. 10, 2009 ERIC J. LIM
RENEWS: 12/31/2012

Eric J. Lim, P.E., G.E.
Geotechnical Department Manager

David A. Baska, Ph.D., C.E.G.
Senior Consultant

Kristopher T. Hauck, P.E.
Office Manager

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APPENDIX A – EXHIBITS

Exhibit A-1	Site Plan
Exhibit A-2	Landslide Map Excerpt
Exhibit A-3	Preliminary Geologic Cross Section
Exhibit A-4	Preliminary Static Slope Stability
Exhibit A-5	Preliminary Seismic Slope Stability

EXECUTIVE SUMMARY

The site's geology and associated geologic hazards were researched with regard to the proposed site development. The preliminary engineering geology and geotechnical considerations associated with the proposed project are summarized below.

- **Existing, Adjacent Landslide Hazards:** The steep slope area to the east is a well-documented landslide hazard area. However, the area immediately adjacent to the site is mapped as an ancient landslide. Recent surface reconnaissance of the steep slope area does not indicate recent movement of the weathered landslide features.

- **Proposed Development Feasibility:** The proposed development is feasible from a geotechnical standpoint provided structures, significant fills, and other loads are located outside a suitable setback. Previous engineering studies established a setback of 35 feet from the top of slope and may be used for planning purposes of the new development.

- **Retaining Walls:** A retaining wall is proposed along the east side of the truck route at the currently proposed 35-foot top of slope setback. Additional engineering design will be necessary for the retaining wall, although our preliminary slope stability models indicate the walls are setback sufficiently from the top of the slope and should not adversely impact the stability of the slope.

- **Site Drainage and Erosion Control:** Surface water should be collected and routed away from the steep slope area. Infiltration facilities should not be implemented due to the potential for the infiltrated water to daylight on the adjacent steep slope areas and decrease slope stability. The area within the setback at the top of the slope may be cleared of invasive vegetation, such as blackberries, and suitably vegetated to reduce erosion towards the steep slope area.

This summary should be used in conjunction with the entire report for design purposes. It should be recognized that details were not included or fully developed in this section, and the report must be read in its entirety for a comprehensive understanding of the items contained herein. The **GENERAL COMMENTS** section should be read for an understanding of the report limitation.

PRELIMINARY ENGINEERING GEOLOGY AND SOIL ENGINEERING REPORT PROPOSED RETAIL DEVELOPMENT MOLALLA AVENUE AND BEAVERCREEK ROAD OREGON CITY, OREGON

Project No. 82125030
October 8, 2012

1.0 INTRODUCTION

In accordance with your request and written authorization, Terracon has completed a Preliminary Engineering Geology and Soil Engineering Evaluation for the proposed retail development in Oregon City, Oregon. Terracon, formerly Zipper Zeman Associates (ZZA), previously completed the following reports:

- Preliminary Results of Slope Stability Evaluation, Proposed Retail Project, Molalla Avenue and Beavercreek Road, Oregon City, Oregon, by ZZA, dated July 3, 2002.
- Subsurface Exploration and Geotechnical Engineering Evaluation, Proposed Retail Project, Molalla Avenue and Beavercreek Road, Oregon City, Oregon, by ZZA, dated February 13, 2004.

2.0 PURPOSE AND SCOPE

The purpose of this report is to satisfy the requirement for both a Preliminary Engineering Geology Report and a Preliminary Soil Engineering Report as required by the Oregon City Geologic Hazards Checklist. An updated geotechnical engineering report will be provided at a later date with engineering recommendations to be used for final design of the development.

Our scope of services included a slope reconnaissance, review of previous subsurface boring and test pit explorations, review of published geologic literature, preliminary geotechnical engineering analysis, and preparation of this report.

3.0 PROJECT INFORMATION

3.1 Site Location

ITEM	DESCRIPTION
Location	The site is located at the northeast corner of Molalla Avenue and Beavercreek Road in Oregon City, Oregon as shown in Exhibit A-1 – Site Plan.
Existing improvements	The site is currently vacant and fenced off. All former buildings have been razed, although several slab and foundations remain. Several retaining walls and/or slopes on the order of 4 feet or less in height are on the site.
Surroundings	The site is bounded by single and multi-family residences to the north, Molalla Avenue and commercial properties to the west, commercial properties to the south, and an undeveloped steep slope area dropping off to the east.
Current ground cover	The site is covered with grass, shrubs (blackberries, etc.), and scattered to dense stands of trees. The southeast portion of the site is wooded, and the entire south edge of the property is overgrown with dense blackberry shrubs.
Existing topography	The majority of the site is relatively flat with several low retaining walls creating broad terraces stepping down to the east. The eastern edge of the site drops steeply down at inclinations in the range of 1½H:1V to ½H:1V to the east toward Newell Creek. The overall slope system height is on the order of 200 feet in vertical drop. We understand that this steep slope area contains active and ancient landslide complexes and has been studied extensively by Portland State University geologists and other researchers.

3.2 Project Description

ITEM	DESCRIPTION
Structures	Main Retail Building The project will include a new one-story retail building and loading dock with a proposed total footprint of approximately 60,000 square feet (SF). The building footprint is planned in the northeast portion of the site as shown on the attached Site Plan. Outlots 1- 4 Four outlots are currently planned for the western third of the site for three retail buildings ranging from approximately 3,600 SF to 7,200 SF and a one- to two-story commercial/office building of approximately 23,000 SF. Outlot 2 will potentially include a remote drive-thru banking structure.
Building construction	Main Retail Building We have assumed that the store will be constructed with masonry block load-bearing and non-load-bearing walls; steel columns, girders, and joists for support of the roof structure; and on-grade cast-in-place floor slabs. Outlots 1-4 No information is available on the outlot buildings, but we assume they will be either wood-framed or masonry block construction with slab-on-grade floors.
Finished floor elevations	Main Retail Building: Currently planned at elevation 445 feet. Outlot 1: Currently planned at elevation 448 feet. Outlot 2: Currently planned at elevation 444 feet. Outlot 3: Currently planned at elevation 442 feet. Outlot 4: Currently planned at elevation 448 feet.
Maximum loads	Main Retail Building Columns: 85 kips gravity and 150 kips maximum live loading. Walls: 1.5 to 2 klf non-load bearing and 4 to 6 klf for load bearing. Slabs: 125 psf uniform loading and 5-kip concentrated loading max. Outlot Buildings The loads for these buildings are not known at this time, but are assumed to not exceed those listed above for the main retail building.

ITEM	DESCRIPTION
Maximum allowable settlement	Main Retail Building Total Static Settlement: 1 inch Masonry Walls: L/900 or ½ inch over 40 feet Outlots Total Static Settlement: 1 inch (assumed) Differential: L/900 or ½ inch over 40 feet (assumed)
Grading	Significant fills on the order of 10 to 12 feet in maximum thickness are expected on the east half of the site and in the building pad. Excavation cuts (or removal of stockpile areas) up to approximately 10 feet may be needed in the proposed truck route off the southeast corner of the site in the existing stockpile areas.
Cut and fill slopes	3H:1V slopes approximately 4 feet or less in height are expected.
Free-standing retaining walls	An approximately 626-foot long by 5- to 12-foot high retaining wall is planned along the east edge of the truck route outside the steep slope setback. Guards rails and/or fall protection fencing are anticipated atop the retaining walls. Determination of the wall type, e.g., segmental block, soldier pile, etc., has not yet been determined along the east side of the truck route but will be determined as part of the final design to include slope stability concerns.
Below Grade Areas	A loading dock area is planned on the northeast corner of the building with a finish grade of 4 feet below the finish floor elevation.
Stormwater Management	A buried detention structure is planned in the southeast corner of the site under the parking area. We understand that the depth of the structure is currently planned at approximately 7 feet below finish grade.
Off-site Improvements	A public road and truck route is proposed from the southeast corner of the site south to Beavercreek Road.
Buried Utilities	We understand that stormwater and water pipes will run along the truck route on the east side of the site. Depths are anticipated to be 10 feet or less. A sanitary sewer line is proposed to run east-west from Molalla between Outlot 2 and Outlot 3 to the main retail building. The sanitary sewer will also run north-south up the Outlot 2 parking lot north to Outlots 1 and 4. Depths have not been determined yet, but may exceed 10 feet in depth.

4.0 LITERATURE REVIEW

Per Oregon City Municipal Code 17.44.050, we reviewed the following documents for this report:

- The State of Oregon Department of Geology and Mineral Industries (DOGAMI) in Bulletin 99, Geology and Geological Hazards of North Clackamas County, Oregon (1979), or in any subsequent DOGAMI mapping for the Oregon City area;
- Portland State University study entitled “Environmental Assessment of Newell Creek Canyon, Oregon City, Oregon (1992);
- Portland State University study, "Landslides in the Portland, Oregon, Metropolitan Area Resulting from the Storm of February 1996: Inventory Map, Database and Evaluation" (Burns and others, 1998);
- DOGAMI Open File Report O-06-27, "Map of Landslide Geomorphology of Oregon City, Oregon, and Vicinity Interpreted from LIDAR Imagery and Aerial Photographs" (Madin and Burns, 2006);
- "Preliminary Geologic Map of the Oregon City Quadrangle, Clackamas County, Oregon" (Madin, in press).

We also reviewed the following, more recently published documents:

- Map showing faults, bedrock geology, and sediment thickness of west half of Oregon City 1:100,000 quad, Washington, Multnomah, Clackamas and Marion Counties, Oregon, 1998, IMS-4, Burns et al., (DOGAMI)
- *Oregon Geologic Data Standard v. 2.1,* 2009 (DOGAMI)
- *Geologic Map of the Oregon City 7.5’ Quadrangle, Clackamas County, Oregon*, 2009, GMS-119 (DOGAMI)
- *Map of Landslide Geomorphology of Oregon City, Oregon, and Vicinity Interpreted from Lidar Imagery and Aerial Photographs*, O-06-27, 2006 (DOGAMI)
- *Landslide Inventory Map of the Northwest Quarter of the Oregon City Quadrangle, Clackamas County, Oregon*, IMS-26, 2009 (DOGAMI)

5.0 PRELIMINARY ENGINEERING GEOLOGY

According to Oregon City’s Geologic Hazards Checklist, a preliminary engineering geology report must be prepared that relates the following items to the actual development proposal:

- (5.1) A description of geologic formations, bedrock and surficial materials including artificial fill; location of any faults, folds, etc.
- (5.2) Structural data including bedding, jointing, and shear zones

- (5.3) Off-site geologic conditions that may pose a hazard to the site or that may be affected by on-site development
- (5.4) Cross sections showing subsurface structure, logs of subsurface explorations and analysis if necessary to evaluate the site
- (5.5) Signature and certification number of the engineering geologist
- (5.6) The report shall also contain a statement as to whether any hazard areas should not be disturbed because of the potential for damage to the site or neighboring properties
- (5.7) The report shall include specific comments resulting from their review of the civil plans for the project including recommendations on maximum cuts, structural fills, rockery walls, drainage behind any type of walls, maximum slopes above walls, removal of toe of slopes, the use of rock hammers and blasting, and so forth.

The above items are discussed individually in the following sections.

5.1 Geologic Description

Geologically, the site is located in the northern Willamette Valley, which consists of a structural trough between the Coastal Range and the Cascade Range. This basin is underlain by thick deposits of sand and gravel washed into it during the Pliocene epoch when the climate in the area was very dry. These granular deposits are locally covered by the Boring lavas (Qtb) in northwest Clackamas County.

Based on the *Oregon Geologic Data Standard v. 2.1* and Oregon Department of Geology and Mineral Industries *Geologic Map of the Oregon City 7.5' Quadrangle, Clackamas County, Oregon, 2009* this site is located within a geologic unit mapped as Tbc-Basalt of Canemah defined as flow or flows of grey medium-grained, olivine basalt. The Oregon Department of Geology and Mineral Industries (DOGAMI), Bulletin 99, *Geologic Map of the Canby and Oregon City Quadrangles, Oregon 1979*, maps the site as consisting of Boring lavas (Qtb), which it describes as Pliocene-Pleistocene lavas, light-gray, open-textured olivine basalt; flow structures common; includes some pyroclastic material of local extent; widely spaced joint pattern. Lavas and breccias have weathered to a residual red clay surface soil. Vertical exposures are susceptible to mass movement and deep bedrock sliding because of failure of underlying material (see the description below with clay materials within the Troutdale unit).

The Boring Lava deposits overly the Troutdale (Tpt), which are described as Pliocene sandstone and conglomerate; indurated beds and lenses of well-sorted sand and cobbly gravel with up to 30 percent quartzite clasts. Some sand originally composed of volcanic glass have altered to an impermeable high shrink-swell clay. The clay can be unstable and cause overlying competent units to fail by landslide. The publications indicate that on slopes where this clay layer daylights, one generally encounters a spring. Also, if layers dip out of the slope, it can become a failure

plane for a slump or slump-earthflow when the pore water pressure has built up to a critical value on top of the clay layer.

Based on the *Map of Landslide Geomorphology of Oregon City, Oregon, and Vicinity Interpreted from Lidar Imagery and Aerial Photographs, O-06-27, 2006* and the *Landslide Inventory Map of the Northwest Quarter of the Oregon City Quadrangle, Clackamas County, Oregon, IMS-26, 2009,* a mapped landslide was identified adjacent to the site to the east. The landslide is identified as a prehistoric or ancient landslide (movement greater than 150 years ago). This is defined by landslide features that are slightly eroded and there is no evidence of historic (recent in last 150 years) movement. In some cases, the observed landslide features have been greatly eroded and/or covered with deposits that result in smoothed and subdued morphology.

The borings completed for the previously referenced 2004 ZZA report are generally consistent with the above geologic mapping for the Boring Lavas/Basalt of Canemah, although the basalt has become deeply weathered in certain areas. The Troutdale unit was not encountered to the maximum depth of the borings at approximately 50½ feet below the ground surface. Although direct evidence of landslide features were not readily observed during our exploration programs for the 2004 report, we did observe the general headscarp area of the ancient landslide area during our 2012 slope reconnaissance with the aid of the recent Lidar-based landslide maps. An excerpt of the landslide map is appended as Exhibit A-2.

5.2 Structural Data

Bedrock outcrops or exposures were not observed during our site visits on the subject property or immediately downslope of the subject property. As discussed above, the bedrock in the site vicinity is mapped as Tbc-Basalt of Canemah defined as flow or flows of grey medium-grained, open-textured, olivine basalt. Flow structures are common, includes some pyroclastic material of local extent, and widely spaced joint pattern. Lavas and breccias have weathered to residual red clay surface soil. Vertical exposures are susceptible to mass movement and deep bedrock sliding because of failure of underlying material. The rock cores completed for the previously referenced 2004 ZZA report indicate close fracture spacing in the upper, weathered zones of the bedrock grading to wide fracture spacing in the fresh, competent bedrock at depth.

5.3 Off-Site Geologic Conditions

The *Map of Landslide Geomorphology of Oregon City, Oregon, and Vicinity Interpreted from Lidar Imagery and Aerial Photographs, O-06-27, 2006* and the *Landslide Inventory Map of the Northwest Quarter of the Oregon City Quadrangle, Clackamas County, Oregon, IMS-26, 2009,* indicate a mapped landslide area adjacent to the east side of the site. The landslide is identified as a prehistoric or ancient landslide (movement greater than 150 years ago). This is defined by landslide features that are slightly eroded and there is no evidence of historic (recent in last 150

years) movement. In some cases, the observed landslide features have been greatly eroded and/or covered with deposits that result in smoothed and subdued morphology.

During our initial exploration period during 2001-2002, we performed a surface reconnaissance of the steep slope area on the eastern edge of the site and immediately downslope of the site to the east. We also re-visited these areas on July 31, 2012 to determine the current conditions. During our slope reconnaissance visits, we walked and mapped the landslide area. We identified a main head scarp along the eastern site boundary, followed by numerous (3 to 5) internal scarps further east of the site within the ancient mapped landslide itself. A spring was observed at the base of the head scarp approximately 100 feet east of the northeast corner of the site at approximately 350 feet in elevation. A second spring was observed approximately 150 feet east of the southeast corner of the site at approximately 290 feet in elevation. Four nick points (i.e., drops in the streambed from erosion) were observed in the stream bed at the base of the ancient landslide ranging in height from 1½ feet to 6 feet. Gray, stiff to medium stiff, wet, lean clay with cemented clasts of gray clay was observed at various points along the stream bed. These deposits can be correlated to the fine grained portion of the Troutdale formation described above. At the time of our site reconnaissance Terracon did not identify new slide areas immediately downslope of the proposed development.

Our field observations agree with the above-referenced published landslide mapping. We did not observe indications of recent movement during our slope reconnaissance during the 2001-2002 ZZA exploration programs and our recent site visit in July 2012.

5.4 Geologic Cross-Sections

Our interpretation of the site's geologic cross-section is shown in Exhibit A-3 of this report.

5.5 Signature and Certification Number of Engineering Geologist

The signature and certification number of the engineering geologist is provided on the report signature page after the front cover.

5.6 Disturbance of Hazards Statement

The geologic hazards of concern for the site development are the steep slope area and ancient landslide to the east of the site. This geologic hazard area should not be disturbed due to the potential for damage to the site and/or neighboring properties. An exception for disturbance would be the removal of invasive vegetation, such as blackberry bushes, and replanting with species suitable for erosion control purposes. After removal of the invasive vegetation, minor grading may necessary, such as bucket smoothing and track walking the slope with a tracked

excavator, to reduce erosion and help temporary and permanent ground cover (e.g., hydroseed, mulch, bark, plantings, etc.) become established on the slope.

5.7 Civil Plans Review Comments

We have reviewed the current civil grading plans. The current site development plans are described in the Section 3 of this report and do not propose to disturb the geologic hazard area. These plans were developed using the 2004 ZZA report recommendations as a guideline. According to these plans, the maximum permanent cuts are relatively low, on the order of 2 to 3 feet for the retaining walls along the north property line. Fills will be up to approximately 12 feet along the east retaining wall area for the proposed truck route, but this wall will be located outside of a top of slope setback of 35 feet. The retaining walls, drainage behind the walls, and maximum slopes above and below the walls will be engineered as part of future design work for the site, and will consider the weight of the fill and loads on the retaining structure on the stability of the slope area. Consideration of the wall type, bedrock conditions, and associated installation procedures will also be included in the retaining wall design. In our opinion, the proposed site development is feasible from a geotechnical perspective without adverse impacts on the stability to the adjacent slope.

6.0 PRELIMINARY SOIL ENGINEERING REPORT

According to Oregon City's Geologic Hazards Checklist, a preliminary soil engineering report must be prepared that relates the following items to the actual development proposal:

- (6.1) The engineering feasibility of the proposed development and addressing strength properties of surface and subsurface soils with regard to stability of slopes
- (6.2) Appropriate types of foundations together with bearing values and settlement criteria for foundation design, soil erosion potential, permeability and infiltration rates
- (6.3) Excavation, filling and grading criteria including recommended final slopes
- (6.4) Surface and subsurface drainage; planting and maintenance of slopes
- (6.5) Other identified soil or subsurface constraints together with geotechnical remediation and other recommendations to alleviate or minimize their effects; and signature and seal of the geotechnical engineer
- (6.6) The report shall also contain a statement as to whether the proposed development, constructed in accordance with the recommended methods, is reasonably likely to be safe and prevent landslide or other damage to other properties over the long term, and whether any specific areas should not be disturbed by construction.

- (6.7) The report shall include specific comments resulting from their review of the civil plans for the project including recommendations on maximum cuts, structural fills, rockery walls, drainage behind any type of walls, maximum slopes above walls, removal of toe of slopes, the use of rock hammers and blasting, and so forth.

The above items are discussed individually in the following sections.

6.1 Engineering Feasibility

In our opinion, the proposed site development is feasible from a geotechnical perspective. Exhibits A-4 and A-5 show our preliminary slope stability models for static and seismic conditions, respectively. The following soil parameters were used in our analysis.

STRATA	FRICTION ANGLE (DEGREES)	COHESION (PSF)	UNIT WEIGHT (PCF)
Proposed Structural Fill	32	0	125
Existing Fill: Silt w/Debris	27	0	120
Highly – Moderately Weathered Basalt	30	250	125
Slightly Weathered to Fresh Basalt	45	250	150
Possible Slide Material	5	100	120

These parameters were partly based on the direct shear test results reported in the 2004 ZZA report and partly based on our engineering judgment. A horizontal seismic coefficient of 0.13g was used in our analysis, which is approximately one-half of the design earthquake peak ground acceleration determined per 2009 IBC methods. The models indicate factors of safety greater than 1.5 and 1.1 for static and seismic conditions, respectively. Based on the slope stability model, the proposed retaining wall and fill are far enough away from the slope and have low effect on the slope stability at the site from a preliminary standpoint.

6.2 Foundation Types, Soil Erosion Potential, Permeability/Infiltration

The appropriate type of foundation for the proposed buildings are conventional shallow spread footings. Allowable bearing values of 2,000 psf for up to 1 inch of settlement may be used for planning purposes.

According to the USDA Soil Conservation Service, the erosion potential of the site soils are "slight" on the relatively flat areas of the site and "severe" on the steep slope areas east of the site. Permeability ranges from 0.6 to 2.0 in the sites soils, however, infiltration systems are not recommended due to the location of the site adjacent the steep slope area.

6.3 Excavation, Filling, and Grading Criteria

Recommendations for excavation, filling and grading are included in the 2004 ZZA report and may be used for preliminary purposes. This information will be updated in the final geotechnical report.

6.4 Other Soil or Subsurface Constraints

Due to the previous development at the site, including existing foundations and floor slabs, existing fill will likely be encountered during subgrade preparation for fills and foundations. Within the proposed building pad, we recommend that all existing fill be removed down to suitable native soils, and the backfilled with compacted structural fill as recommended in the previous section and the 2004 report. Overexcavation of the existing fill soils will also likely be necessary in the retaining wall area along the east retaining wall (truck route). Alternatives, such as partial overexcavation and replacement or the use of aggregate pier ground improvement, should be considered during the final geotechnical report phase.

6.5 Proposed Development Stability Statement

In our opinion, the proposed development should not adversely affect the stability of the slope nor increase landslide risk to other properties with the incorporation of the 35-foot development setback. Additional fill or loads should not be placed over the unstable steep slope areas. The preliminary setback from the top of slope is currently 35 feet, but this may change on examination of new data and analysis from upcoming exploration and testing. It should be noted that there are documented, existing, ancient and recent landslides further downslope of the property that may continue to move but will not be adversely impacted by the subject site development. One benefit to the site development will actually be control of surface water, which currently is not being controlled above the steep slope area.

6.6 Civil Plans Review Comments

We have reviewed the current civil grading plans. The current site development plans are described in the Section 3 of this report and do not propose to disturb the geologic hazard area. These plans were developed using the 2004 ZZA report recommendations as a guideline. The maximum permanent cuts are relatively low, on the order of 2 to 3 feet for the retaining walls along the north property line. Fills will be up to approximately 12 feet along the east retaining

wall area for the proposed truck route, but this wall will be located outside of a top of slope setback of 35 feet. The retaining walls, drainage behind the walls, and maximum slopes above and below the walls will be engineered as part of future design work for the site, and will consider the weight of the fill and loads on the retaining structure on the stability of the slope area. Consideration of the wall type, bedrock conditions, and associated installation procedures will also be included in the retaining wall design. In our opinion, the proposed site development is feasible from a geotechnical perspective without adversely impacted the stability of the slope to the east.

7.0 GENERAL COMMENTS

Terracon should be retained to review the final design plans and specifications so comments can be made regarding interpretation and implementation of our geotechnical recommendations in the design and specifications. Terracon also should be retained to provide observation and testing services during grading, excavation, foundation construction and other earth-related construction phases of the project.

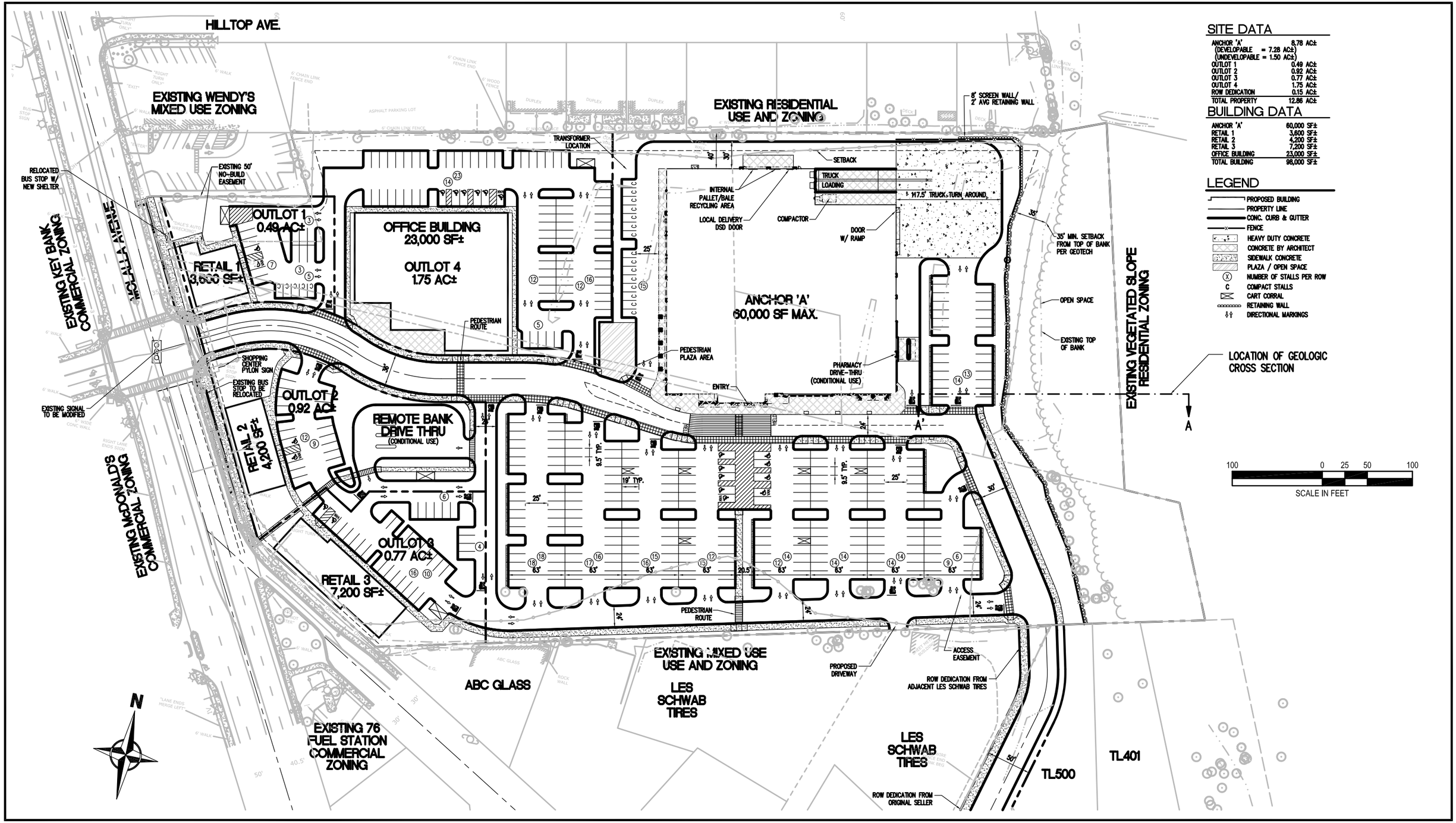
The analysis and recommendations presented in this report are based upon the data obtained from the borings performed at the indicated locations and from other information discussed in this report. This report does not reflect variations that may occur between borings, across the site, or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. If variations appear, we should be immediately notified so that further evaluation and supplemental recommendations can be provided.

The scope of services for this project does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

This report has been prepared in accordance with generally accepted geotechnical engineering practices for the exclusive use of PACLAND, and their respective successors and assigns, for specific application to the project location and stated purpose. No warranties, either express or implied, are intended or made. Site safety, excavation support, and dewatering requirements are the responsibility of others. In the event that changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless Terracon reviews the changes and either verifies or modifies the conclusions of this report in writing.

APPENDIX A

EXHIBITS A-1 to A-5



SITE DATA

ANCHOR 'A' (DEVELOPABLE = 7.28 AC±) (UNDEVELOPABLE = 1.50 AC±)	8.78 AC±
OUTLOT 1	0.49 AC±
OUTLOT 2	0.92 AC±
OUTLOT 3	0.77 AC±
OUTLOT 4	1.75 AC±
ROW DEDICATION	0.15 AC±
TOTAL PROPERTY	12.86 AC±

BUILDING DATA

ANCHOR 'A'	60,000 SF±
RETAIL 1	3,600 SF±
RETAIL 2	4,200 SF±
RETAIL 3	7,200 SF±
OFFICE BUILDING	23,000 SF±
TOTAL BUILDING	98,000 SF±

LEGEND

- PROPOSED BUILDING
- PROPERTY LINE
- CONC. CURB & GUTTER
- FENCE
- HEAVY DUTY CONCRETE
- CONCRETE BY ARCHITECT
- SIDEWALK CONCRETE
- PLAZA / OPEN SPACE
- (X) NUMBER OF STALLS PER ROW
- C COMPACT STALLS
- CART CORRAL
- RETAINING WALL
- DIRECTIONAL MARKINGS

100 0 25 50 100

SCALE IN FEET

REV.	DATE	BY	DESCRIPTION

Terracon
Consulting Engineers and Scientists
4103 SE INTERNATIONAL WAY, SUITE 300 PORTLAND, OREGON 97222
PH. (503) 659-3281 FAX. (503) 659-1287

SITE PLAN

PACLAND

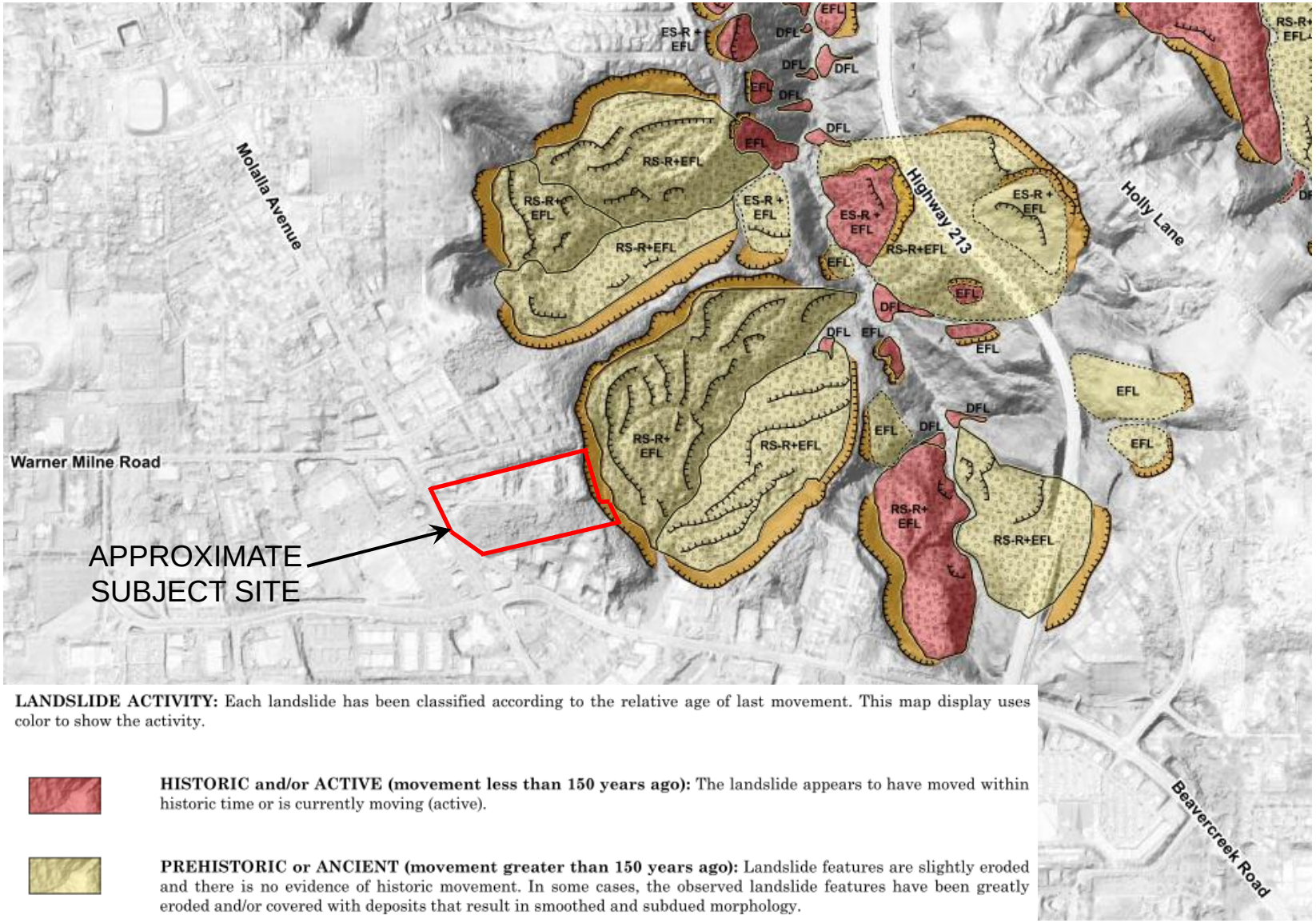
PROPOSED RETAIL DEVELOPMENT

MOLALLA AVENUE AND BEAVERCREEK ROAD

OREGON CITY OREGON

EXHIBIT A-1

DESIGNED BY:	EJL
DRAWN BY:	EJL
APPVD. BY:	EJL
SCALE:	AS SHOWN
DATE:	OCT 2012
JOB NO.	82125030
ACAD NO.	EXH A-1
SHEET NO.:	1 OF 1



LANDSLIDE ACTIVITY: Each landslide has been classified according to the relative age of last movement. This map display uses color to show the activity.

HISTORIC and/or ACTIVE (movement less than 150 years ago): The landslide appears to have moved within historic time or is currently moving (active).

PREHISTORIC or ANCIENT (movement greater than 150 years ago): Landslide features are slightly eroded and there is no evidence of historic movement. In some cases, the observed landslide features have been greatly eroded and/or covered with deposits that result in smoothed and subdued morphology.

REF: Landslide Inventory Map of the Northwest Quarter of the Oregon City Quadrangle, Clackamas County, Oregon (DOGAMI, IMS 26).

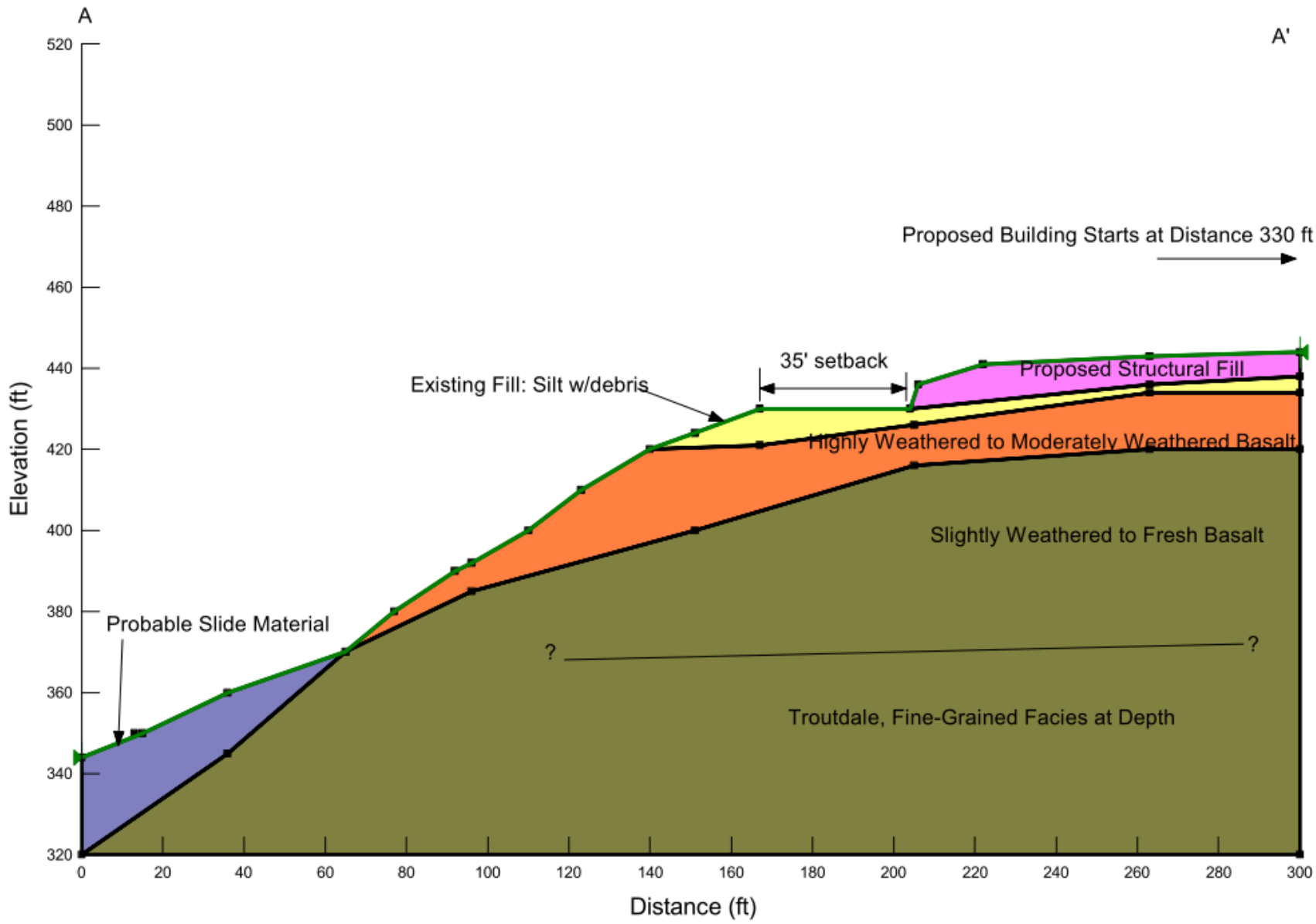
Project Manager:	EJL
Drawn by:	EJL
Checked by:	EJL
Approved by:	EJL
Project No.	82125030
Scale:	As Shown.
File Name:	Exhibit A-2
Date:	Oct. 2012

Terracon
Consulting Engineers & Scientists
4103 SE International Way, #300 Portland, OR 97222
PH. (503) 659-3281 FAX. (503) 659-1287

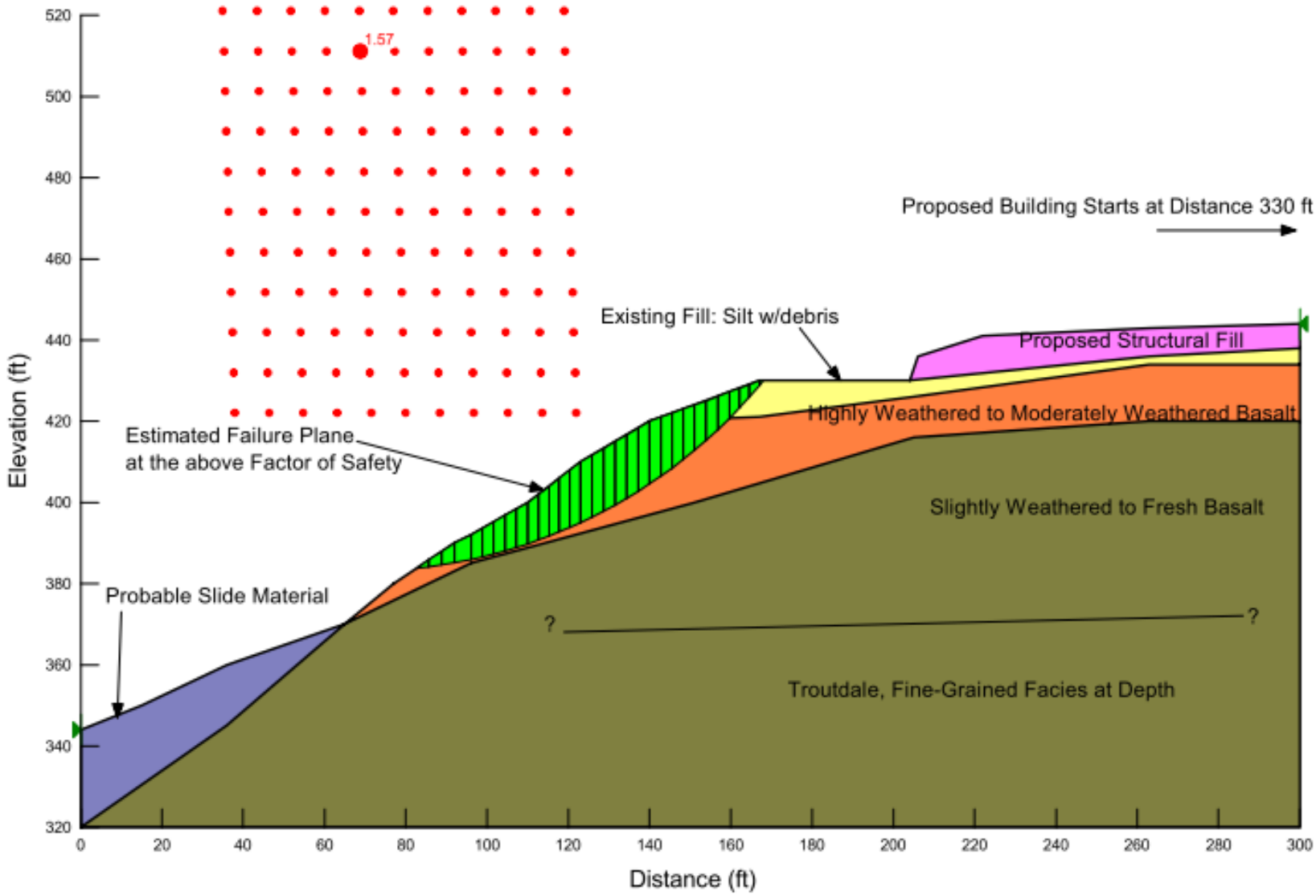
LANDSLIDE MAP EXCERPT

PROPOSED RETAIL DEVELOPMENT
Molalla Avenue and Beavercreek Road
Oregon City, Oregon

Exhibit
A-2

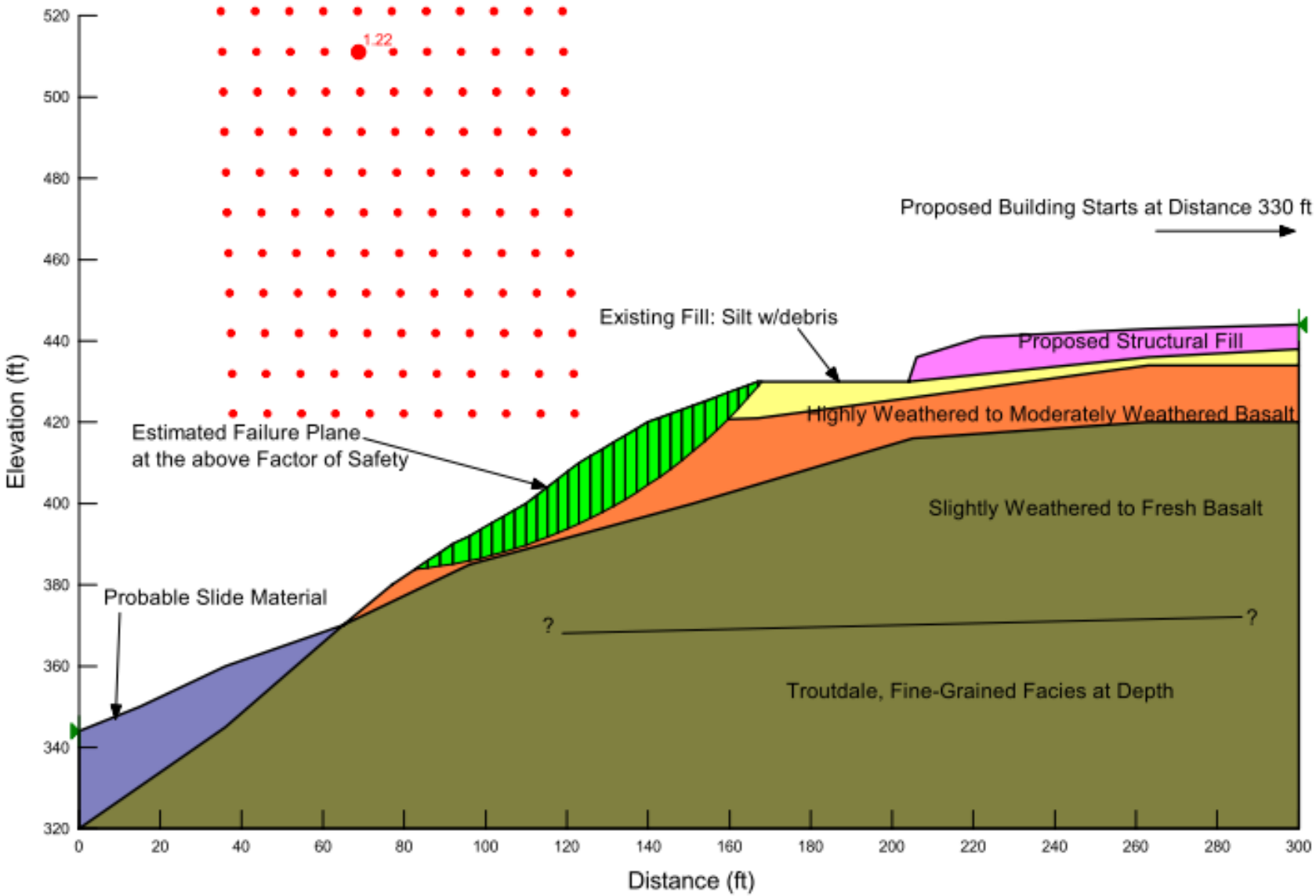


Project Manager: EJL	Project No. 82125030	Terracon Consulting Engineers & Scientists	PRELIMINARY GEOLOGIC CROSS SECTION
Drawn by: EJL	Scale: N.T.S.	4103 SE International Way, #300 Portland, OR 97222	PROPOSED RETAIL DEVELOPMENT Molalla Avenue and Beavercreek Road Oregon City, Oregon
Checked by: EJL	File Name: Exhibit A-2	PH. (503) 659-3281 FAX. (503) 659-1287	Exhibit A-3
Approved by: EJL	Date: Oct. 2012		



Project Manager: EJL	Project No. 82125030	Terracon Consulting Engineers & Scientists	PRELIMINARY STATIC SLOPE STABILITY
Drawn by: EJL	Scale: N.T.S.	4103 SE International Way, #300 Portland, OR 97222	PROPOSED RETAIL DEVELOPMENT
Checked by: EJL	File Name: Exhibit A-2	PH. (503) 659-3281 FAX. (503) 659-1287	Molalla Avenue and Beavercreek Road
Approved by: EJL	Date: Oct. 2012		Oregon City, Oregon

Exhibit A-4



Project Manager: EJL	Project No. 82125030	Terracon Consulting Engineers & Scientists	PRELIMINARY SEISMIC SLOPE STABILITY
Drawn by: EJL	Scale: N.T.S.	4103 SE International Way, #300 Portland, OR 97222	PROPOSED RETAIL DEVELOPMENT
Checked by: EJL	File Name: Exhibit A-2	PH. (503) 659-3281 FAX. (503) 659-1287	Molalla Avenue and Beavercreek Road
Approved by: EJL	Date: Oct. 2012		Oregon City, Oregon

Exhibit A-5

EXPLORATION AND TESTING PROCEDURES

Field Exploration

2001 - 2002 Explorations (J-1200-01)

Exploration Number	Exploration Type	Exploration Depth (feet)	Location	
			Latitude	Longitude
02-B-1	Drilled boring	19.5	45.3355°N	122.5872°W
02-B-2	Drilled boring	13.1	45.3355°N	122.5867°W
02-B-3	Drilled boring	20	45.3360°N	122.5869°W
02-B-4	Drilled boring	21.5	45.3364°N	122.5869°W
02-B-5	Drilled boring	21.5	45.3359°N	122.5875°W
02-B-6	Drilled boring	10	45.3366°N	122.5861°W
02-B-7	Drilled boring	8.5	45.3363°N	122.5860°W
02-B-8	Drilled boring	11	45.3357°N	122.5856°W
02-B-9	Drilled boring	5.5	45.3364°N	122.5863°W
02-B-10	Drilled boring	12.75	45.3361°N	122.5862°W
02-B-11	Drilled boring	13	45.3357°N	122.5861°W
02-B-12	Drilled boring	46	45.3351°N	122.5856°W
02-B-13	Drilled boring	24	45.3352°N	122.5855°W
02-B-14	Drilled boring	50.5	45.3354°N	122.5858°W
02-B-15	Drilled boring	41.5	45.3355°N	122.5858°W
02-B-16	Drilled boring	45.5	45.3357°N	122.5859°W
02-B-17	Drilled boring	24.75	45.3359°N	122.5860°W
02-B-18	Drilled boring	41	45.3361°N	122.5861°W
02-B-19	Drilled boring	26	45.3363°N	122.5861°W
02-B-20	Drilled boring	45	45.3366°N	122.5861°W
02-B-21	Drilled boring	11.5	45.3368°N	122.5867°W
02-B-22	Drilled boring	21.5	45.3366°N	122.5879°W
02-B-23	Drilled boring	18.5	45.3365°N	122.5887°W
02-B-24	Drilled boring	16.5	45.3340°N	122.5854°W
02-MW-1	Drilled boring	20	45.3362°N	122.5875°W
02-MW-2	Drilled boring	26.5	45.3357°N	122.5863°W

Exploration Number	Exploration Type	Exploration Depth (feet)	Location	
			Latitude	Longitude
02-MW-3	Drilled boring	20	45.3359°N	122.5884°W
02-MW-4	Drilled boring	19.5	45.3351°N	122.5892°W
02-MW-5	Drilled boring	20	45.3349°N	122.5891°W
02-TP-1	Test Pit	10	45.3352°N	122.5856°W
02-TP-2	Test Pit	7	45.3351°N	122.5862°W
02-TP-3	Test Pit	11.5	45.3350°N	122.5867°W
02-TP-4	Test Pit	11	45.3349°N	122.5873°W
02-TP-5	Test Pit	7	45.3348°N	122.5878°W
02-TP-6	Test Pit	10	45.3347°N	122.5881°W
02-TP-7	Test Pit	10	45.3347°N	122.5885°W
02-TP-8	Test Pit	11	45.3348°N	122.5889°W
02-TP-9	Test Pit	10.5	45.3350°N	122.5886°W
02-TP-10	Test Pit	11	45.3350°N	122.5882°W
02-TP-11	Test Pit	11	45.3351°N	122.5877°W
02-TP-12	Test Pit	9	45.3352°N	122.5875°W
02-TP-13	Test Pit	6	45.3354°N	122.5875°W
02-TP-14	Test Pit	5.5	45.3354°N	122.5879°W
02-TP-15	Test Pit	10.5	45.3353°N	122.5883°W
02-TP-16	Test Pit	10	45.3353°N	122.5887°W
02-TP-17	Test Pit	10.5	45.3352°N	122.5890°W
02-TP-18	Test Pit	7	45.3356°N	122.5855°W
02-TP-19	Test Pit	7.5	45.3354°N	122.5853°W
02-TP-20	Test Pit	10	45.3354°N	122.5892°W
02-TP-21	Test Pit	10.5	45.3355°N	122.5888°W
02-TP-22	Test Pit	10	45.3355°N	122.5884°W
02-TP-23	Test Pit	7.5	45.3357°N	122.5880°W
02-TP-24	Test Pit	4	45.3358°N	122.5876°W
02-TP-25	Test Pit	10.5	45.3360°N	122.5878°W
02-TP-26	Test Pit	11	45.3359°N	122.5881°W
02-TP-27	Test Pit	10.5	45.3359°N	122.5885°W
02-TP-28	Test Pit	8.5	45.3358°N	122.5890°W

Exploration Number	Exploration Type	Exploration Depth (feet)	Location	
			Latitude	Longitude
02-TP-29	Test Pit	11	45.3355°N	122.5895°W
02-TP-30	Test Pit	11.5	45.3358°N	122.5898°W
02-TP-32	Test Pit	11	45.3361°N	122.5890°W
02-TP-33	Test Pit	11	45.3361°N	122.5886°W
02-TP-31	Test Pit	11.5	45.3359°N	122.5892°W
02-TP-34	Test Pit	12.5	45.3362°N	122.5882°W
02-TP-35	Test Pit	10.5	45.3363°N	122.5879°W
02-TP-36	Test Pit	11	45.3364°N	122.5871°W
02-TP-37	Test Pit	12.5	45.3365°N	122.5867°W
02-TP-38	Test Pit	5.5	45.3364°N	122.5863°W
02-TP-39	Test Pit	13	45.3357°N	122.5860°W
02-TP-40	Test Pit	10	45.3352°N	122.5864°W
02-TP-41	Test Pit	10	45.3351°N	122.5870°W
02-TP-42	Test Pit	6.5	45.3353°N	122.5859°W
02-TP-43	Test Pit	11	45.3341°N	122.5854°W
02-TP-44	Test Pit	11	45.3343°N	122.5858°W
02-TP-45	Test Pit	6	45.3346°N	122.5856°W
02-TP-46	Test Pit	7	45.3347°N	122.5857°W
02-TP-47	Test Pit	11	45.3349°N	122.5855°W
02-TP-48	Test Pit	10	45.3364°N	122.5862°W
02-TP-1A	Test Pit	9	45.3357°N	122.5860°W
02-TP-2A	Test Pit	11	45.3359°N	122.5860°W
02-TP-3A	Test Pit	12	45.3360°N	122.5861°W
02-TP-4A	Test Pit	12	45.3361°N	122.5861°W
02-TP-5A	Test Pit	11	45.3363°N	122.5861°W
02-TP-6A	Test Pit	6.5	45.3364°N	122.5863°W
02-TP-7A	Test Pit	9	45.3359°N	122.5865°W
02-TP-8A	Test Pit	7.5	45.3359°N	122.5866°W
02-TP-9A	Test Pit	9.5	45.3363°N	122.5871°W
02-TP-10A	Test Pit	7	45.3364°N	122.5870°W
02-TP-11A	Test Pit	11	45.3358°N	122.5877°W

Exploration Number	Exploration Type	Exploration Depth (feet)	Location	
			Latitude	Longitude
02-TP-12A	Test Pit	10	45.3361°N	122.5880°W
02-TP-13A	Test Pit	9.5	45.3363°N	122.5879°W
02-TP-14A	Test Pit	4.5	45.3362°N	122.5875°W
02-TP-15A	Test Pit	11.5	45.3360°N	122.5891°W
02-TP-16A	Test Pit	9.5	45.3361°N	122.5885°W
02-TP-17A	Test Pit	10	45.3359°N	122.5883°W
02-TP-18A	Test Pit	10	45.3357°N	122.5883°W
02-TP-19A	Test Pit	8	45.3357°N	122.5887°W
02-TP-20A	Test Pit	10	45.3357°N	122.5895°W

2021 Exploration

Exploration Number	Exploration Type	Exploration Depth (feet)	Location	
			Latitude	Longitude
21-B-1	Drilled Boring	90½	45.3363°N	122.5863°W

Exploration Layout and Elevations: Terracon personnel provided the exploration layout. Coordinates were obtained with a handheld GPS unit (estimated horizontal accuracy of about ±10 feet) and approximate elevations were obtained from Google Earth Pro data. If elevations and a more precise exploration layout are desired, we recommend explorations be surveyed following completion of fieldwork.

Subsurface Exploration Procedures: We advance soil borings with a truck-mounted drill rig using continuous flight augers (hollow stem or solid stem). Four samples were typically obtained in the upper 10 feet of each boring and at intervals of 5 feet thereafter. Soil sampling was performed using thin-wall tube and/or split-barrel sampling procedures. In the thin-walled tube sampling procedure, a thin-walled, seamless steel tube with a sharp cutting edge is pushed hydraulically into the soil to obtain a relatively undisturbed sample. In the split barrel sampling procedure, a standard 2-inch outer diameter split barrel sampling spoon is driven into the ground by a 140-pound automatic hammer falling a distance of 30 inches. The number of blows required to advance the sampling spoon the last 12 inches of a normal 18-inch penetration is recorded as the Standard Penetration Test (SPT) resistance value. The SPT resistance values, also referred to as N-values, are indicated on the boring logs at the test depths. The samples were placed in appropriate containers, taken to our soil laboratory for testing, and classified by a geotechnical engineer. In addition, we observed and recorded groundwater levels during drilling and sampling.

All explorations were supervised and logged by a field geologist who recorded field test data, classified soils, and collected the samples from the explorations. Our exploration team prepared field boring logs as part of standard drilling operations including sampling depths, penetration distances, and other relevant sampling information. Field logs include visual classifications of materials encountered during drilling, and our interpretation of subsurface conditions between samples. Final boring logs, prepared from field logs, represent the geotechnical engineer's interpretation, and include modifications based on observations and laboratory tests.

Upon encountering bedrock or refusal-to-drilling conditions, rock coring (using NQ/NX rock core barrel) was performed within select borings.

All explorations were supervised and logged by a field engineer or field geologist who recorded field test data, classified soils, and collected the samples from the explorations. Our exploration team prepared field boring logs as part of standard drilling operations including sampling depths, penetration distances, and other relevant sampling information. Field logs include visual classifications of materials encountered during drilling, and our interpretation of subsurface conditions between samples. Final boring logs, prepared from field logs, represent the geotechnical engineer's interpretation, and include modifications based on observations and laboratory tests.

Vibrating Wire Piezometer: We installed one vibrating wire piezometer (VWP) in boring 21-B-1 on December 17, 2021. The VWP was installed at a depth of approximately 30¾ feet below the ground surface (bgs), at the top of the intact, very low permeability, Boring lava (basaltic bedrock). This depth was determined by the project geotechnical engineer following completion of drilling. Prior to installation, the lower portion of the boring was filled with a bentonite chip-grout mixture and low-permeability grout was extended from approximately 35 feet bgs to about 1-foot bgs.

During installation, the VWP was taped to a one-inch diameter PVC pipe with the pressure sensor facing upwards. The VWP cable was taped to the PVC pipe on approximate 3-foot intervals as it was lowered into the boring. Once the VWP was at the target depth, a bentonite chip-grout mixture was placed from the bottom of the exploration to a depth of approximately 35 feet bgs. Then a low permeability grout was introduced to seal the upper portion of the exploration and allow the mini data logger to record changes in the vibrating wire frequency, and thus changes in pressure. The VWP wire was connected to a mini data logger housed within a steel, flush-mount wellhead. The mini data logger was set to record vibrating wire readings every 4 hours, starting December 20, 2021 at 5:00PM. Completion of the VWP is summarized in the following table:

Depth (feet bgs)	Description	Detail
0	Steel, flush-mount wellhead	Approximate 8-inch diameter and 18-inches tall
0 to 1	Void (open space)	---
1 to 35	Low permeability grout	50 PSI Grout for Medium to Hard Soils 30 gallon Water / 94 lb. Portland Cement
30¾	VWP piezometer installation	Geokon 4500S-350KPA (51psi)
35 to 90½	Bentonite chip-low permeability grout mixture	50 PSI Grout for Medium to Hard Soils 30 gallon Water / 94 lb. Portland Cement / 25 lb. Bentonite

Property Disturbance: We backfilled borings according to local jurisdiction requirements after completion of each exploration. Our services do not include repair of the site beyond backfilling our boreholes. Excess auger cuttings were dispersed in the general vicinity of each borehole. Since backfill material often settles below the surface after a period, we recommend boreholes be checked periodically and additional backfill added, if necessary.

Laboratory Testing

The project engineer reviewed the field data and assigned laboratory tests to understand the engineering properties of the various soil strata, as necessary, for this project. The following tests were performed for this project.

- ASTM D2216 Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
- ASTM D6913 Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis
- AASHTO T-267 Standard Method of Test for Determination of Organic Content in Soils by Loss on Ignition
- ASTM D1883 Standard Test Method for California Bearing Ratio (CBR) of Laboratory-Compacted Soils
- ASTM D6913 Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis
- ASTM D1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort
- ASTM G51 Standard Test Method for Measuring pH of Soil for Use in Corrosion Testing
- ASTM C 1580 Standard Test Method for Water-Soluble Sulfate in Soil
- ASTM G187 Standard Test Method for Measurement of Soil Resistivity Using the Two-Electrode Soil Box Method
- ASTM D2938 Standard Test Method for Unconfined Compressive Strength of Intact Rock Core Specimens
- ASTM D3080 Standard Test Method for Direct Shear Test Of Soils Under Consolidated Drained Conditions

The laboratory testing program included examination of soil samples by an engineer. Based on the material's texture and plasticity, we described and classified the soil samples in accordance with the Unified Soil Classification System.

Rock classification was conducted using locally accepted practices for engineering purposes; petrographic analysis may reveal other rock types. Rock core samples typically provide an improved specimen for this classification. Boring log rock classification was determined using the Description of Rock Properties.



Western portion of site, facing north



Central portion of site, facing west



Top of headscarp, facing south



Base of scarp in area of observed spring, facing south

EXPLORATION RESULTS

Contents:

2021 Boring Log (21-B-1)
2002-4 Exploration Logs (B-1 through B-24, MW-1 through MW-5, TP-1 through TP-46, TP-1A through TP-20A)
2002 Lab Test Results
- Grain Size Distribution Results (12 pages)
- Atterberg Limits Results
- CBR Results
- Direct Shear Test Results
- Unconfined Compression Test Results
- Soil Chemical Analysis Results
- Organic Content Results

Note: All attachments are one page unless noted above.

BORING LOG NO. 21-B-1

PROJECT: Oregon City Development

CLIENT: The Wolff Company LLC
Scottsdale, AZ

SITE: 1367 Molalla Avenue
Oregon City, OR

LOCATION See Exploration Plan

Latitude: 45.3363° Longitude: -122.5863°

Surface Elev.: 429 (Ft.)

DEPTH	ELEVATION (Ft.)	Description
0.2	429	**ASPHALT**, moist
1.0	428	**FILL - LEAN CLAY WITH GRAVEL (CL)**, medium to high plasticity, red, moist
		FILL - POORLY GRADED GRAVEL WITH CLAY AND SAND (GP-GC), dark gray, moist Basalt boulder from 5 to 7 feet bgs
7.0	422	**CLAYEY SAND WITH GRAVEL (SC)**, low to medium plasticity, red, white, and black, moist, very loose, residual soil
		nonplastic, gray, moist, very dense, probably heavily weathered rock
		basalt frgaments present
30.5	398.5	vibrating wire piezometer installed at 30 ft bgs
		BASALT, gray, moist, sound, moderate spacing, unweathered, very strong

DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS
5		50/1"
10		3-5-7 N=12 .25 (HP)
15		21-38-50/5" 1.75 (HP)
20		50/5"
25		50/1"
30		50/5" RQD = 0%
35		RQD = 88%
40		RQD = 95%
45		RQD = 92%
50		RQD = 91%

STRENGTH TEST: TEST TYPE; COMPRESSIVE STRENGTH (tsf); STRAIN (%)

WATER CONTENT (%)

DRY UNIT WEIGHT (pcf)

ATTERBERG LIMITS: LL-PL-PI

Stratification lines are approximate. In-situ, the transition may be gradual.
Vibrating wire piezometer installed at 30' bgs

Hammer Type: Automatic

Advancement Method:
Mud Rotary/Coring

Abandonment Method:
Boring Grouted with vibrating wire piezometer

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevation estimated from site topographic map

Notes:
Vibrating Piezometer installed at this depth

Serial No. 2146354

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
700 NE 55th Ave
Portland, OR

Boring Started: 12-16-2021 | Boring Completed: 12-17-2021

Drill Rig: Truck-mounted | Driller: Western States

Project No.: 82215043

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 82215043 OREGON CITY DEVEL.GPJ TERRACON_DATATEMPLATE.GDT 1/5/22

BORING LOG NO. 21-B-1

PROJECT: Oregon City Development

CLIENT: The Wolff Company LLC
Scottsdale, AZ

SITE: 1367 Molalla Avenue
Oregon City, OR

LOCATION See Exploration Plan

Latitude: 45.3363° Longitude: -122.5863°

Surface Elev.: 429 (Ft.)

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI
		55	RQD = 78%						
		60	RQD = 68%						
		65	RQD = 70%						
		70	RQD = 67%						
		75	RQD = 30%						
		80	RQD = 0%						
		85	RQD = 0%						
		90	RQD = 91%						

BASALT, gray, moist, sound, moderate spacing, unweathered, very strong *(continued)*

moderately fractured, very close fracture spacing, slightly weathered, fractured zone 70 to 80 feet bgs

sound, moderate spacing, unweathered, strong rock

90.5 338.5

Boring Terminated at 90.5 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.
Vibrating wire piezometer installed at 30' bgs

Hammer Type: Automatic

Advancement Method:
Mud Rotary/Coring

Abandonment Method:
Boring Grouted with vibrating wire piezometer

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevation estimated from site topographic map

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
700 NE 55th Ave
Portland, OR

Boring Started: 12-16-2021 | Boring Completed: 12-17-2021

Drill Rig: Truck-mounted | Driller: Western States

Project No.: 82215043

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 82215043 OREGON CITY DEVEL.GPJ TERRACON_DATATEMPLATE.GDT 1/5/22

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-1 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 443 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot)	N-values	Testing
	Soft, wet, brown, SILT with some clay and fine roots. (Topsoil)						
	Stiff to very stiff, moist, orange-brown, SILT with trace clay and trace to some sand.						
	Medium dense, wet, orange-brown, silty, fine to medium SAND and stiff to very stiff, wet, orange-brown, SILT with trace clay and sand with occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)		S-1		23		
5			S-2		15		
			S-3		57 / 17		
10			S-4		58 / 47		
	Dense, damp, light gray, moderately weathered ANDESITE boulder encountered from 11 to 12.5 feet.						
15	Grades to dense, orange-gray, silty, fine to medium SAND and stiff, wet, orange-brown, SILT with trace clay and sand.		S-5		49 / 37		
	Very dense, damp, light gray, moderately weathered ANDESITE boulder encountered from 17 to 19.5 feet.						
20	Boring completed at 19.5 feet on 10/29/01. No groundwater seepage observed at time of drilling.		S-6		50/4"		
25							

0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc.
Geotechnical & Environmental Consultants

BORING LOG	Figure A-1
Date Drilled: 10/29/01	Logged By: JPG

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-2 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 440 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot)	N-values	Testing
	Soft, wet, brown, SILT with trace clay and fine roots. (Topsoil)						
	Very stiff to hard, damp to moist, orange-brown, SILT with trace clay and some sand.						
			S-1		▲ 20, ▲ 30	34	
5	Very dense, moist, orange-gray, silty, fine to medium SAND with trace to some clay and occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)		S-2		● 20, ▲ 50	52	
	Very dense, damp, gray, moderately weathered ANDESITE boulder encountered from 7 to 8.5 feet.		S-3		● 12, ▲ 50	50/1"	
10			S-4		● 15, ▲ 50	50/6"	
	Very dense, damp, gray, moderately weathered ANDESITE boulder encountered from 12.5 to 13.5 feet.						
	Boring completed at approximately 13.1 feet on 10/29/01 with refusal on Andesitic boulder. No groundwater seepage observed at time of drilling.		S-5		▲ 50	50/1"	
15							
20							
25							

0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- ⊗ No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 10/29/01	Logged By: JPG

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-3 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 440 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (Standard ▲ / Other △; Blows per foot)	N-values	Testing
	6" Asphalt pavement.						
	Stiff to medium stiff, orange-brown, SILT with trace to some clay and sand.		S-1		4		
5	Medium dense, wet, orange-brown, silty, fine to medium SAND and stiff to very stiff, wet, orange-brown, clayey SILT with trace sand with occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)		S-2		50	12	
			S-3		48	14	
10			S-4		57	14	
15	Grades to orange-gray.		S-5		55	33	
20	Grades to saturated at 19 feet.		S-6	ATD	50	50/4"	
	Boring completed at 20 feet on 10/29/01. Perched groundwater seepage observed at 19 feet at time of drilling.						
25							

0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 10/29/01	Logged By: JPG

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-4 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 439 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot)	N-values	Testing
	10" Asphalt pavement.						
	Stiff grading to very stiff, moist to wet, orange-brown, SILT with trace to some clay and sand.						
			S-1		19		
5	Medium dense , moist to wet, orange-brown, silty, fine to medium SAND and stiff to very stiff, wet, orange-brown, clayey SILT with trace sand with occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)		S-2		16		
	Grades to wet		S-3		24 (50)		
10							
	Grades to dense and orange-gray.		S-4		40 (49)		
15			S-5		50		
20	Grades to very dense.		S-6		52		
	Boring completed at 21.5 fet on 10/29/01. No groundwater seepage observed at time of drilling.						
25							

0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 10/29/01	Logged By: JPG

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-5 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 445 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot)	N-values	Testing
	4" Asphalt pavement.						
	Loose, moist to wet, brown, SILT with trace to some fine sand. (Topsoil)						
	Medium dense, moist to wet, orange-brown, SILT with trace to some clay and fine sand.		S-1			13	
5	Medium dense, wet, orange-brown, silty SAND and stiff to very stiff, wet, orange-brown, SILT with trace clay and sand with occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)		S-2		55	21	
			S-3		49	50/6"	
10	Very dense, damp, light gray, moderately weathered ANDESITE boulder encountered from 8.5 to 9.5 feet.		S-4		52	16	
15	Grades to dense.		S-5			33	
20			S-6		53	33	
	Boring completed at 21.5 feet on 10/29/01. No groundwater seepage observed at time of drilling.						
25							

Penetration Resistance axis: 0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 10/29/01	Logged By: JPG

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-6 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 425 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0 10 20 30 40 50)	N-values	Testing
	6" Very loose, wet, brown, sandy SILT with some organic debris and roots. (Topsoil)						
	Very stiff, moist, orange-brown, SILT with some sand to sandy SILT.						
	Medium dense, moist to wet, orange-brown, silty SAND and stiff to very stiff, wet, orange-brown, SILT with trace clay and sand with occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)		S-1			24	
5			S-2			14	
			S-3			25	
	Grades to orange gray.						
10			S-4			29	
	Boring completed at 10 feet on 10/29/01 with refusal. No groundwater seepage observed at time of drilling.						
15							
20							
25							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 10/29/01	Logged By: JPG

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-7 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 400 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot)	N-values	Testing
	Very loose, moist to wet, orange-brown, sandy SILT.						
	Very loose, moist to wet, orange-brown, sandy SILT						
	Medium dense, moist to wet, orange-brown, silty SAND and stiff to very stiff, wet, orange-brown, SILT with trace clay and sand with occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)	I	S-1			33	
5	Grades to dense. (Possible boulder)	I	S-2			50	
	Grades to medium dense.	I	S-3			37	
	Boring completed at 8.5 feet on 10/29/01 with refusal. No groundwater seepage observed at time of drilling.						
10							
15							
20							
25							

0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc.
Geotechnical & Environmental Consultants

BORING LOG | **Figure A-1**

Date Drilled: 10/29/01 | **Logged By: JPG**

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-8 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 395 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (Standard ▲ / Other △; Blows per foot)	N-values	Testing
	Very loose, wet, brown, sandy SILT with some organic debris and roots. (Topsoil)						
	Very loose, moist, orange-brown, sandy SILT. (Colluvium)						
	Loose, moist to wet, orange-brown, silty SAND and stiff to very stiff, wet, orange-brown, SILT with trace clay and sand with occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)	I	S-1		▲ 7	7	
5	Grades to medium dense.	I	S-2		▲ 25	25	
	Grades to dense.	I	S-3		▲ 42	42	
10	Grades to very dense and light gray. (Probable boulder)	I	S-4		▲ 50/4"	50/4"	
	Boring completed at approximately 11 feet on 10/31/01 with refusal. No groundwater seepage observed at time of drilling.						
15							
20							
25							

Penetration Resistance scale: 0 10 20 30 40 50

Explanation

- I — 2-inch O.D. split spoon sample
- II — 3-inch I.D Shelby tube sample
- ⊗ — No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 10/31/01	Logged By: JPG

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-9 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 433 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot; 0 10 20 30 40 50)	N-values	Testing
	Loose, moist to wet, mottled orange-brown and brown, sandy SILT with trace to some gravel. Occasional clasts of asphalt and plastic observed. (Fill)		S-1			10	
5	Concrete debris in tip of sampler.		S-2			50/6"	
	Boring terminated at 5.5 feet with refusal on concrete debris. Moved drill rig approximately 8 feet east and redrilled to refusal on concrete at 6.5 feet. No groundwater seepage observed at time of drilling.						
10							
15							
20							
25							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 10/31/01	Logged By: JPG

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-10 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 433 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot)	N-values	Testing
	6" Asphalt pavement						
	Medium dense, wet, mottled brown-gray, SILT with trace to some clay and gravel. Slight hydrocarbon odor. (Fill)		S-1			12	
5	Stiff, wet, orange-brown, SILT with some sand.		S-2			15	
	Medium dense , moist to wet, orange-brown, silty, fine to medium SAND and stiff to very stiff, wet, orange-brown, SILT with trace clay and sand with occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)		S-3		54	24	
10	grades to very dense, wet, and orange-gray.		S-4			57	
			S-5			50/4"	
	Boring completed at approximately 12.75 feet on 11/1/01. No groundwater seepage observed at time of exploration.						
15							
20							
25							

Penetration Resistance scale: 0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 11/1/01	Logged By: JPG

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-11 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 433 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0 10 20 30 40 50)	N-values	Testing
	6" Asphalt pavement.						
	Medium stiff to stiff, wet, mottled brown, sandy SILT with trace to some gravel. (Fill)		S-1			5	
5	Grades to SILT with some sand. (Fill)		S-2			9	
	Asphalt observed at 7 feet.						
	Loose to medium dense, wet, orange-brown, silty SAND and stiff to very stiff, wet, orange-brown, SILT with trace clay and sand with occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)		S-3			13	
10			S-4			9	
	Very dense, damp, light gray, moderately weathered ANDESITE boulder encountered from 11.5 to 13 feet.		S-5			53	
	Boring completed at 13 feet on 11/1/01. No groundwater seepage observed at time of drilling.						
15							
20							
25							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 11/1/01	Logged By: JPG

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-12	PAGE 1 OF 3
Location: Oregon City, Oregon	Approximate Elevation: 433 feet		

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0 10 20 30 40 50)	N-values	Testing
	Blackberries and wood refuse.						
	Stiff, moist, red-brown, clayey SILT with some sand (probable fill).		S-1		▲ 9	9	
5	Stiff, moist, brown, SILT with trace to some clay and some fine organics (probable fill).		S-2		▲ 10	10	
	Medium stiff, moist, red, brown, and gray, sandy CLAY (completely weathered bedrock).		S-3		▲ 7	7	
10	Medium dense, moist, red, brown, and gray, friable, silty SAND with trace clay and gravel (completely weathered bedrock).		S-4		▲ 59	15	GS
15	Medium stiff, moist, red, brown, and gray, friable, sandy SILT with trace clay (completely weathered bedrock).		S-5		▲ 7	7	
20	Very stiff, moist, red, brown, and gray, friable, sandy SILT with trace clay (completely weathered bedrock).		S-6		▲ 28	28	
25							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-12
	Date Drilled: 3/14/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-12 | **PAGE 2 OF 3**

Location: Oregon City, Oregon | **Approximate Elevation:** 433 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot)	N-values	Testing
	Stiff, moist, red, brown, and gray, friable, sandy (completely weathered bedrock).	I	S-7			10	
30	Dense, gray, slightly weathered to fresh, basaltic ANDESITE (bedrock). Switch to coring - see next sheet.	I	S-8			50/6"	
35							
40							
45							
50							

0 10 20 30 40

0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-12
	Date Drilled: 3/14/02	Logged By: EL

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-12	PAGE 3 OF 3
Location: Oregon City, Oregon	Approximate Elevation: 433 feet		

Depth (ft)	Fracture: Profile	Fracture: Infilling	Fracture: Inclination	Rock Description	Time	Core Run	RQD (%)	Recovery (%)	Comments
30				Coring intiated at 31 feet					
35			65°	Gray, slightly to moderately weathered, closely to moderately fractured, weak to moderately strong, basaltic ANDESITE.	1:24 1:32	1	63	100	
40				Gray with red discoloration, moderately weathered, very closely to closely fractured, weak, basaltic ANDESITE. Gray, fresh, widely fractured, strong, basaltic ANDESITE.	1:35 1:47	2	30	100	
45				Gray, fresh, widely fractured, strong, basaltic ANDESITE.		3	100	100	Circulation loss.
50				Coring terminated at 46 feet.					
55									

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	CORING LOG	Figure A-12
	Date Drilled: 3/14/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-13 | **PAGE 1 OF 2**

Location: Oregon City, Oregon | **Approximate Elevation:** 425 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40, 50)	N-values	Testing
	Blackberry bushes over very soft, wet, brown, SILT with forest duff (topsoil).						
	Medium stiff, wet, red, residual silty CLAY with trace to some sand, silty SAND, and sandy SILT (completely weathered bedrock).		S-1		▲	6	
5	Stiff, moist, red/gray/black, residual silty CLAY (completely weathered bedrock).		S-2		▲	15	
	Stiff, moist, red/gray/black, friable, residual sandy SILT/silty SAND with trace clay (completely weathered bedrock).		S-3		▲ 63	8	GS
10	Stiff, moist, red/gray/black, friable, residual, sandy SILT/silty SAND with trace clay (highly to completely weathered bedrock).		S-4		▲	13	
15	Stiff, moist, red/gray/black, friable, residual sandy SILT with trace to some clay (highly to completely weathered bedrock).		S-5		▲	12	
20	Refusal bedrock at 19 feet. Start of coring - see next sheet.						
25							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- ⊗ No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-13
	Date Drilled: 3/14/02	Logged By: EL

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-13	PAGE 2 OF 2
Location: Oregon City, Oregon	Approximate Elevation: 425 feet		

Depth (ft)	Fracture: Profile	Fracture: Infilling	Fracture: Inclination	Rock Description	Time	Core Run	RQD (%)	Recovery (%)	Comments
				Coring initiated at 19 feet.					
20				Gray, fresh, widely fractured, strong, basaltic ANDESITE.	9:15	1	52	95	Unconfined compressive strength = 8880 psi.
				Red-brown with black specks, highly weathered, very closely fractured, friable, basaltic ANDESITE.	9:28				Infilling soil loss.
25				Coring terminated at 24 feet.					
30									
35									
40									
45									

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	CORING LOG	Figure A-13
	Date Drilled: 3/13/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-14 | **PAGE** 1 OF 3

Location: Oregon City, Oregon | **Approximate Elevation:** 424 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	Very soft, wet, brown, organic SILT (forest duff and organic-rich topsoil).						
	Medium stiff to stiff, moist to wet, red with gray and black, residual silty CLAY/clayey SILT with some fine sand (completely weathered bedrock).		S-1		▲	8	
5	Stiff, moist to wet, red with gray and black, residual silty CLAY/clayey SILT with some fine sand (completely weathered bedrock).		S-2		▲	10	
	Very stiff, moist, gray and red, friable, residual sandy SILT/silty SAND with trace clay (completely weathered bedrock).		S-3		▲	21	
10	Very stiff, moist, gray and red, friable, residual sandy SILT/silty SAND with trace clay (completely weathered bedrock).		S-4		▲	20	
15	Very stiff, moist, gray and red, friable, residual sandy SILT/silty SAND (highly weathered bedrock).		S-5		▲	50/2"	
	Drilling terminated on bedrock. Switch to coring. See next sheet.						
20							
25							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

0 10 20 30 40 50

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-14
	Date Drilled: 3/13/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-14 | **PAGE 2 OF 3**

Location: Oregon City, Oregon | **Approximate Elevation:** 424 feet

Depth (ft)	Fracture: Profile	Fracture: Infilling	Fracture: Inclination	Rock Description	Time	Core Run	RQD (%)	Recovery (%)	Comments
15				Coring initiated at 15.5 feet.					
20				Gray, fresh, moderately fractured, strong, basaltic ANDESITE. Red-brown with black specks, moderately to highly weathered, very closely fractured, friable to weak, basaltic ANDESITE.	11:52 12:01	1	18	100	
25				Red-brown and black, moderately to highly weathered, very closely fractured, friable to weak. basaltic ANDESITE. Gray, red and black, moderately weathered, very closely fractured, weak, basaltic ANDESITE.	12:05 12:20	2	8	100	
30				Gray and black, moderately weathered, very closely to closely fractured, weak to moderately strong, basaltic ANDESITE.	12:24 12:37	3	13	100	Circulation loss.
35				Gray, fresh, widely fractured, strong, basaltic ANDESITE.	13:41	4	100	100	
40				Gray, fresh, widely fractured, strong, basaltic ANDESITE.	13:55	5	100	100	

Zipper Zeman Associates, Inc. **Geotechnical & Environmental Consultants**	**CORING LOG**	**Figure A-14**
	Date Drilled: 3/13/02	**Logged By: EL**

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-14 | **PAGE 3 OF 3**

Location: Oregon City, Oregon | **Approximate Elevation:** 424 feet

Depth (ft)	Fracture: Profile	Fracture: Infilling	Fracture: Inclination	Rock Description	Time	Core Run	RQD (%)	Recovery (%)	Comments
45		Red clay	70° 70°	Gray, fresh, widely fractured, strong, basaltic ANDESITE.	14:05	6	75	100	
50			70°	Gray, fresh, widely fractured, strong, basaltic ANDESITE.	14:30	7	100	100	
55				Coring terminated at 50.5 feet.					
60									
65									
70									

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	CORING LOG	Figure A-14
	Date Drilled: 3/13/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-15 | **PAGE 1 OF 2**

Location: Oregon City, Oregon | **Approximate Elevation:** 422 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	Very soft, wet, brown, organic SILT (topsoil).						
	Medium stiff, moist to wet, red and black, residual, silty CLAY/clayey SILT (completely weathered bedrock).		S-1		▲	7	
5	Medium stiff to stiff, moist, red, gray and black, friable, residual sandy SILT/silty SAND with trace clay (completely weathered bedrock).		S-2		▲	8	
	Stiff, moist, red, gray and black, friable, residual sandy SILT/silty SAND with trace clay (completely weathered bedrock).		S-3		▲	11	
10	Very stiff, moist, red, gray and black, friable, residual sandy SILT/silty SAND with trace clay (completely weathered bedrock).		S-4		▲	23	
15	Stiff, moist, red, gray and black, friable, residual sandy SILT/silty SAND witht race clay (completely weathered bedrock).		S-5		▲	11	
20	Very stiff, moist, red, gray and black, friable, residual sandy SILT/silty SAND with trace clay (completely weathered bedrock).		S-6		▲	24	
25							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content (0, 10, 20, 30, 40, 50)

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-15
	Date Drilled: 3/12/02-3/13/02	Logged By: EL

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-15	PAGE 2 OF 2
Location: Oregon City, Oregon	Approximate Elevation: 422 feet		

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	Dense, moist, red with gray and black, silty SAND with trace clay (highly to completely weathered bedrock).		S-7		▲ 32	32	
30	Dense, moist, gray, friable, residual silty SAND with trace clay (moderately to highly weathered bedrock).		S-8		▲ 43	43	
35	Medium dense, moist, gray, friable, residual silty SAND with trace clay (moderately to highly weathered bedrock).		S-9		▲ 27	27	
40	Very dense, moist, gray, friable, residual silty SAND with trace clay (moderately to highly weathered bedrock).		S-10		▲ 50/5"	50/5"	
	Drilling terminated on bedrock at 41.5 feet. No groundwater observed at time of drilling.						
45							
50							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-15
	Date Drilled: 3/12/02-3/13/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-16 | **PAGE 1 OF 3**

Location: Oregon City, Oregon | **Approximate Elevation:** 430 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (Standard ▲ / Other △; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	Blackberry bushes, junk, asphalt debris over soft, moist, red, sandy silty CLAY (fill).						
	Medium stiff, moist, red, residual sandy SILTwith some clay (fill).		S-1		▲	5	
5	Soft, moist, red, residual sandy silty CLAY/clayey SILT (fill).		S-2		▲	3	
	Soft, moist, red, residual sandy silty CLAY (fill).		S-3		▲	3	
	Soft, wet, dark gray-brown, clayey SILT with small pieces of rubber and glass (relic topsoil).						
10	Med. dense, moist, tan, residual, silty SAND with trace clay		S-4		▲	5	
	Medium stiff, moist to wet, red, residual silty CLAY (completely weathered bedrock).						
15	Hard, moist, red, gray, and black, friable, residual sandy SILT/silty SAND with trace clay (highly weathered bedrock).		S-5		▲	50/5"	
	Very dense, damp, gray, fine to coarse SAND (moderately weathered bedrock). Rough/difficult drilling action.						
20	No recovery.	⊗	S-6		▲	15	
25							

0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- ⊗ No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-16
	Date Drilled: 3/8/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-16 | **PAGE 2 OF 3**

Location: Oregon City, Oregon | **Approximate Elevation:** 430 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	Medium dense, moist, gray, friable, residual silty fine to coarse SAND (moderately weathered bedrock).		S-7			25	
	Medium dense, wet, red and gray, friable, residual silty SAND with trace to some clay (highly weathered bedrock).						
30	No recovery. Switch to coring - see next sheet.		S-8		50/1"		
35							
40							
45							
50							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-16
	Date Drilled: 3/8/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-16 | **PAGE 3 OF 3**

Location: Oregon City, Oregon | **Approximate Elevation:** 430 feet

Depth (ft)	Fracture: Profile	Fracture: Infilling	Fracture: Inclination	Rock Description	Time	Core Run	RQD (%)	Recovery (%)	Comments
				Coring initiated at 29.5 feet.					
30				Gray, fresh, widely fractured, strong, basaltic ANDESITE.	11:00 11:15	1	100	100	
			70°	Gray with red discoloration, moderately weathered, closely fractured, weak, basaltic ANDESITE.	11:36	2	33	100	
35					12:00				
			70°	Gray with red discoloration, slightly weathered, moderately to widely fractured, moderately strong, basaltic ANDESITE.	12:45	3	43	100	
40				Gray, fresh, moderately fractured, strong, basaltic ANDESITE.					
				Gray, fresh, moderately fractured, strong, basaltic ANDESITE.	13:30	4	98	100	
45				Gray, slightly weathered, closely fractured, moderately strong, basaltic ANDESITE.					
				Coring terminated at 45.5 feet.					
50									
55									

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	CORING LOG	Figure A-16
	Date Drilled: 3/8/02	Logged By: EL

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-17	PAGE 1 OF 1
Location: Oregon City, Oregon	Approximate Elevation: 431 feet		

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0 10 20 30 40 50)	N-values	Testing
	Junk and asphalt debris over soft, wet, red, silty CLAY with some fine sand (probable fill).						
	Soft, wet, red, silty CLAY/clayey SILT with some fine sand (probable fill).		S-1		▲	2	
5	Soft to medium stiff, wet, red, silty CLAY/clayey SILT with some fine sand (probable fill).		S-2		▲	4	
	Soft to medium stiff, wet, red, silty CLAY with some fine sand (probable fill).		S-3		▲	4	
10	Very soft, wet, brown, silty CLAY (probable relic topsoil).		S-4		▲ ●	6	ATT
	Medium stiff, moist, red, gray-brown, and black, friable, residual silty clayey SAND (completely weathered bedrock).						
15	Medium stiff, moist, red, gray-brown, and black, friable, residual silty clayey SAND (completely weathered bedrock).		S-5		▲	9	
20	Medium stiff, moist, red, gray-brown, and black, friable, residual silty SAND with trace clay (highly weathered bedrock).		S-6		▲	50/5"	
	Very dense, moist, gray with red discoloration, slightly to moderately weathered, basaltic ANDESITE (bedrock).						
25	Refusal on bedrock at 24.75 feet. No groundwater observed at time of drilling.				▲	50/3"	

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-17
	Date Drilled: 3/11/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-18 | **PAGE** 1 OF 2

Location: Oregon City, Oregon | **Approximate Elevation:** 432 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	Junk debris over soft, wet, red, silty CLAY with some fine sand (probable fill).						
	Soft, wet, red, silty CLAY with some sand and gravel (probable fill).		S-1		▲	3	
5	Soft, wet, red, silty CLAY with some sand and gravel (probable fill).		S-2		▲	2	
	Soft, wet, brown, silty CLAY with fine woody debris (relic topsoil).		S-3		▲	8	
10	Very stiff, moist, red, gray, and black, friable, residual silty SAND with trace to some clay (highly to completely weathered bedrock).		S-4		▲	21	
15	Very stiff, moist, red, gray, and black, friable, residual silty SAND with trace clay (highly weathered bedrock).		S-5		▲	50/4"	
	Drilling terminated at 16 feet. Start of coring - see next sheet.						
20							
25							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- ⊗ No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-18
	Date Drilled: 3/11/02	Logged By: EL

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-18	PAGE 2 OF 2
Location: Oregon City, Oregon	Approximate Elevation: 432 feet		

Depth (ft)	Fracture: Profile	Fracture: Infilling	Fracture: Inclination	Rock Description	Time	Core Run	RQD (%)	Recovery (%)	Comments
				Coring initiated at 16 feet.					
20				Gray with red discoloration, moderately weathered, closely to moderately fractured, weak to moderately strong, basaltic ANDESITE.	13:45 14:00	1	42	100	
25				Gray, slightly weathered, moderately fractured, strong, basaltic ANDESITE. Gray with red discoloration, moderately weathered, very closely fractured, weak, basaltic ANDESITE.	14:55 15:15	2	43	90	
30				Gray with red discoloration, moderately weathered, very closely fractured, friable to weak, basaltic ANDESITE. Gray, fresh, moderately to widely fractured, strong, basaltic ANDESITE.	15:32	3	28	100	Loss of circulation.
35			45°	Gray, fresh to slightly weathered, moderately fractured, strong, basaltic ANDESITE.	15:32 ~15:45	4	100	100	
40			45°	Gray, fresh, widely fractured, strong, basaltic ANDESITE.	~16:00 16:11	5	100	100	
45				Coring terminated at 41 feet.					

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	CORING LOG	Figure A-18
	Date Drilled: 3/11/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-19 | **PAGE 1 OF 2**

Location: Oregon City, Oregon | **Approximate Elevation:** 431 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, ● Other; Blows per foot: 0 10 20 30 40 50)	N-values	Testing
	Blackberry bushes over soft, wet, red, silty CLAY with some sand (probable fill).						
	Medium stiff, wet, red, silty CLAY with some sand (probable fill).		S-1		▲ ●	5	ATT
5	Soft, wet, red, silty CLAY with some sand (probable fill).		S-2		▲	3	
	Medium stiff, wet, red, silty CLAY with some sand (probable fill).		S-3		▲	3	
10	Very soft, wet, brown, organic silty CLAY (relic topsoil).						
	Medium stiff, moist to wet, red, residual silty CLAY (completely weathered bedrock).		S-4		▲	8	
15	Dense, moist, gray and red, friable, residual silty SAND (highly to moderately weathered bedrock).		S-5		▲	42	
20	Medium dense, moist, gray and red, friable, residual silty SAND (highly to moderately weathered bedrock).		S-6		▲	20	
25							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-19
	Date Drilled: 3/12/02	Logged By: EL

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-19	PAGE 2 OF 2
Location: Oregon City, Oregon	Approximate Elevation: 431 feet		

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0 10 20 30 40)	N-values	Testing
	Very dense, moist, gray, slightly weathered ANDESITE bedrock.	I	S-7		▲ 50/1"		
	Drilling terminated at 26 feet. No groundwater observed at time of drilling.						
30							
35							
40							
45							
50							

0 10 20 30 40 50

Explanation

- I — 2-inch O.D. split spoon sample
- II — 3-inch I.D Shelby tube sample
- ⊗ — No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-19
	Date Drilled: 3/12/02	Logged By: EL

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-20	PAGE 1 OF 2
Location: Oregon City, Oregon	Approximate Elevation: 429 feet		

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (Standard ▲, Other △; Blows per foot: 0 10 20 30 40 50)	N-values	Testing
	Soft, wet, red, sandy silty CLAY (probable fill).						
	Medium stiff, wet, red, sandy silty CLAY (probable fill).		S-1		▲	6	
5	Very loose, wet, red, silty SAND with some clay and gravel (probable fill).		S-2		▲ ●	4	GS
	Very soft, wet, red, sandy silty CLAY (probable fill).		S-3		▲	1	
	Very soft, wet, brown, organic SILT (relic topsoil).						
10	Very soft, wet, brown, organic SILT (relic topsoil).		S-4		▲	8	
	Medium stiff, moist to wet, red, residual silty CLAY with some sand (completely weathered bedrock).						
15	Very stiff, moist, gray, red, and black, friable, residual silty SAND with trace clay (highly weathered bedrock).		S-5		▲	18	
	Drilling terminated at 18 feet. Start of coring - see next sheet.		S-6		▲	50/1"	
20							
25							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-20
	Date Drilled: 3/12/02	Logged By: EL

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-20	PAGE 2 OF 2
Location: Oregon City, Oregon	Approximate Elevation: 429 feet		

Depth (ft)	Fracture: Profile	Fracture: Infilling	Fracture: Inclination	Rock Description	Time	Core Run	RQD (%)	Recovery (%)	Comments
				Coring initiated at 18 feet.					
20				Gray, fresh, widely fractured, basaltic ANDESITE.	11:45 11:50	1	100	100	
25		Red clay		Gray with red discoloration, moderately to highly weathered, very closely fractured, friable to weak, basaltic ANDESITE. Gray, fresh, moderately fractured, strong, basaltic ANDESITE.	12:05	2	18	60	Loss of circulation.
30		Red clay		Gray with red discoloration, moderately to highly weathered, very closely fractured, friable to weak, basaltic ANDESITE.	13:12	3	18	80	Loss of circulation.
35		Red clay		Gray with red discoloration, moderately to highly weathered, very closely fractured, weak to moderately strong, basaltic ANDESITE.	13:30	4	25	90	Intermittent loss of circulation.
40		Red clay		Gray with red and black discoloration, moderately to highly weathered, closely fractured, weak, basaltic ANDESITE.	13:50	5	20	100	
45		Red clay		Gray with red discoloration, moderately to highly weathered, closely fractured, weak, basaltic ANDESITE. Gray with slight red discoloration, slightly weathered, moderately fractured, moderately strong, basaltic ANDESITE.		6	22	100	Loss of circulation.
				Coring terminated at 45 feet.					

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	CORING LOG	Figure A-20
	Date Drilled: 3/12/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-21 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 442 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	Sod over soft, wet, brown, silty CLAY with some fine sand.						
	Soft, wet, brown with red-orange and black specks, residual silty CLAY with some sand.	I	S-1		▲	2	
5	Medium stiff, wet, orange, gray, and brown, residual silty CLAY/clayey SILT with some sand.	I	S-2		▲	5	
	Stiff, wet, orange, gray, and brown, silty CLAY/clayey SILTwith some sand.	I	S-3		▲	13	
10	Medium stiff, wet, orange, gray, and brown, residual sandy SILT with clay stringers.	I	S-4		▲	5	
	Drilling terminated at 11.5 feet. No groundwater observed at time of drilling.						
15							
20							
25							

0 10 20 30 40 50

Explanation

- I — 2-inch O.D. split spoon sample
- II — 3-inch I.D Shelby tube sample
- ⊗ — No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-21
	Date Drilled: 3/7/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-22 | **PAGE** 1 OF 1

Location: Oregon City, Oregon | **Approximate Elevation:** 451 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	Sod over soft, wet, brown, silty CLAY with some sand.						
	Medium stiff, wet, red, residual silty CLAY with some sand.		S-1		▲	6	
5	Stiff to very stiff, moist, red, friable, residual silty SAND/sandy SILT with trace to some clay.		S-2		▲	18	
	Stiff, moist to wet, red and gray, friable, residual silty SAND/sandy SILT with trace to some clay.		S-3		▲	9	
10	Stiff, moist to wet, red and gray, friable, residual silty SAND/sandy SILT with trace to some clay.		S-4		▲	9	
15	Stiff, moist to wet, red and gray, friable, residual silty SAND/sandy SILT with trace to some clay.		S-5		▲	11	
20	Stiff, saturated, red and gray, friable, residual silty SAND/sandy SILT with trace clay.		S-6	▼ ATD	▲	13	
	Drilling terminated at 21.5 feet. Groundwater observed at approximately 20 feet at time of drilling.						
25							

0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- ⊗ No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-22
	Date Drilled: 3/7/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-23 | **PAGE** 1 OF 1

Location: Oregon City, Oregon | **Approximate Elevation:** 456 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot)	N-values	Testing
	3" asphalt and 6" crushed rock over medium stiff, moist, red, silty CLAY.						
	Medium stiff, moist, red, residual silty CLAY with some sand.	I	S-1		▲	7	
5	Very stiff, moist, red, residual silty CLAY with some sand.	I	S-2		▲	17	
	Medium stiff to stiff, moist to wet, red and gray, friable, residual sandy SILT with trace to some clay.	I	S-3		▲	8	
10	Stiff, moist to wet, red and gray, friable, residual clayey silt with some sand.	I	S-4		▲	11	
15	Stiff, moist to wet, red and gray, friable, residual sandy SILT with trace clay.	I	S-5		▲	12	
	Drilling terminated at 16.5 feet. No groundwater observed at time of drilling.						
20							
25							

0 10 20 30 40 50

Explanation

- I — 2-inch O.D. split spoon sample
- II — 3-inch I.D Shelby tube sample
- ⊗ — No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-23
	Date Drilled: 3/7/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-24 | **PAGE** 1 OF 1

Location: Oregon City, Oregon | **Approximate Elevation:** 427 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	1" crushed rock over medium stiff, moist, dark brown, SILT with fine woody debris (fill).						
5	Medium stiff, moist, dark brown, clayey SILT with fine woody debris (fill),	I	S-1		▲	7	
10	Medium stiff, moist, dark brown, clayey SILT with fine woody debris (fill),	I	S-2		▲	5	
15	Soft, wet, dark brown, clayey SILT with fine woody debris (probable fill, possible relic topsoil),	I	S-3		▲	3	
	Drilling terminated at 16.5 feet. No groundwater observed at time of drilling.						
20							
25							

Explanation

- I — 2-inch O.D. split spoon sample
- II — 3-inch I.D Shelby tube sample
- ⊗ — No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit (0, 10, 20, 30, 40, 50)

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-24
	Date Drilled: 3/14/02	Logged By: EL

PROJECT: Proposed Retail Development - Phase II ESA **JOB NO.** J-1200-02 **BORING** MW-1 **PAGE 1 OF** 1

Location: Oregon City, Oregon **Approximate Elevation:** 443 feet +/-

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (Standard ▲ / Other △; Blows per foot)	N-values	Testing
	Grass and debris over medium dense, damp, brown-gray, sandy silty GRAVEL. (FILL)		S-1			25	
		⊗	S-2			9	
5	Loose, damp to wet, orange-brown, SILT with trace fine sand and occasional volcanic cinders.		S-3			8	
			S-4	11/2/01 15:32		14	
10			S-5			17	
	Medium dense grading to dense, damp to moist, orange-brown, SILT with fine sand. (Severely weathered, highly fractured, gray basaltic andesite.)			ATD			
15			S-6			17	
20	Monitoring well completed at 20.0 feet on 10/30/01. Wells included above-ground monuments and protective bollards. Groundwater encountered at 14 feet bgs at time of drilling, later measured at 8 feet bgs at time of development.	⊗				50/1"	
25							

Penetration Resistance axis: 0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- ⊗ No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- 2" Sch. 40 PVC
- Bentonite
- Concrete
- 10-slot screened casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 10/30/01	Logged By: MJB

PROJECT: Proposed Retail Development - Phase II ESA | **JOB NO.** J-1200-02 | **BORING** MW-2 | **PAGE 1 OF 2**

Location: Oregon City, Oregon | **Approximate Elevation:** 438 feet +/-

Depth (ft)	Soil Description	Sample Number	N-values
	Asphalt surfacing.		
	Dense, damp to moist, gray to dark gray, sandy silty GRAVEL with occasional asphalt. (FILL)	S-1	44
5		S-2	8
		S-3	11
10	Medium stiff to stiff, damp to moist, orange-brown grading to red-brown, SILT with trace fine sand and clay.	S-4	6
15		S-5	42
20	Dense to very dense, damp to moist, orange to red-brown, SILT with fine sand. (Severely weathered, highly fractured, gray basaltic andesite.)	S-6	54
25			

Penetration Resistance: ▲ Standard, Blows per foot, △ Other; 0 10 20 30 40 50

Ground Water | Testing

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- ⊗ No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- 2" Sch. 40 PVC
- Bentonite
- Concrete
- 10-slot screened casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-2
	Date Drilled: 10/30/01	Logged By: MJB

PROJECT: Proposed Retail Development - Phase II ESA **JOB NO.** J-1200-02 **BORING MW-2** **PAGE 2 OF 2**

Location: Oregon City, Oregon **Approximate Elevation:** 438 feet +/-

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot)	N-values	Testing
	Very dense, damp to moist, orange to red-brown, SILT with fine sand. (Severely weathered, highly fractured, gray basaltic andesite.)	I	S-7			61	
	Boring completed at 26.5 feet on 10/30/01, Monitoring well installed from 25 feet bgs. Wells included above-ground monuments and protective bollards. No groundwater encountered at time of drilling or at time of development, 16:31 on 11/2/01.						
30							
35							
40							
45							
50							

Penetration Resistance scale: 0 10 20 30 40 50

Explanation

- I — 2-inch O.D. split spoon sample
- II — 3-inch I.D Shelby tube sample
- ⊗ — No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- 2" Sch. 40 PVC
- Bentonite
- Concrete
- 10-slot screened casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-2
	Date Drilled: 10/30/01	Logged By: MJB

PROJECT: Proposed Retail Development - Phase II ESA | **JOB NO.** J-1200-02 | **BORING** MW-3 | **PAGE** 1 OF 1

Location: Oregon City, Oregon | **Approximate Elevation:** 450 feet +/-

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (Standard ▲, Other △; Blows per foot: 0 10 20 30 40 50)	N-values	Testing
5	2-inches asphalt over loose to medium dense, damp to wet, orange-brown, SILT with trace fine sand and occasional volcanic cinders.		S-1			7	
			S-2			16	
			S-3			10	
			S-4			10	
10	Loose grading to dense, damp to moist, orange-brown, SILT with fine sand. (Severely weathered, highly fractured, gray basaltic andesite.)		S-5			9	
15			S-6	ATD 11/2/01 15:43		9	
20			S-7			36	
25	Monitoring well completed at 20.0 feet on 10/30/01. Wells included above-ground monuments and protective bollards. Groundwater encountered at 16 feet bgs at time of drilling, later measured at 17.5 feet bgs at time of development.						

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- 2" Sch. 40 PVC
- Bentonite
- Concrete
- 10-slot screened casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-3
	Date Drilled: 10/31/01	Logged By: MJB

PROJECT: Proposed Retail Development - Phase II ESA | **JOB NO.** J-1200-02 | **BORING** MW-4 | **PAGE** 1 OF 1

Location: Oregon City, Oregon | **Approximate Elevation:** 445 feet +/-

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (Standard ▲ / Other △; Blows per foot: 0 10 20 30 40 50)	N-values	Testing
5	Grass over loose, damp to wet, orange-brown, SILT with trace fine sand, occasional gravel and pieces of visqueen. (FILL)		S-1			8	
			S-2			8	
			S-3			7	
10			S-4	11/2/01 13:50		4	
15	Dense, damp to moist, orange-brown, SILT with fine sand. (Severely weathered, highly fractured, gray basaltic andesite.)		S-5	ATD		36	
20	Very dense, wet, gray, moderately to severely weathered, highly fractured,basaltic andesite.		S-6			50/5"	
25	Monitoring well completed at 19.5 feet on 10/30/01 due to drilling refusal. Wells included above-ground monuments and protective bollards. Groundwater encountered at 15 feet bgs at time of drilling, later measured at 11.2 feet bgs at time of development.						

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- 2" Sch. 40 PVC
- Bentonite
- Concrete
- 10-slot screened casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-4
	Date Drilled: 10/31/01	Logged By: MJB

PROJECT: Proposed Retail Development - Phase II ESA **JOB NO.** J-1200-02 **BORING MW-5** **PAGE 1 OF 1**

Location: Oregon City, Oregon **Approximate Elevation:** 445 feet +/-

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot)	N-values	Testing
	Grass over loose, damp to moist, brown, sandy gravelly SILT. (FILL)		S-1			16	
5	Medium dense, damp to wet, orange-brown, SILT with trace fine sand and occasional angular pieces of gray, severely weathered, highly fractured basaltic andesite.		S-2			13	
			S-3			20	
10			S-4	11/2/01 12:49 ATD		14	
15	Medium dense, damp to moist, orange-brown, SILT with fine sand. (Severely weathered, highly fractured, gray basaltic andesite.)		S-5			17	
20	Very dense, wet, gray, moderately to severely weathered, highly fractured,basaltic andesite.		S-6			50/6"	
25	Monitoring well completed at 20.0 feet on 10/30/01 due to drilling refusal. Wells included above-ground monuments and protective bollards. Groundwater encountered at 15 feet bgs at time of drilling, later measured at 11.2 feet bgs at time of development.						

Penetration Resistance axis: 0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- 2" Sch. 40 PVC
- Bentonite
- Concrete
- 10-slot screened casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-5
	Date Drilled: 10/31/01	Logged By: MJB

Test Pit TP-1
Approximate ground surface elevation: 425 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Duff over soft, damp, brown, SILT with trace fine sand. (Topsoil) Sparse fine roots to 1.2 feet and sparse medium roots to 2 feet.	S-1@0.5' MC=24%
1.0-3.0	Soft grading to stiff, damp, orange-brown, SILT with trace clay and trace to some 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, rounded, basaltic andesite cobbles.	S-2@2' MC=16%
3.0-10.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp to moist, reddish orange-brown sandy silt with trace clay.	
	Test pit completed at 10.0 feet on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-2
Approximate ground surface elevation: 435 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.8	Duff over soft, damp to moist, dark brown, SILT with trace fine sand and occasional fine gravel. (Topsoil) Sparse fine roots to one foot and sparse medium to large roots to 2 ½ feet. Pocket penetrometer at 0.5 feet = 1.75 tons per square foot (tsf.)	
0.8-3.0	Soft grading to stiff, damp, orange-brown, SILT with trace clay, fine sand, and trace to some 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, rounded, basaltic andesite boulders. Pocket penetrometer at 1.5 feet > 4.5 tsf.	S-1@1.5'
3.0-7.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish orange-brown silt with trace clay to silty SAND. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-2@3.5' MC=31%
	Digging refusal at 7.0 feet on a boulder on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-3
Approximate ground surface elevation: 440 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Duff over soft, moist to wet, dark brown, SILT with trace fine sand and occasional gray, moderately weathered, round, basaltic andesite boulders. (Topsoil) Sparse fine to medium roots to 1.2 feet.	S-1@0.5' S-2@1.0' MC=41%
1.0-2.5	Soft grading to stiff, damp to moist, orange-brown, SILT with trace clay and trace to some 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Pocket penetrometer at 2.0 feet = 2.75 tsf.	S-3@2.0' MC=25%
2.5-11.5	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish orange-brown sandy silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-4@10.5' MC=44%
	Test pit terminated at 11.5 feet on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-4
Approximate ground surface elevation: 440 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.3	Duff over soft, damp to moist, dark brown, SILT with trace fine sand (Topsoil.) Moderate to dense fine roots to 1.2 feet and sparse medium roots to 1.2 feet.	S-1@1.0' MC=36%
1.3-3.0	Medium stiff, damp to moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Pocket penetrometer at 2.5 feet = 1.5 tsf.	S-2@2.5' MC=24%
3.0-11.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown silt with trace clay.	S-3@6.0' MC=53%
	Test pit terminated at 11.0 feet on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-5
Approximate ground surface elevation: 441 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.7	Duff over soft, moist to wet, dark brown, SILT with trace fine sand (Topsoil) Moderate to dense fine roots to 1.0 feet and sparse medium roots to 1.2 feet.	S-1@0.5’
0.7-3.5	Medium stiff, damp to moist, orange-brown, sandy SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Pocket penetrometer at 3 feet > 4.5 tsf.	
3.5-7.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown sandy silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite boulders.	S-2@7.0’
	Test pit terminated at 7.0 feet on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-6
Approximate ground surface elevation: 442 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.7	Duff over soft, moist, dark brown, SILT with trace fine sand. (Topsoil) Moderate to dense fine roots to 0.8 feet and sparse medium roots to 1.2 feet.	
0.7-3.5	Medium stiff, damp to moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Pocket penetrometer at 3 feet = 2.0 to 2.5 tsf.	S-1@1.0’ S-2 @3.0’
3.5-10.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay.	S-3@5.5’
	Test pit terminated at 10.0 feet on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-7
Approximate ground surface elevation: 443 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Short to medium length grass and blackberry vines over soft, moist to wet, dark brown, SILT with trace fine sand and occasional pockets of 3/8" minus crushed rock (Topsoil/FILL) Moderate to dense fine roots to medium roots to 1.2 feet.	S-1@0.5' MC=30%
1.0-3.5	Medium stiff, damp to moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Pocket penetrometer at 2.0 feet = 3.75 tsf.	S-2@2.0' MC=21%
3.5-10.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown silt with trace clay. Occasional dark gray, subangular, slightly weathered, basalt with visible vesicles.	S-3@10.0' MC=56%
	Test pit terminated at 10.0 feet on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-8
Approximate ground surface elevation: 443 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.2	Grass over soft, moist to wet, dark brown, sandy, gravelly SILT (Topsoil/FILL) Dense fine roots to 1.0 feet.	S-1@1.0'
1.2-4.0	Medium stiff, damp to moist, orange-brown, SILT with trace clay and trace to some 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, round, basaltic andesite boulders. Pocket penetrometer at 3.0 feet > 4.5 tsf.	
4.0-11.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	S-2@10.5'
	Test pit terminated at 11.0 feet on 11/1/01. Slight groundwater seepage observed at 11.0 feet. No caving observed.	

Test Pit TP-9
Approximate ground surface elevation: 444 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.7	Short grass and blackberry vines over soft, moist to wet, brown, gravelly SILT with trace fine sand. (Topsoil/FILL) Moderate to dense fine to medium roots to 1.0 feet.	S-1@0.5’
0.7-6.0	Medium stiff, damp to moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
6.0-10.5	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay.	
	Test pit terminated at 10.5 feet on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-10
Approximate ground surface elevation: 444 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Blackberry vines over soft, moist to wet, brown, SILT with trace fine sand. (Topsoil) Moderate to dense fine to medium roots to 1.2 feet.	S-1@1.0’ MC=28%
1.0-3.0	Soft grading to stiff, damp to moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
3.0-11.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay.	S-2@5.0’ MC=20%
	Test pit terminated at 11.0 feet on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-11
Approximate ground surface elevation: 444 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Blackberry vines over soft, moist to wet, dark brown, SILT with occasional gravel. (Topsoil) Moderate to dense fine to medium roots to 1.8 feet.	S-1@0.5 MC=32%
1.0-3.0	Medium stiff, damp to moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2@2.0' MC=29% S-3@5.0' MC=44%
3.0-11.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders. Test pit terminated at 11.0 feet on 11/1/01. No groundwater seepage observed. No caving observed.	S-4@9.0' MC=59%

Test Pit TP-12
Approximate ground surface elevation: 444 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.5	Short grass and blackberry vines over soft, moist to wet, brown, gravelly SILT with trace fine sand. (Topsoil/FILL) Moderate fine to medium roots to 0.9 feet.	S-1@1.0'
1.5-3.5	Soft grading to stiff, damp to moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Pocket penetrometer at 2.0 feet = 1.75 tsf. Pocket penetrometer at 3.0 feet > 4.5 tsf.	
3.5-9.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders. Test pit terminated at 9.0 feet on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-13
Approximate ground surface elevation: 445 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.5	Short grass and blackberry vines over soft, wet, brown, SILT with trace to some sand. (Topsoil) Moderate fine to medium roots to 1.5 feet.	S-1@0.3' MC=24%
0.5-3.0	Medium stiff grading to stiff, moist to wet, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2@2.0'
3.0-6.0	Medium dense grading to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	
	Test pit terminated at 6.0 feet on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-14
Approximate ground surface elevation: 447 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.5	Short grass and blackberry vines over soft, wet, brown, SILT with trace to some sand. (Topsoil) Moderate fine roots to 1.0 feet.	S-1@0.3'
0.5-4.0	Medium stiff to stiff, moist to wet, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2@3.0'
4.0-5.5	Medium dense grading to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	
	Test pit terminated at 5.5 feet on 11/2/01 due to equipment failure. No groundwater seepage observed. No caving observed.	

Test Pit TP-15
Approximate ground surface elevation: 447 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.5	Grass over soft, damp to moist, brown, SILT with SILT and occasional gravel. (Topsoil) Moderate fine roots to 2.0 feet.	S-1@1.0' MC=27%
1.5-7.0	Medium stiff to stiff, damp to moist, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
7.0-10.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown sandy silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	S-2@9.0' MC=59%
	Test pit terminated at 10.5 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-16
Approximate ground surface elevation: 446 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Grass and blackberry vines over soft, damp, brown, SILT with trace fine sand. (Topsoil) Moderate to dense fine roots to 1.0 feet.	S-1@0.5'
1.0-4.0	Medium stiff to stiff, damp to moist, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
4.0-7.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown sandy silt with trace clay.	S-2@6.0'
7.0-10.0	Medium dense to very dense, dark gray, moderately weathered, subangular to rounded, poorly sorted, vesicular basalt clasts in a matrix of medium stiff to stiff, damp, red silt with trace clay.	
	Test pit terminated at 10.0 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-17
Approximate ground surface elevation: 447 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.7	Grass and blackberry vines over soft, damp, brown, SILT with trace fine sand. (Topsoil) Moderate to dense fine roots to 1.0 feet.	S-1@0.5' MC=26% S-2@1.0' MC=26%
1.7-3.0	Medium stiff, damp to moist, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-3@2.5' MC=21%
3.0-7.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay.	S-4@5.5' MC=26%
7.0-10.5	Medium dense to very dense, dark gray, moderately weathered, subangular to rounded, poorly sorted, vesicular basalt clasts in a matrix of medium stiff to stiff, damp, red silt with trace clay.	S-5@9.5' MC=55%
	Test pit terminated at 10.5 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-18
Approximate ground surface elevation: 405 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Soft, wet, dark brown, SILT with some gravel, organic debris and roots. (Topsoil)	
1.0-7.0	Very dense, moderately weathered, sub-rounded basaltic andesite boulders in matrix of medium dense, moist, orange-gray, silty SAND to sandy SILT.	
	Test pit completed at 7.0 on feet on 11/2/01 with refusal on boulder. No groundwater seepage observed. No caving observed.	

Test Pit TP-19
Approximate ground surface elevation: 402 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.8	Soft, wet, dark brown, SILT with some clay and sand, organic debris and roots. (Topsoil)	
0.8-2.5	Loose to medium dense, moist, orange-gray, silty SAND to sandy SILT with occasional cobbles and boulders of severely weathered basalt.	S-1@2’
2.5-7.5	Very dense basaltic andesite boulders from 2 to 8 feet in diameter in a medium stiff, sandy SILT matrix.	
	Test pit completed at 7.5 feet on 11/2/01 with refusal on boulder. No groundwater seepage observed. No caving observed.	

Test Pit TP-20
Approximate ground surface elevation: 448 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.8	Grass over soft, damp, brown, SILT with trace fine sand. (Topsoil) Moderate fine roots to 0.8 feet, sparse medium roots to 1.2 feet.	
0.8-2.5	Medium stiff, damp to moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-1@1.5’ MC=28%
2.5-10.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional, gray, moderately weathered, round basaltic andesite cobbles and boulders.	S-2@4.0’ MC=56%
	Test pit terminated at 10.0 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-21
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.3	Grass and blackberry vines over soft, damp, brown, SILT with trace fine sand. (Topsoil) Moderate fine to medium roots to 1.5 feet.	S-1@0.5’
1.3-9.5	Medium stiff to stiff, damp to moist, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2@2.0’
9.5-10.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	
	Test pit terminated at 10.5 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-22
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Grass and blackberry vines over soft, damp, brown, SILT with trace fine sand. (Topsoil) Moderate fine and medium roots to 1.0 feet.	
1.0-6.5	Medium stiff to stiff, damp to moist, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	
6.5-10.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	
	Test pit terminated at 10.0 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-23
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.7	Wood debris and blackberry vines over soft, damp, brown, SILT with trace fine sand. (Topsoil) Moderate fine and medium roots to 1.0 feet.	S-1@0.5' MC=25%
0.7-6.5	Medium stiff to stiff, damp to moist, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Pocket penetrometer at 2.0 feet = 1.75 tsf. Pocket penetrometer at 3.5 feet = 3.0 to >4.5 tsf.	S-2@1.5' MC=26%
6.5-7.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay.	
	Test pit terminated at 7.5 feet due to space constraints on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-24
Approximate ground surface elevation: 448 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.8	Metal debris over soft, damp, brown, blocky, SILT with trace fine sand. (Fill) Trace fine roots to 0.7 feet.	S-1@0.5' S-2@1.0'
0.8-1.5	Soft to medium stiff, moist, brown, SILT with trace clay. (FILL)	
1.5-3.5	Soft to medium stiff to stiff, moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-3@2.5'
3.5-4.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay.	
	Test pit terminated at 4.0 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-25
Approximate ground surface elevation: 448 Feet

Depth (feet)	Material Description	Sample No.
0.0-4.5	Wrecking yard debris over soft to medium stiff, damp, brown, SILT with occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite and wrecking yard debris. (Fill) Trace fine to medium roots to 1.0 feet.	S-1@0.5' S-2@2.0'
4.5-7.5	Medium stiff to stiff, moist, orange-brown, sandy SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
7.5-10.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-3@10.5'
	Test pit terminated at 10.5 feet on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-26
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.4	1-inch of asphalt over 3-inches of 5/8" minus crushed rock base.	S-1@0.5' MC=26%
0.4–1.1	Soft to medium stiff, damp to moist, brown, SILT with trace fine sand and occasional gravel (Topsoil prior to paving.) Trace fine to medium roots to 0.6 feet. Pocket penetrometer at 1.0 feet > 1.5 tsf.	S-2@1.0' MC=27%
1.1-4.5	Medium stiff to stiff, damp to moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders. Pocket penetrometer at 2.5 feet = A.5 tsf.	S-3@2.5' MC=37%
4.5-11.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay to silty SAND.	S-4@10.5' MC=46%
	Test pit terminated at 11.0 feet on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-27
Approximate ground surface elevation: 451 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.6	Grass over loose, damp to wet, brown silty GRAVEL and wrecking yard debris. (FILL). Trace fine to medium roots to 1.6 feet.	S-1@0.5’
0.6–1.3	Soft to medium stiff, damp, brown, SILT with trace fine sand and occasional gravel (Relic topsoil)	
1.3-3.0	Medium stiff to stiff, moist, orange-brown, sandy SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2@1.5’
3.0-10.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	
	Test pit terminated at 10.5 feet on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-28
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.8	Blackberry vines over loose, damp to wet, brown silty GRAVEL and wrecking yard debris. (FILL) Trace fine to medium roots to 1.5 feet.	S-1@0.5' MC=16%
0.8–1.5	Soft to medium stiff, damp to moist, dark brown, SILT with trace fine sand and occasional gravel. (Relic topsoil)	S-2@1.0' MC=32%
1.3-3.2	Medium stiff to stiff, moist, orange-brown grading to reddish-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-3@2.5' MC=31%
3.2-8.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite and boulders.	S-4@6.0' MC=57%
	Test pit terminated at 8.5 feet on a boulder on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-29
Approximate ground surface elevation: 449 Feet

Depth (feet)	Material Description	Sample No.
0.0-4.0	Grass over soft to medium stiff, damp to moist, brown, SILT with gravel and occasional asphalt debris. (Fill) Dense fine roots to 0.5 feet.	S-1@1.5'
4.0-7.5	Medium stiff to stiff, moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2@5.0'
7.5-11.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	
	Test pit terminated at 11.0 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-30
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.8	Grass and gravel over soft to medium stiff, damp to moist, brown, SILT with gravel and occasional asphalt debris. (FILL) Moderate fine roots to 0.3 feet. Occasional gray, moderately weathered, round, basaltic andesite boulders.	S-1@1.0’
1.8-6.0	Medium stiff to stiff, moist, orange-brown grading to red-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
6.0-11.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	
	Test pit terminated at 11.5 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-31
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-5.0	Grass and gravel over soft to medium stiff, damp to moist, brown, SILT with gravel and occasional asphalt debris. (FILL) Moderate fine roots to 1.1 feet.	
5.0-9.5	Medium stiff to stiff, moist, orange-brown grading to red-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-1@6.0’ MC=25%
9.5-11.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-2@11.0’ MC=53%
	Test pit terminated at 11.0 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-32
Approximate ground surface elevation: 451 Feet

Depth (feet)	Material Description	Sample No.
0.0–1.0	Blackberry vines over loose, damp to moist, dark brown, SILT with gravel and occasional metal debris. (Topsoil/FILL) Moderate fine to medium roots to 1.2'.	S-1@0.5' MC=11%
1.0-1.7	Soft to medium stiff, damp, light brown, SILT with trace sand and occasional gravel and metal debris. (FILL)	S-2@1.3' MC=25%
1.7-3.0	Medium stiff, damp, light brown, SILT with occasional asphalt and metal debris. (FILL)	S-3@2.5' MC=20%
3.0-4.7	Medium stiff, damp, reddish-brown, SILT with occasional fine to medium roots.	
4.7-9.0	Medium stiff to stiff, moist, orange-brown grading to reddish-brown, sandy SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-4@7.5' MC=27%
9.0-11.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-5@9.5'

Test pit terminated at 11.0 feet on 11/2/01.
No groundwater seepage observed.
No caving observed.
Fill was from Molalla Avenue cut, approximately 50 years ago, according to Rocky Younger, property owner.

Test Pit TP-33
Approximate ground surface elevation: 451 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Short grass, blackberry vines, and metal debris over soft, damp, dark brown, SILT with trace fine sand and occasional pockets of gravel. (Topsoil/FILL) Moderate fine to medium roots to 1.0 feet.	S-1@0.8’
1.0-5.5	Medium stiff, damp, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
5.5-11.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	
	Test pit terminated at 11.5 feet on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-34
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-2.0	Short grass and metal debris over medium stiff to stiff, damp to moist, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-1@1.5’ MC=41%
2.0-12.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	S-2@9.5’ MC=66% S-3@12.0’ MC=62%
	Test pit terminated at 12.5 feet on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-35
Approximate ground surface elevation: 449 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Metal debris over loose, damp, dark brown, SILT with trace fine sand and occasional pockets of gravel and wrecking yard debris. (Topsoil/FILL) Moderate fine and medium roots to 1.0 feet.	S-1@0.5’
1.0-3.5	Medium stiff to stiff, damp to moist, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
3.5-10.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	
	Test pit terminated at 10.5 feet on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-36
Approximate ground surface elevation: 440 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Blackberry vines and metal debris over soft to medium stiff, damp to moist, brown, SILT with trace fine sand and wrecking yard debris (Topsoil/FILL) Moderate fine and medium roots to 1.0 feet. Pocket penetrometer at 1.0 feet = 1.5 tsf.	S-1@1.0’ MC=29%
1.0-5.0	Medium stiff to stiff, damp to moist, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Pocket penetrometer at 2.0 feet = 1.5 tsf. Pocket penetrometer at 2.5 feet = 2.5 tsf.	S-2@2.0’ MC=29%
5.0-11.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-3@10.5’ MC=50%
	Test pit terminated at 11.0 feet on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-37
Approximate ground surface elevation: 431 Feet

Depth (feet)	Material Description	Sample No.
0.0-5.0	Blackberry vines over soft to medium stiff, damp to moist, brown, SILT with significant large pieces of concrete and asphalt debris. (FILL) Moderate fine and medium roots to 1.4 feet.	S-1@1.0' MC=19%
5.0-8.0	Medium stiff to stiff, damp to moist, orange-brown grading to reddish-orange, sandy SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2@7.0' MC=35%
8.0-12.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-3@10.0' MC=50%
	Test pit terminated at 12.5 feet on a boulder on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-38
Approximate ground surface elevation: 431 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Blackberry vines and short grass over medium dense, moist to wet, brown, silty sandy GRAVEL with significant asphalt debris (FILL) Moderate fine and medium roots to 0.8 feet.	S-1@0.5'
1.0-5.5	Soft to medium stiff, damp, orange-brown SILT with significant large pieces of asphalt and concrete debris. (FILL)	S-2@2.0'
	Digging refusal at 5.5 feet due on concrete debris on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-39
Approximate ground surface elevation: 430 Feet

Depth (feet)	Material Description	Sample No.
0.0-3.5	Duff and asphalt debris over soft to medium stiff, damp to moist, orange-brown, SILT with some sand and occasional asphalt debris and 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. (FILL)	S-1@1.0' MC=46%
3.5-7.5	Soft to medium stiff, moist, brown, SILT with organics, and occasional wood and metal debris. (FILL)	S-2@4.0' MC=26% S-3@7.0' MC=28%
7.5-10.5	Medium stiff to stiff, damp to moist, orange-brown, sandy SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
10.5-13.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, rounded, basaltic andesite cobbles and boulders.	S-4@11.5' MC=42%
	Test pit terminated at 13.0 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-40
Approximate ground surface elevation: 440 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.9	Duff over soft, damp, brown, SILT with trace fine sand. (Topsoil) Sparse fine roots to 1.0 feet and sparse medium roots to 1.9 feet.	S-1@1.0' MC=23%
1.9-3.0	Medium stiff, damp, orange-brown, sandy SILT with trace clay and trace to some 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, rounded, basaltic andesite boulders. Pocket penetrometer at 2.0 feet >4.5 tsf.	S-2@2.5' MC=21%
3.0-10.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp to moist, reddish orange-brown silt with trace clay. Occasional gray, moderately weathered, rounded, basaltic andesite cobbles and boulders.	S-3@5.5' MC=21%
	Test pit completed at 10.0 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-41
Approximate ground surface elevation: 441 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.5	Duff over soft, damp to moist, brown, SILT with trace fine sand and occasional gravel. (Topsoil) Moderate fine to medium roots to 1.2 feet and sparse large roots to 1.5 feet.	S-1@0.5-2.0' S-1A@0.5-2.5'
1.5-2.5	Soft grading to stiff, damp, orange-brown, SILT with trace clay and trace to some 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, rounded, basaltic andesite boulders.	S-2@2.5' MC=26%
2.5-6.5	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp to moist, reddish orange-brown silt with trace clay. Occasional gray, moderately weathered, rounded, basaltic andesite cobbles and boulders.	S-3@5.5'
	Digging refusal at 10.0 feet on a boulder on 11/3/01. No groundwater seepage observed. No caving observed. Samples S-1 and S-1A were shelby tube samples.	

Test Pit TP-42
Approximate ground surface elevation: 432 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Soft to medium stiff, wet, brown grading to orange-brown, SILT with some sand, organic debris and roots to 3". (Topsoil)	
1.0-4.0	Soft grading to stiff, damp, orange-brown, SILT with trace clay and trace to some 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, rounded, basaltic andesite boulders.	
4.0-6.5	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp to moist, reddish orange-brown silt with trace clay. Occasional gray, moderately weathered, rounded, basaltic andesite cobbles and boulders to 3 feet in diameter.	
	Test pit completed at 6.5 feet on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-43
Approximate ground surface elevation: 426 Feet

Depth (feet)	Material Description	Sample No.
0.0-3.5	Medium stiff, moist to wet, orange-brown, sandy SILT with some gravel, clay, and debris consisting of concrete, asphalt, crushed rock, and wire. (Fill)	S-1@1'
3.5-7.8	Soft to medium stiff, wet, dark gray-brown, SILT with some clay, sand and gravel. Occasional clasts of concrete, asphalt, brick and trace organic material. (Fill)	S-2@5'
7.8-8.0	Pine needles and thin branches to 1-inch in diameter. (Fill)	
8.0-11.0	Large andesitic boulder encountered at east end of test pit. Boulder appeared to be in a matrix of stiff to medium stiff, gray-brown SILT. (Fill)	
	Test pit completed at 11.0 feet on 3/4/02. Very slight seepage observed at 9 feet at time of exploration. No caving observed.	

Test Pit TP-44
Approximate ground surface elevation: 421.5 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.3	Grass sod.	
0.3-6.0	Soft to medium stiff, wet, orange-brown, sandy SILT with some clay and gravels. Occasional clasts of asphalt and concrete to 2 feet in diameter. 2-½ foot diameter andestitic boulder encountered at 1.5 feet. (Fill)	S-1@2'
6.0-8.0	Soft grading to stiff, wet, orange-brown, SILT with some clay and trace to some gray, sub-rounded clasts of severely weathered basaltic ardisite.	
8.0-11.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular to sub-rounded, poorly sorted basaltic andesite clasts in a matrix of medium stiff to stiff, moist, orange-brown, sandy SILT with trace clay.	
	Test pit completed at 11.0 feet on 3/4/02. No groundwater observed at time of exploration. No caving observed.	

Test Pit TP-45
Approximate ground surface elevation: 433.5 Feet

Depth (feet)	Material Description	Sample No.
0.0-2.5	Soft grading to stiff, moist, orange-brown, SILT with trace to some clay, sand, and 3 inch minus fragments of severely weathered basaltic andesite.	S-1@1'
2.5-6.0	Very dense, damp, gray, moderately weathered andesitic boulders to 3 feet in diameter in a matrix of medium stiff to stiff, moist to wet, orange-brown, SILT with trace clay to silty SAND with trace clay. Boulders sub-angular to rounded.	
	Test pit completed at 6.0 feet with refusal on 6-foot diameter andesitic boulder. No groundwater observed at time of exploration. No caving observed.	

Test Pit TP-46
Approximate ground surface elevation: 438 Feet

Depth (feet)	Material Description	Sample No.
0.0-6.0	Concrete and asphalt debris with matrix of sandy GRAVEL with some silt (dirty crushed rock). Approximately 40% asphalt and 20% concrete based on visual estimation. (Fill)	
6.0-7.0	Soft to medium stiff, moist, orange-brown, SILT with some sand and clay.	
	Test pit completed at 7 feet on 3/4/02. No groundwater seepage observed at time of exploration. No caving observed.	

Test Pit TP-47
Approximate ground surface elevation: 435 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.2	Grass sod.	
0.2-3.0	Asphalt debris in matrix of sandy gravel with some silt (crushed rock). Approximately 40-50% asphalt based on visual estimation. (Fill)	S-1@1'
3.0-6.0	Medium stiff, moist, orange-brown, sandy SILT with some gravel and trace clay. (Fill)	
6.0-8.5	Soft grading to stiff, moist, orange-brown, SILT with trace to some clay, sand, and 3 inch minus fragments of severely weathered basaltic andesite.	S-2@4'
8.5-11.0	Very dense, damp, gray, moderately weathered andesitic boulders to 3 feet in diameter in a matrix of medium stiff to stiff, moist to wet, orange-brown, SILT with trace clay to silty SAND with trace clay. Boulders sub-angular to rounded.	
	Test pit completed at 11.0 feet on 3/4/02. No groundwater seepage observed at time of exploration. No caving observed.	

Test Pit TP-48
Approximate ground surface elevation: 433 Feet

Depth (feet)	Material Description	Sample No.
0.0-5.5	Stiff to medium stiff, moist to wet, orange-brown, SILT with some sand and trace clay and occasional clasts of asphalt and concrete. (Fill)	
5.5-10.0	Randomly oriented rebar reinforced concrete debris from 6 to 8 inches thick and up to 4 feet across. Approximately 5% of debris consisted of rebar, asphalt, and wire. (Fill)	
	Test pit completed at 10.0 feet on 3/4/02 due to refusal on large concrete debris. No groundwater seepage observed at time of exploration. No caving observed.	

Test Pit TP-1A
Approximate ground surface elevation: 430 Feet

Depth (feet)	Material Description	Sample No.
0.0-6.0	Duff and asphalt debris over very soft to medium stiff, moist, reddish-brown, SILT with some sand and occasional asphalt debris and 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. (FILL)	S-1 @ 0.5' S-2 @ 2'
6.0-9.0	Soft to medium stiff, moist, gray SILT with organic and metal debris and occasional cobbles of of severely to highly weathered, highly fractured, basaltic andesite. (FILL)	S-3 @ 8'
9.0-12.0	Medium stiff, moist, orange-red-brown SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-4 @ 9.5'
	Test pit terminated at 12.0 feet on 03/01/2002. Slight groundwater seepage observed at 9.0 feet, perched on native soils. No caving observed.	

Test Pit TP-2A
Approximate ground surface elevation: 430 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.8	Duff over 7-inches of asphalt over 3-inches of 3/8-inch minus crushed rock base.	S-1 @ 1'
0.8-8.0	Soft to medium stiff, damp, reddish-brown SILT with trace clay with occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. (FILL)	S-2 @ 8'
8.0-9.0	Soft, damp to moist, light gray to dark gray, SILT with trace clay and wood, metal, glass, and rubber debris. (FILL)	
9.0-11.0	Medium stiff, moist, orange-red-brown SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
	Test pit terminated at 11.0 feet on 03/01/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-3A

Approximate ground surface elevation: 430 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.3	Metal debris over soft, damp to moist, gray SILT with trace clay and occasional fine rootlets. Slight to moderate odor of oil impact. (FILL)	
0.3-7.5	Soft to medium stiff, damp, reddish-brown SILT with trace clay with occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. (FILL)	S-1 @ 0.5' S-2 @ 2'
7.5-8.0	Soft, damp to moist, orange-brown silt with trace clay and fine rootlets. (Relict topsoil horizon)	
8.0-12.0	Medium stiff, moist, orange-red-brown SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	
	Test pit terminated at 12.0 feet on 03/01/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-4A

Approximate ground surface elevation: 430 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.5	Metal debris over 5/8-inch minus crushed rock base. Very strong odor of oil impact. Visible free product (appears to be crankcase oil) in crushed rock. (FILL)	S-1 @ 1'
1.5-8.0	Soft to medium stiff, damp, reddish-brown SILT with trace clay with occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. (FILL)	S-2 @ 3' S-3 @ 7'
8.0-10.0	Medium stiff, moist, orange-red-brown SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
	Test pit terminated at 12.0 feet on 03/01/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-5A
Approximate ground surface elevation: 430 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Metal debris and grass over very soft, damp, gray SILT with trace clay and gravel. (FILL)	S-1 @ 1'
1.0-8.5	Soft to medium stiff, damp, reddish-brown SILT with trace clay with occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. (FILL)	S-2 @ 8'
8.5-9.0	Loose, damp, brown-gray SILT with trace clay, occasional gravel and fine rootlets. (Relict topsoil horizon.)	
9.0-11.0	Medium stiff, damp, orange-red-brown SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	
	Test pit terminated at 11.0 feet on 03/01/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-6A
Approximate ground surface elevation: 431 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Blackberry vines and short grass over soft, damp, dark gray SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. (FILL)	
1.0-6.0	Soft to medium stiff, damp, red-brown SILT with occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite and large pieces of asphalt and concrete debris. (FILL)	S-1@2.0'
6.0-6.5	Medium dense, damp, gray sandy SILT with some gravel. (FILL)	
	Digging refusal at 6.5 feet due on concrete debris on 03/01/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-7A

Approximate ground surface elevation: 430 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.4	8-inches of asphalt over 8-inches of 3/8-inch minus crushed rock base. Very strong odors of gasoline and weathered gasoline. Gasoline dissolving asphalt.	
1.4-2.5	Soft, moist, red-brown SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite and gravel. (FILL)	S-1 @ 1.5'
2.5-5.0	Soft to medium stiff, moist, red-brown SILT with trace clay and occasional 3-inch minus, gray angular fragments of severely to highly weathered, highly fractured basaltic andesite.	S-2 @ 3.5'
5.0-9.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	S-3 @ 6' S-4 @ 6.5'
	Test pit terminated at 9.0 feet on 03/01/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-8A

Approximate ground surface elevation: 430 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Soft, damp to moist, dark brown SILT with trace clay and occasional gravel.	
1.0-3.5	Soft to medium stiff, damp, red-brown SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite and gravel.	S-1 @ 3'
3.5-7.5	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay	S-2 @ 6.5'
	Test pit terminated at 7.5 feet on 03/01/2002. Moderate groundwater seepage observed at 6.5 feet. Slight caving observed below 6.5 feet.	

Test Pit TP-9A

Approximate ground surface elevation: 440 Feet

Depth (feet)	Material Description	Sample No.
0.0-3.5	Medium dense, damp, dark gray silty sandy GRAVEL with occasional cobbles. (FILL)	S-1 @ 1.5'
3.5-5.5	Soft to medium stiff, damp to moist, orange-red-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2 @ 3.5'
5.5-9.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	S-3 @ 9.5'
	Test pit terminated at 9.5 feet on 03/01/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-10A

Approximate ground surface elevation: 440 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.5	Loose to medium dense, damp, gray-brown SILT with trace clay and trace fine sand and occasional fine highly weathered, highly fractured basaltic andesite gravel.	S-1 @ 1'
1.5-4.5	Soft to medium stiff, damp, orange-red-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2 @ 2'
4.5-6.5	Medium stiff to stiff, damp, red-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
6.5-7.0	Medium dense to very dense, gray, highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	S-3 @ 7'
	Test pit terminated at 7.0 feet on 03/01/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-11A

Approximate ground surface elevation: 448 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.8	Sparse grass and metal debris over 5/8-inch minus crushed rock base. (FILL)	
0.8-2.0	Soft to medium stiff, damp, gray, SILT with trace clay and occasional metal, rubber, and glass debris. Slight odor of weathered gasoline and slight staining observed. (FILL)	S-1 @ 1.5'
2.0-4.5	Soft to medium stiff, damp, red-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-2 @ 3'
4.5-11.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay.	S-3 @ 5.5' S-4 @ 11'

Test pit terminated at 11.0 feet on 03/02/2002.
No groundwater seepage observed.
No caving observed.

Test Pit TP-12A

Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Grass and blackberry vines over soft, damp, dark brown, SILT with trace fine sand, trace clay and occasional gray, highly weathered, round, basaltic andesite gravel.	
1.0-4.0	Medium stiff to stiff, damp to moist, reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
4.0-10.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, wet grading to damp, yellow silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-1 @ 4'

Test pit terminated at 10.0 feet on 03/02/2002
Very slight groundwater seepage observed at 4 feet.
No caving observed.

Test Pit TP-13A

Approximate ground surface elevation: 449 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Metal debris over loose, damp, dark brown, SILT with trace fine sand and occasional pockets of gravel and debris. (Topsoil/FILL)	
1.0-4.0	Medium stiff to stiff, damp to moist, reddish-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-1@1'
4.0-9.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	S-2 @ 4.5' S-3 @ 9'

Test pit terminated at 9.5 feet on 03/02/2002.
No groundwater seepage observed.
No caving observed.

Test Pit TP-14A

Approximate ground surface elevation: 449 Feet

Depth (feet)	Material Description	Sample No.
0.0-2.0	Loose, damp, gray, SILT with trace clay and occasional pockets of 5/8-inch minus gravel and debris. Slight odor of oil impact to upper foot of soils, slight staining in upper foot of soils. (FILL)	S-1@1'
2.0-4.5	Soft to medium stiff, damp to moist, reddish-orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2 @ 2.5'

Test pit terminated at 4.5 feet on 03/02/2002.
No groundwater seepage observed.
No caving observed.

Test Pit TP-15A

Approximate ground surface elevation: 451 Feet

Depth (feet)	Material Description	Sample No.
0.0-4.5	5/8-inch minus crushed rock base over soft to medium stiff, damp, gray brown, SILT with trace sand and occasional gravel and asphalt debris. (FILL)	S-1 @ 2'
4.5-7.5	Soft to medium stiff, damp, reddish-brown, sandy SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2 @ 5'
7.5-9.5	Medium dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-3 @ 8.5'
9.5-11.5	Dense to very dense, gray, highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-4 @ 11.5'
	Test pit terminated at 11.5 feet on 03/02/2002 No groundwater seepage observed. No caving observed. Cesspool cistern discovered at 1.5 to 5 feet. Test pit relocated to north of cistern, adjacent.	

Test Pit TP-16A

Approximate ground surface elevation: 451 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.5	Soft, damp, dark brown, SILT with trace fine sand and occasional pockets of gravel. (Topsoil/FILL)	
0.5-2.5	Soft, damp, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-1 @ 2'
2.5-9.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-2 @ 5' S-3 @ 8.5'
	Test pit terminated at 9.5 feet on 03/02/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-17A
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-4.0	4-inches of asphalt over soft, damp, orange-brown grading to reddish-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-1 @ 1' S-2 @ 3'
4.0-10.0	Medium dense grading to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay to silty SAND.	S-3 @5.5' S-4 @ 9'

Test pit terminated at 10.0 feet on 03/02/2002.
No groundwater seepage observed.
No caving observed.

Test Pit TP-18A
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-6.0	Broken asphalt over soft grading to medium stiff, damp, orange-brown grading to reddish-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-1 @ 3'
6.0-10.0	Medium dense grading to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay to silty SAND.	S-2 @ 6' S-3 @ 10'

Test pit terminated at 10.0 feet on 03/02/2002.
No groundwater seepage observed.
No caving observed.

Test Pit TP-19A

Approximate ground surface elevation: 451 Feet

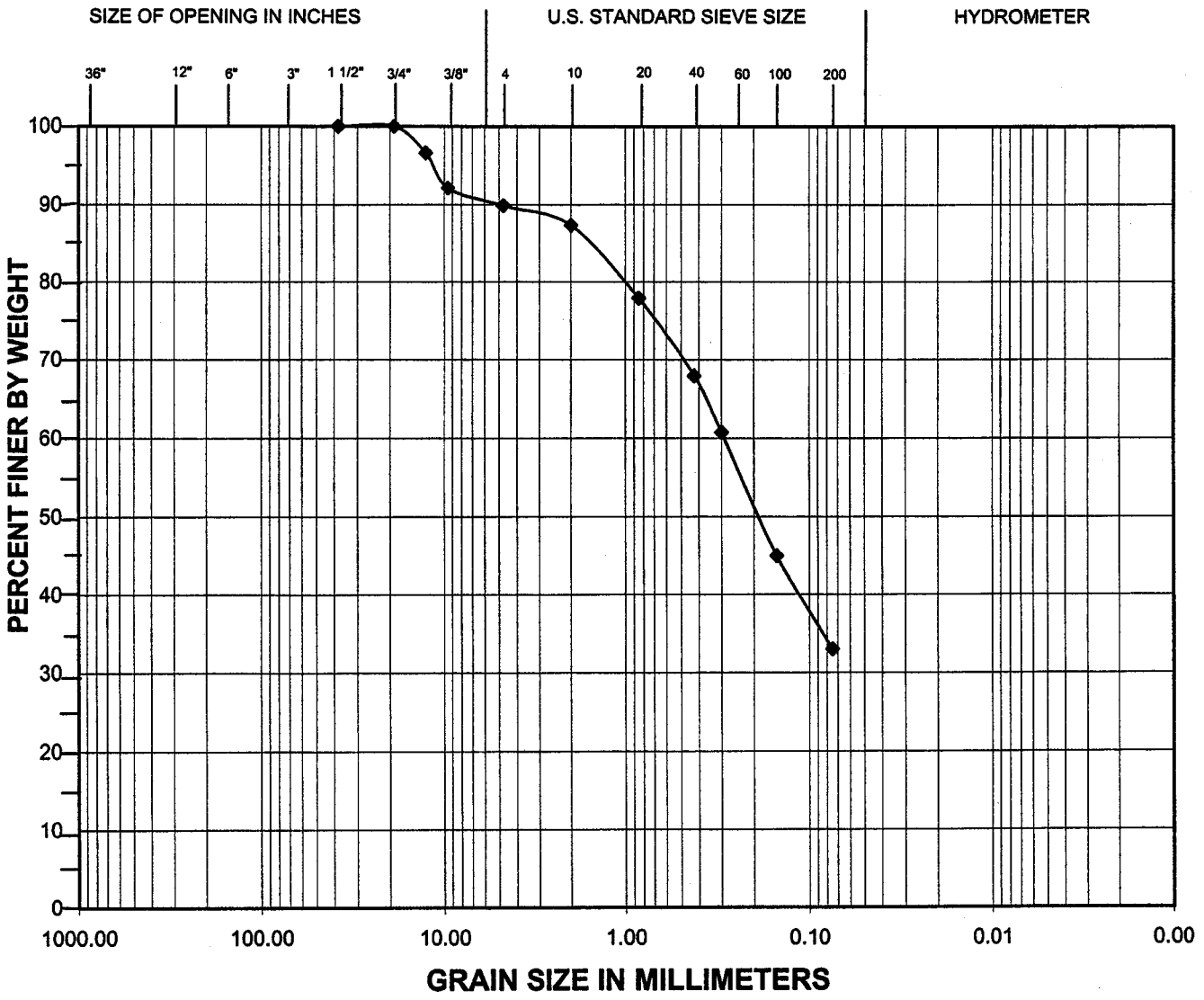
Depth (feet)	Material Description	Sample No.
0.0-1.5	2-inches of 5/8-inch minus crushed rock over soft, damp to moist, dark brown-gray, SILT with trace clay, occasional gravel and occasional metal debris. (FILL)	S-1 @ 1'
1.5-5.0	Medium stiff to stiff, moist, orange-brown, sandy SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2 @ 3'
5.0-8.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-3 @ 7'
	Test pit terminated at 8.0 feet on 03/02/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-20A

Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-3.5	Gravel over soft to medium stiff, damp, reddish-brown, SILT with gravel and trace clay and occasional asphalt debris. Occasional gray, moderately weathered, round, basaltic andesite boulders. (FILL).	S-1 @ 2'
3.5-4.0	Soft to medium stiff, damp, brown, SILT with trace clay and fine rootlets. (Relict topsoil horizon.)	
4.0-9.0	Medium stiff, damp, orange-brown grading to reddish-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2 @ 4' S-3 @ 7'
9.0-10.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp to wet, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-4 @ 9.5'
	Test pit terminated at 10.0 feet on 03/02/2002. Moderate groundwater seepage observed at 9.5 feet. No caving observed.	

GRAIN SIZE DISTRIBUTION ASTM D422



		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

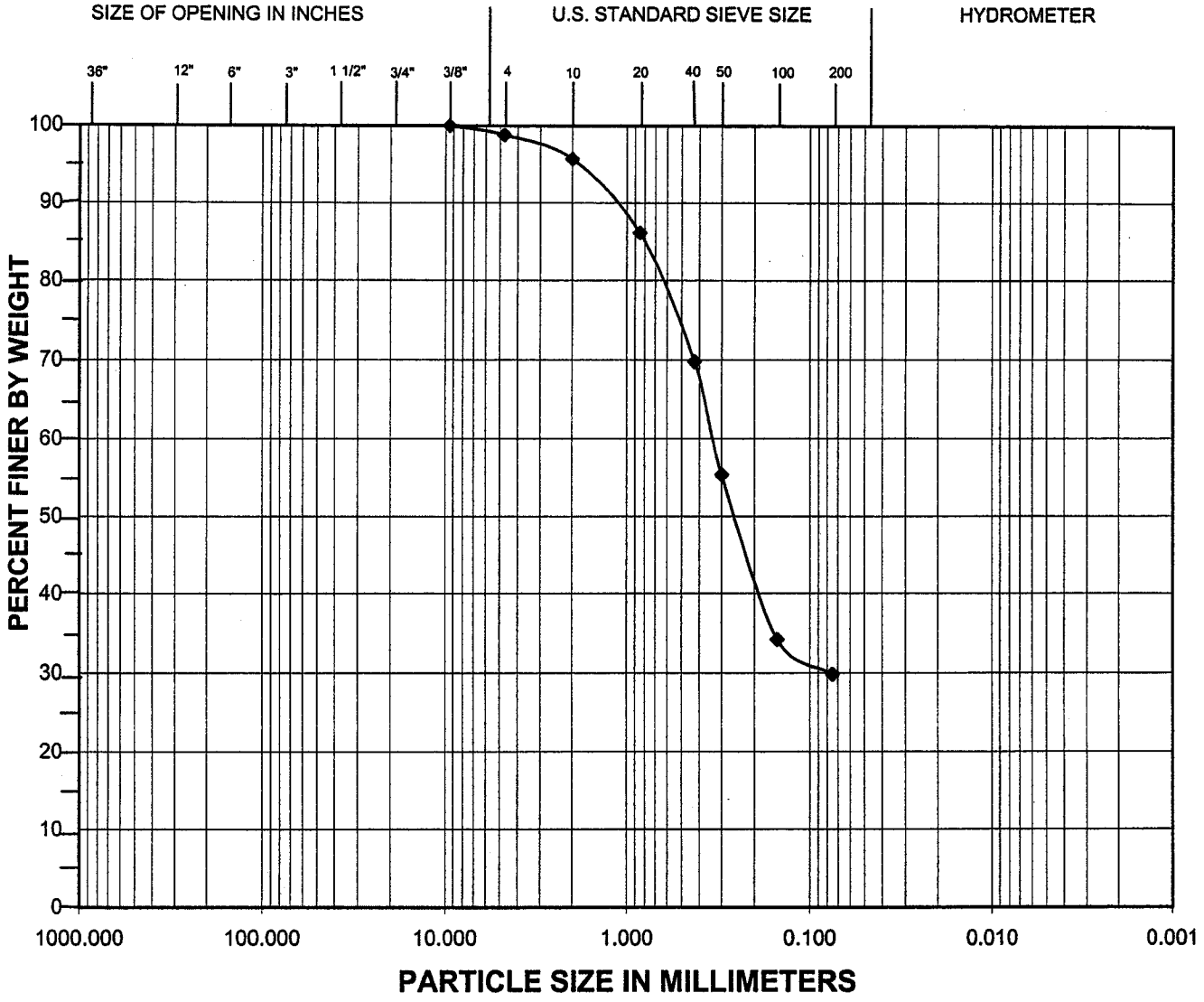
Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
B-4	S-4	10'	49	33	silty SAND w/ some gravel

ZIPPER ZEMAN ASSOCIATES, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTING	PROJECT NO: J-1200 DATE OF TESTING: 11/7/01	PROJECT NAME: Oregon City Retail

GRAIN SIZE ANALYSIS

Test Results Summary

ASTM D1140, D422



		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Comments:

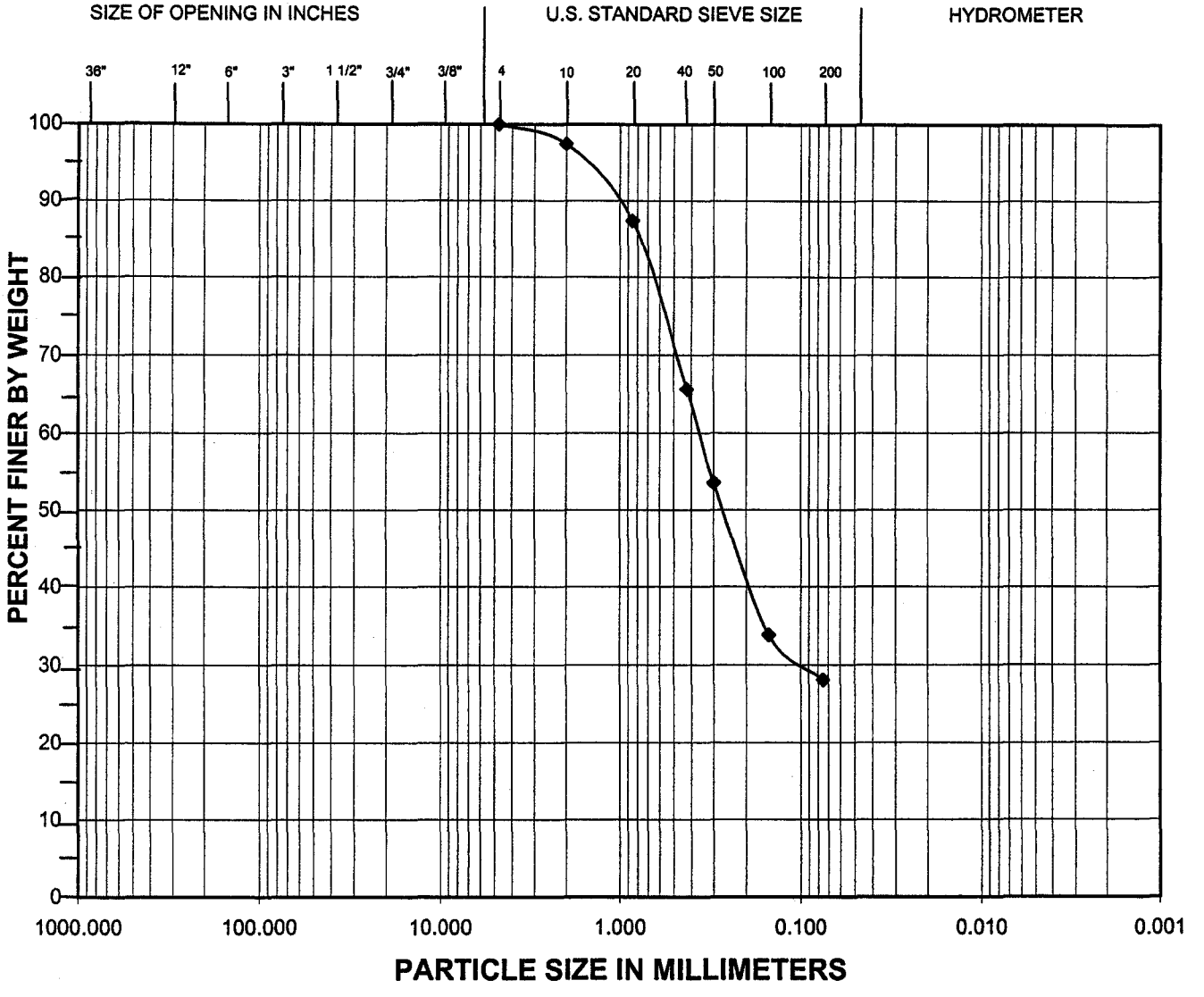
Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
B-12	S-4	10.0	59	29.8	silty SAND with trace gravel

Zipper Zeman Associates, Inc. Geotechnical and Environmental Consulting	PROJECT NO: J-1200 DATE OF TESTING: 5/17/02	PROJECT NAME: Oregon City Retail

GRAIN SIZE ANALYSIS

Test Results Summary

ASTM D1140, D422



		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Comments:

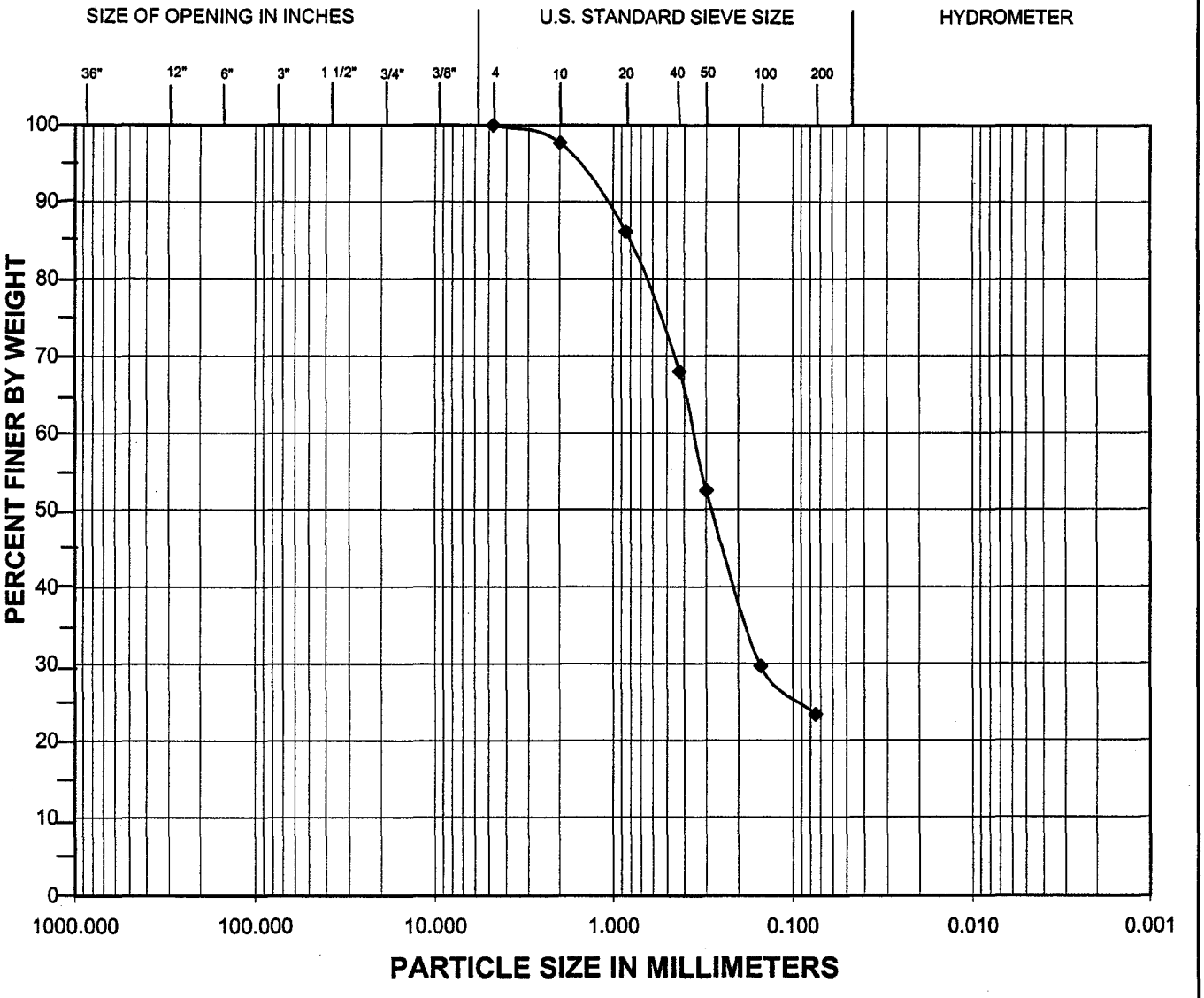
Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
B-13	S-3	7.5	63	28.1	silty SAND

Zipper Zeman Associates, Inc. Geotechnical and Environmental Consulting	PROJECT NO: J-1200 DATE OF TESTING: 5/15/02	PROJECT NAME: Oregon City Retail

GRAIN SIZE ANALYSIS

Test Results Summary

ASTM D1140, D422



		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Comments:

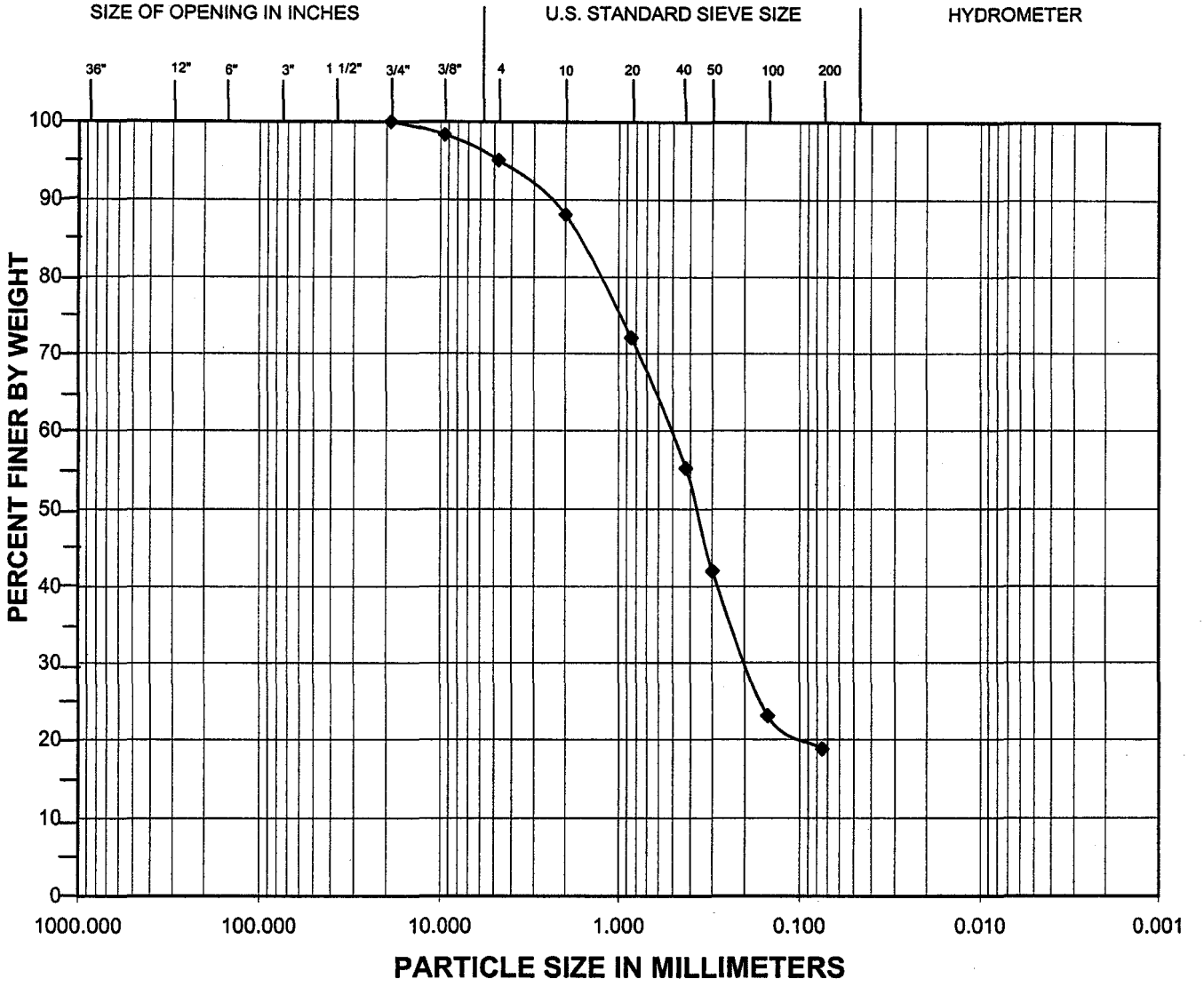
Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
B-15	S-2	5.0	54	23.3	silty SAND

Zipper Zeman Associates, Inc. Geotechnical and Environmental Consulting	PROJECT NO: J-1200 DATE OF TESTING: 5/15/02	PROJECT NAME: Oregon City Retail

GRAIN SIZE ANALYSIS

Test Results Summary

ASTM D1140, D422



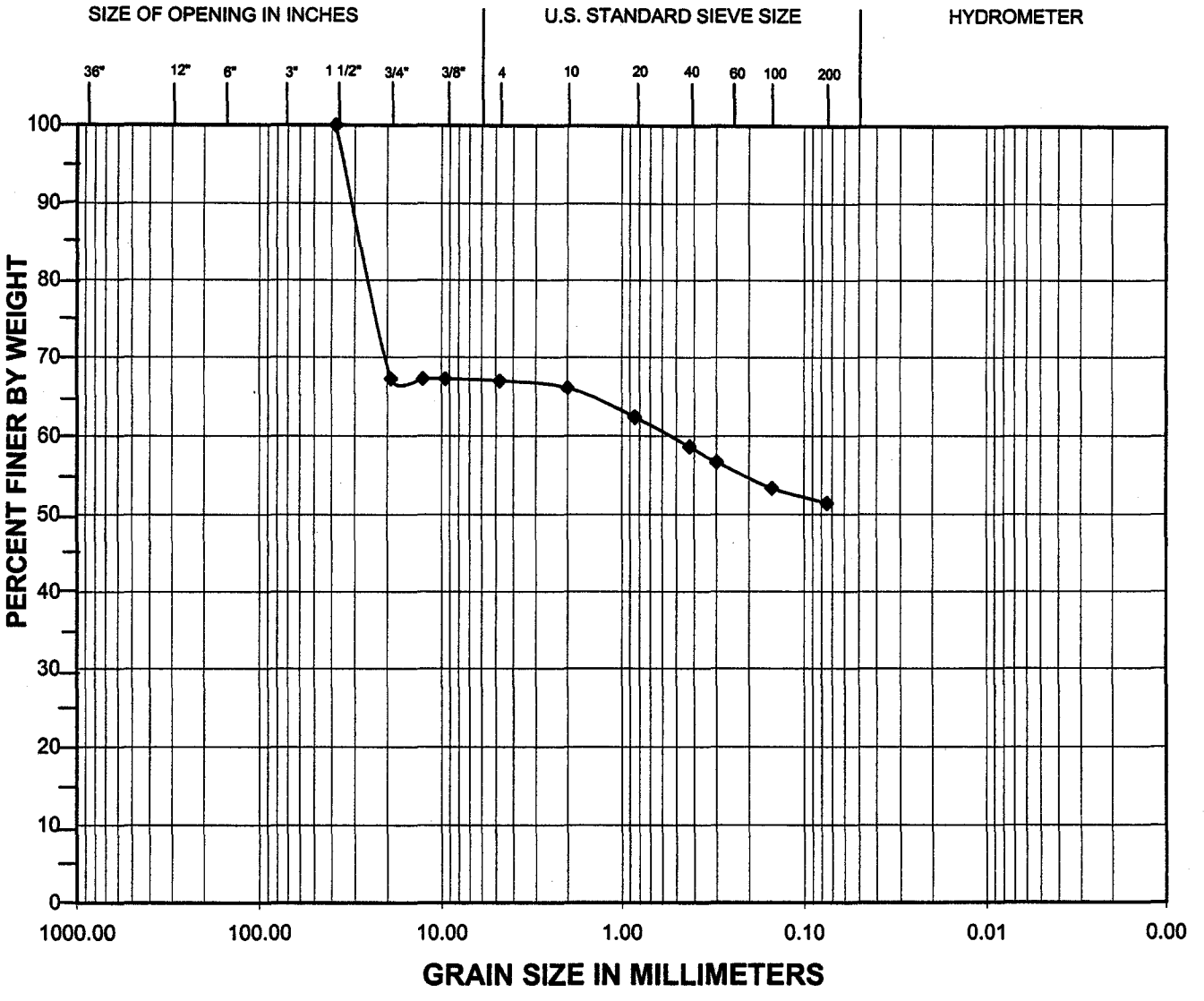
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Comments:

Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
B-20	S-2	5.0	38	18.8	silty SAND with trace to some gravel

Zipper Zeman Associates, Inc. Geotechnical and Environmental Consulting	PROJECT NO: J-1200 DATE OF TESTING: 5/17/02	PROJECT NAME: Oregon City Retail

GRAIN SIZE DISTRIBUTION ASTM D422

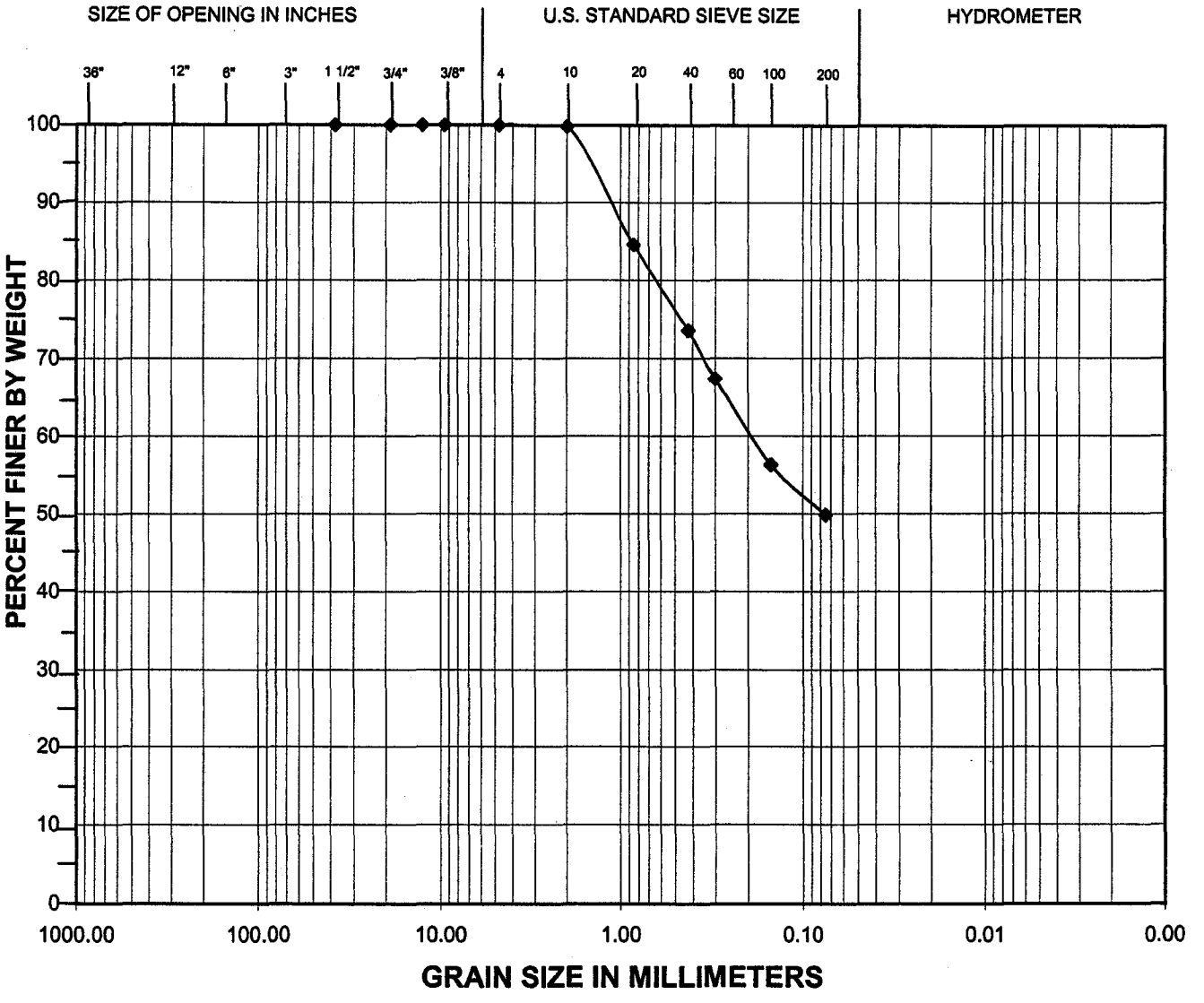


		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
TP-1	S-2	2'	16	51	sandy, gravelly,SILT

ZIPPER ZEMAN ASSOCIATES, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTING	PROJECT NO: J-1200 DATE OF TESTING: 11/7/01	PROJECT NAME: Organ City Retail

GRAIN SIZE DISTRIBUTION ASTM D422

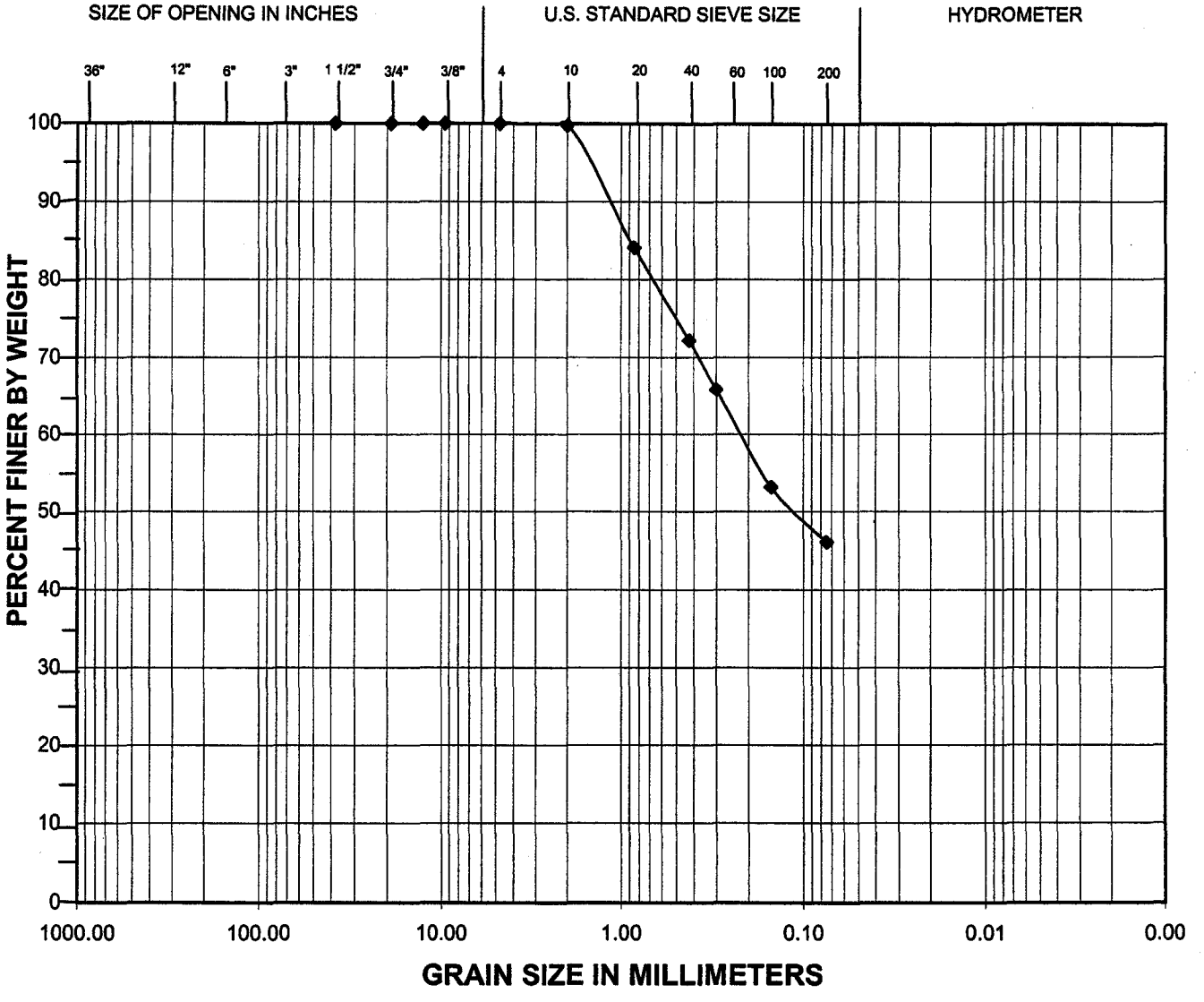


		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
TP-2	S-2	3.5'	31	49.8	silty SAND

ZIPPER ZEMAN ASSOCIATES, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTING	PROJECT NO: J-1200 DATE OF TESTING: 11/8/01	PROJECT NAME: Oregon City Retail

GRAIN SIZE DISTRIBUTION ASTM D422

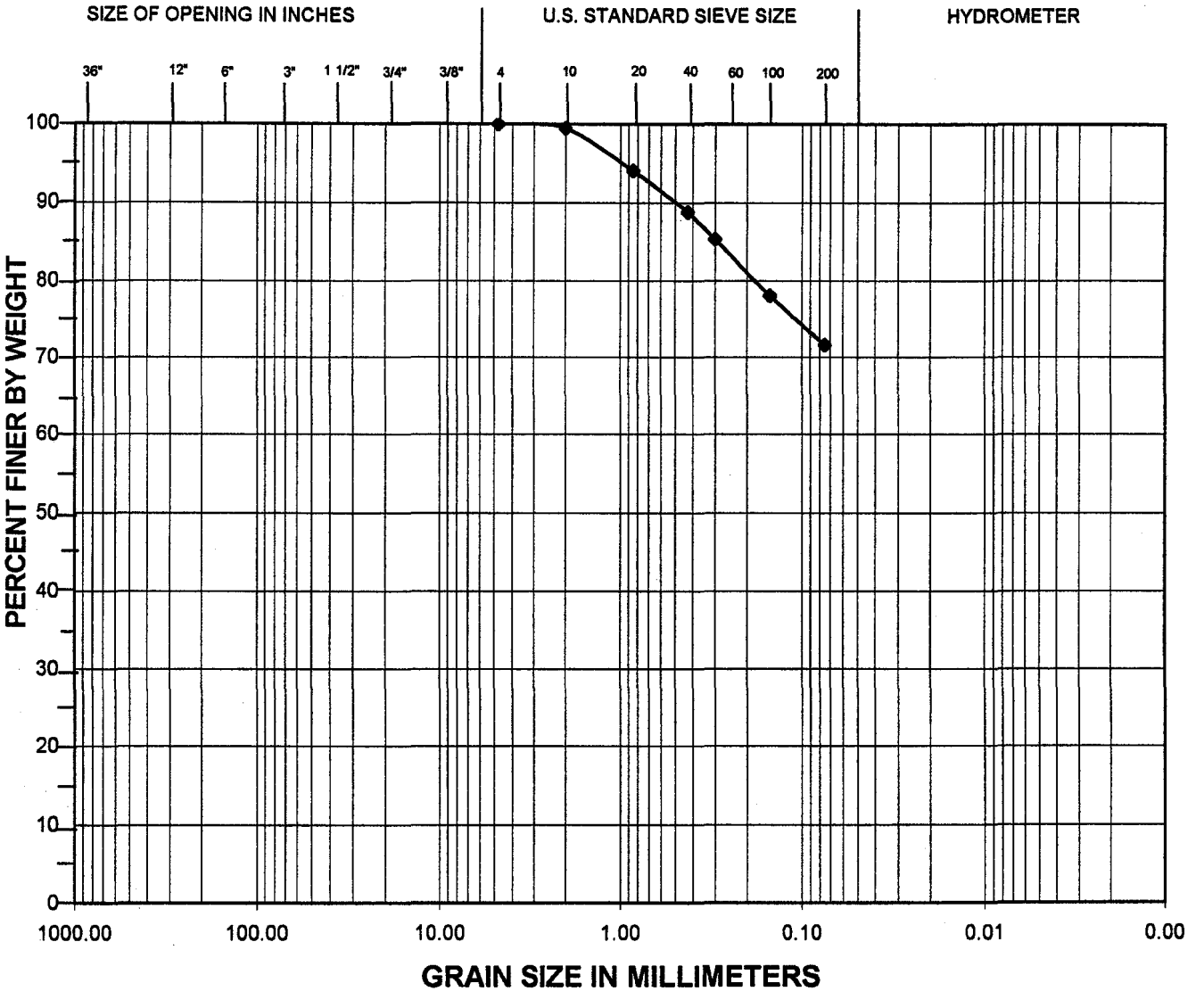


		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
TP-26	S-4	10.5'	60	46.1	silty SAND

ZIPPER ZEMAN ASSOCIATES, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTING	PROJECT NO: J-1200 DATE OF TESTING: 11/8/01	PROJECT NAME: Oregon City Retail

GRAIN SIZE DISTRIBUTION ASTM D422

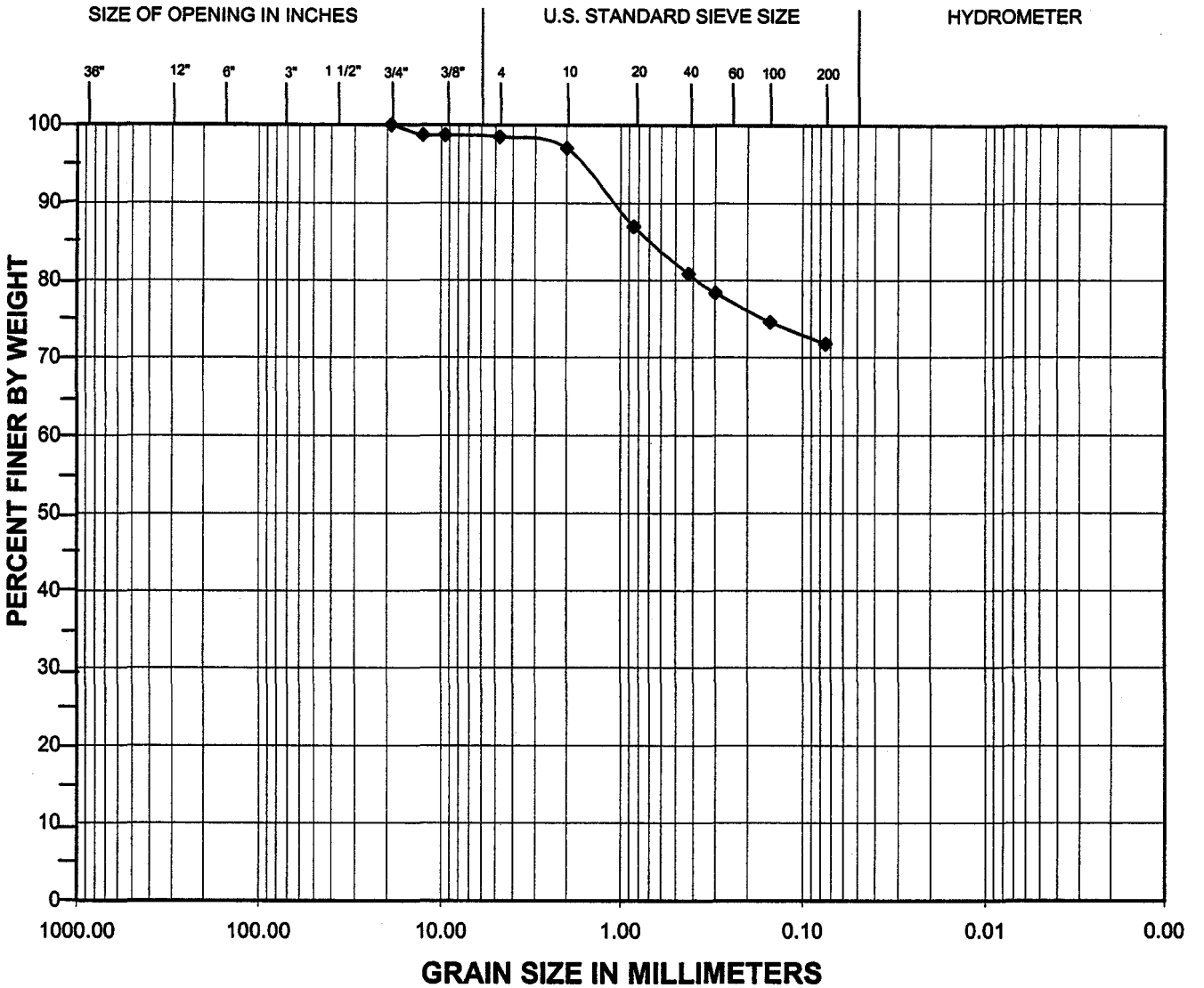


		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
TP-32	S-4	7.5'	27	72	sandy SILT

ZIPPER ZEMAN ASSOCIATES, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTING	PROJECT NO: J-1200 DATE OF TESTING: 11/07/2001	PROJECT NAME: Oregon City Retail

GRAIN SIZE DISTRIBUTION ASTM D422

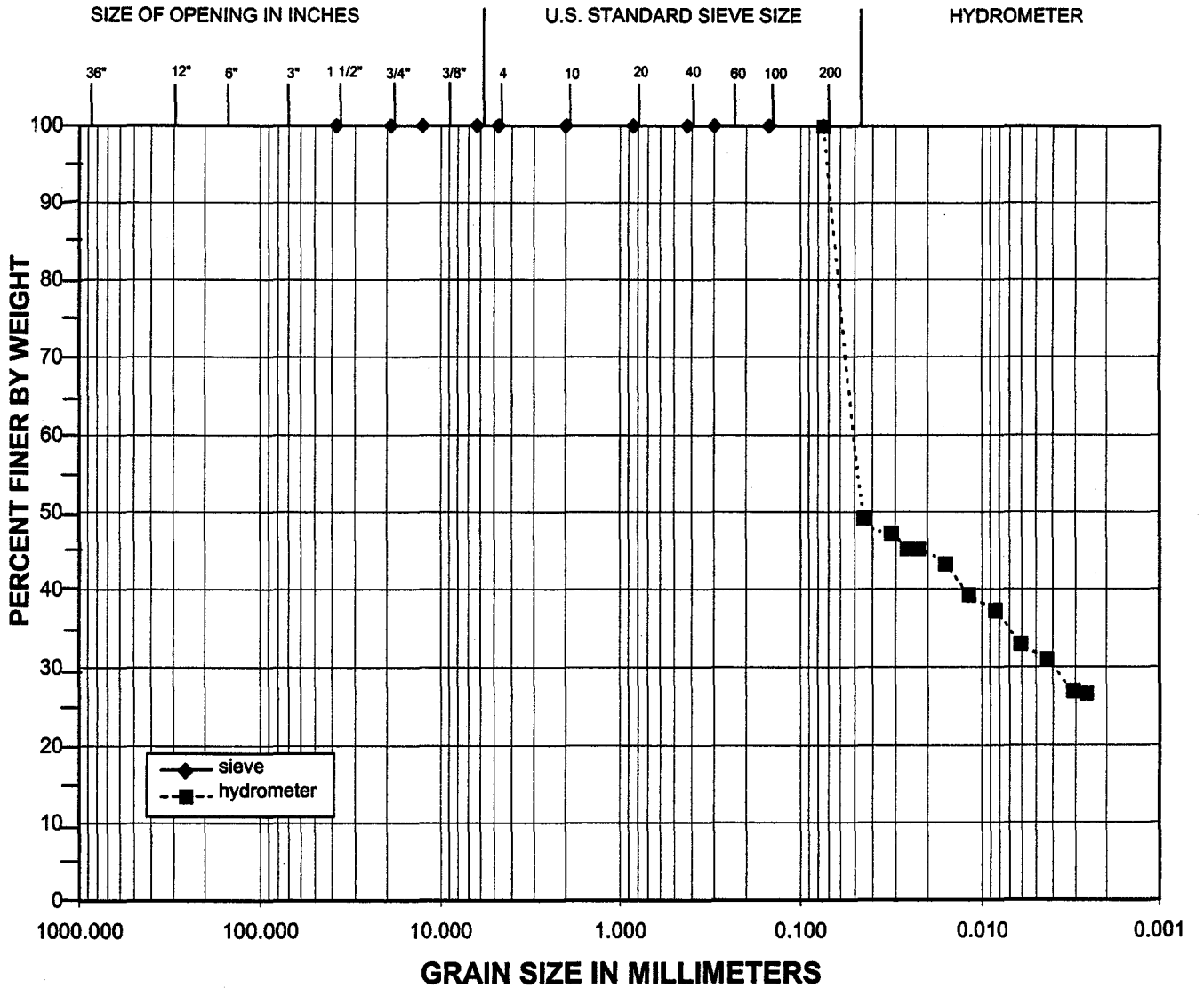


		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
TP-40	S-2	2.5'	21	72	sandy, SILT w/ trace gravel

ZIPPER ZEMAN ASSOCIATES, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTING	PROJECT NO: J-1200 DATE OF TESTING: 11/7/01	PROJECT NAME: Oregon City Retail

GRAIN SIZE DISTRIBUTION ASTM D 422

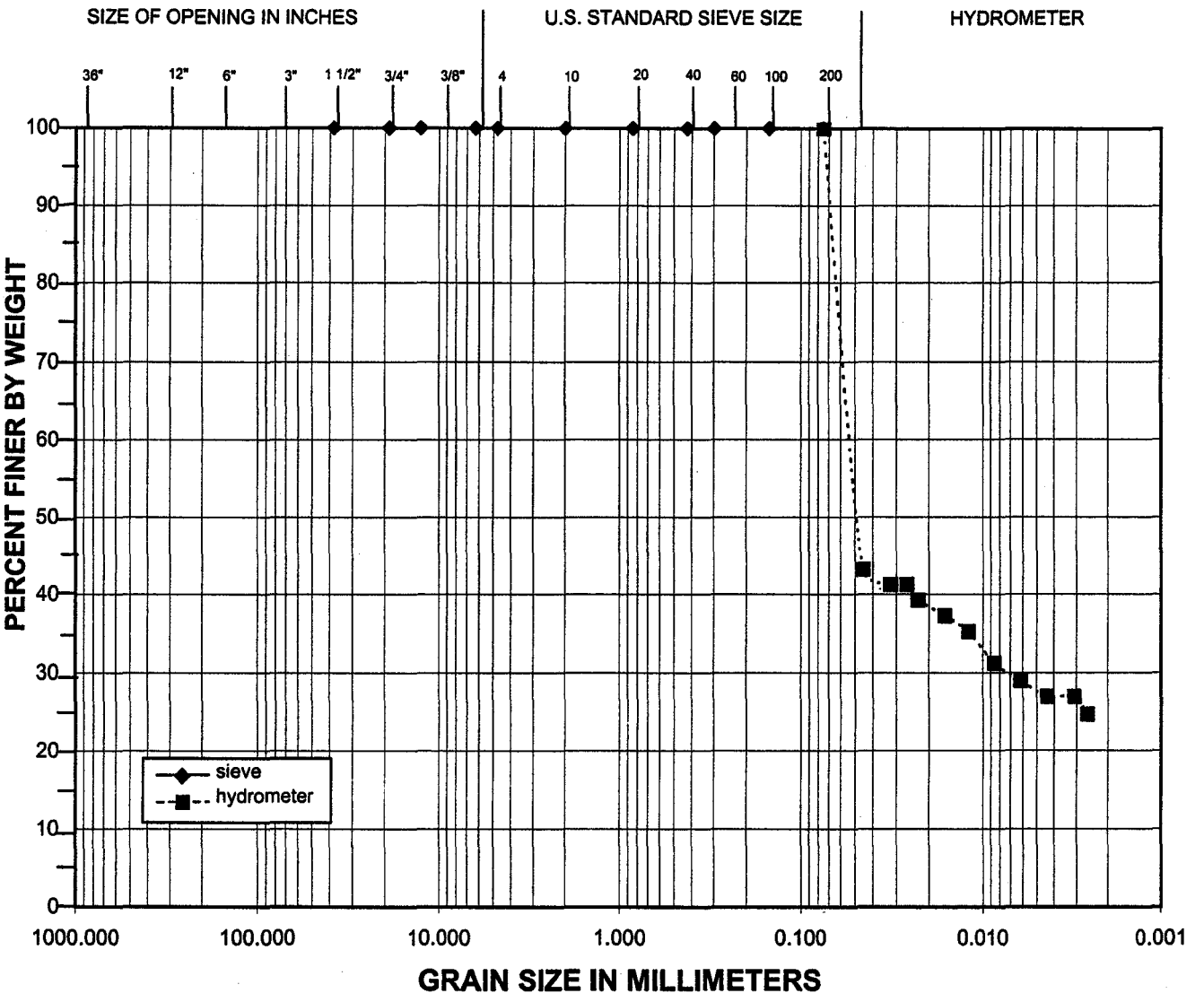


		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
B-1	S-2	5'	48	100	clayey, SILT

ZIPPER ZEMAN ASSOCIATES, INC GEOTECHNICAL AND ENVIRONMENTAL CONSULTING	PROJECT NO: J-1200 DATE OF TESTING: 11/9/01	PROJECT NAME: Oregon City Retail

GRAIN SIZE DISTRIBUTION ASTM D 422



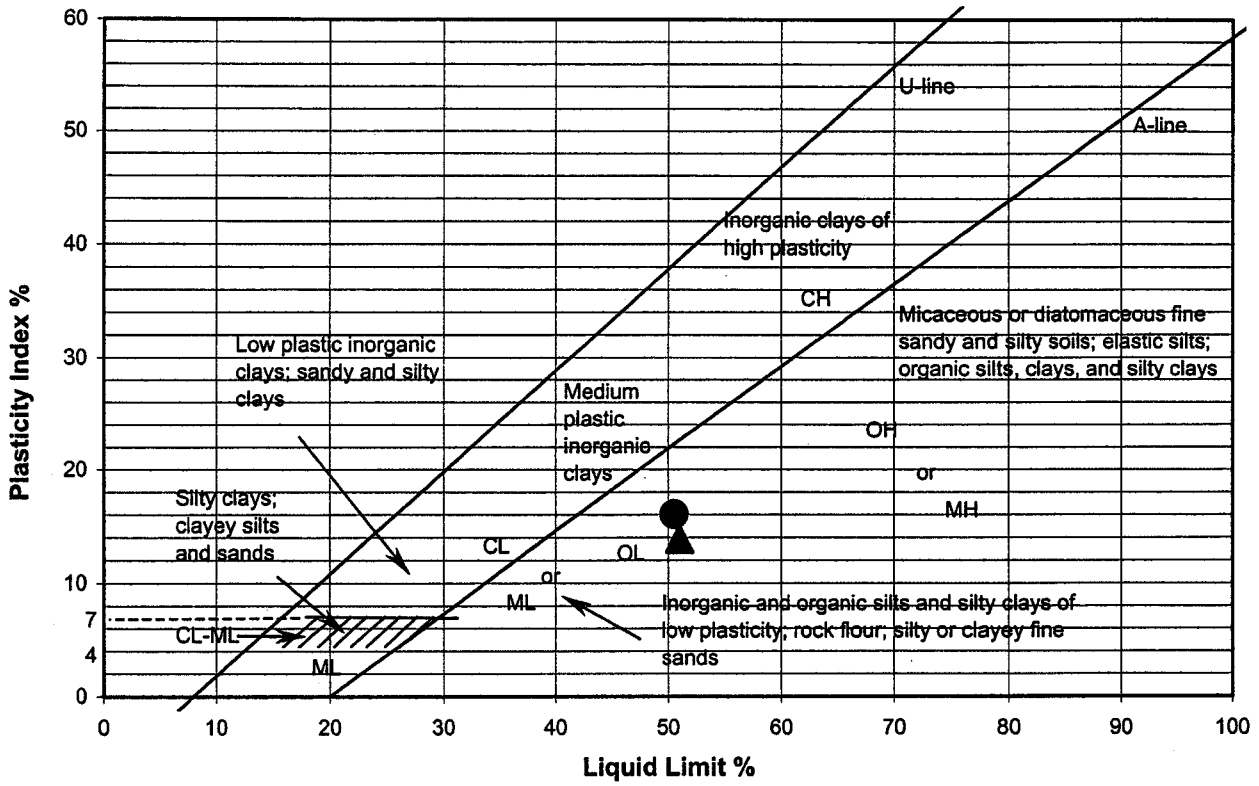
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
TP-39	S-1	1'	46	100	SILT With some clay

ZIPPER ZEMAN ASSOCIATES, INC GEOTECHNICAL AND ENVIRONMENTAL CONSULTING	PROJECT NO: J-1200 DATE OF TESTING: 11/9/01	PROJECT NAME: Oregon City Retail

PLASTICITY CHART

ASTM D 4318



Symbol	Boring	Sample	USCS Description	Received M.C. (%)	Liquid Limit	Plastic Limit	Plasticity Index	Comments
●	B-17	S-4	ML	35	51	34	16	
▲	B-19	S-1	ML	15	51	37	14	
■								
◆								

Remarks:

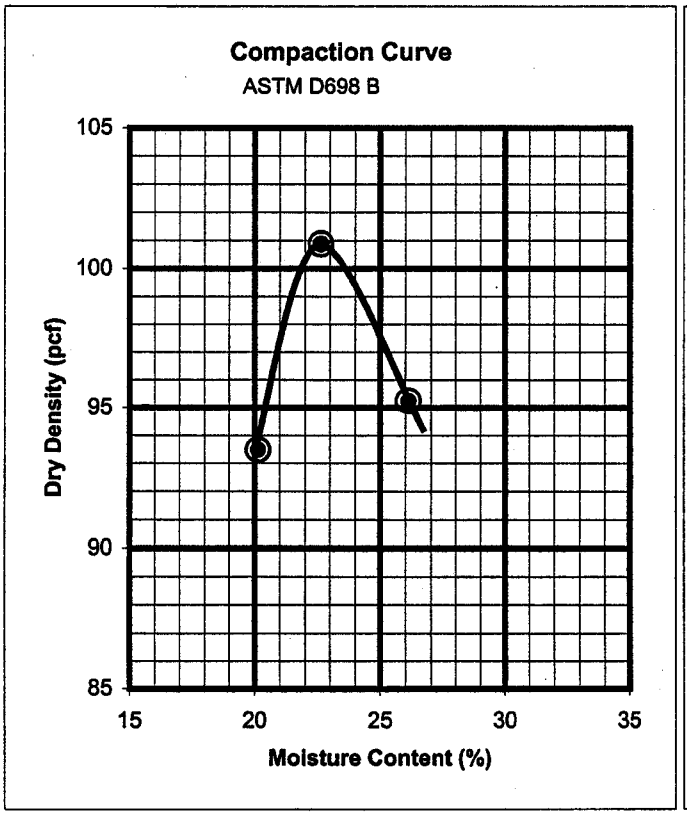
Zipper Zeman Associates, Inc. Geotechnical and Environmental Consulting	PROJECT NO: J-1200 DATE OF TESTING: 5/17/02	PROJECT NAME: Oregon City Retail

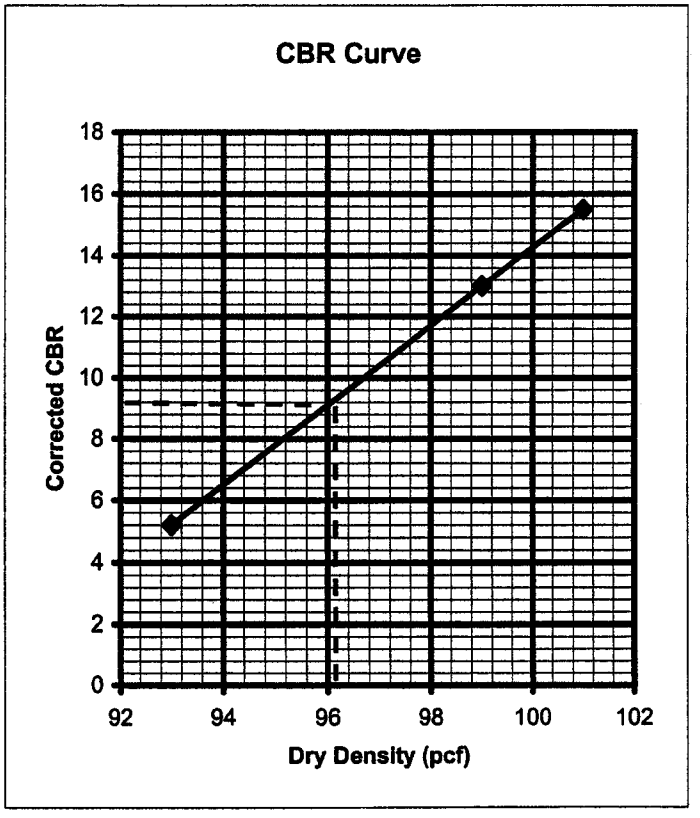
CALIFORNIA BEARING RATIO ASTM D 1883

Exploration: TP-16
Sample No.: Grab
Depth: 1.5 feet

Soil Description: SILT
Tested By: PZ/JY

	18 Blows/Lift		10 Blows/Lift		25 Blows/Lift	
Condition of Sample:	soaked		soaked		soaked	
Dry Density Before Soaking:	99	pcf	93	pcf	101	pcf
Dry Density After Soaking:	96	pcf	90	pcf	99	pcf
Moisture Content:						
Before Compaction:	20.5	%	20.5	%	20.5	%
After Compaction:	20.5	%	20.5	%	20.6	%
Top 1-in Layer After Soaking:	27.7	%	29.7	%	25.1	%
Average After Soaking:	27.5	%				
Swell:	-0.3	%	0.5	%	0.2	%
Surcharge Amount:	90.2	psf	90.2	psf	90.2	psf





Max. Dry Density = 101 pcf
Optimum Moisture = 22.5 %

CBR at 95% of Max. Dry Density = 9

ZIPPER ZEMAN ASSOCIATES, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTING	PROJECT NO: J-1200 DATE OF TESTING: 11/6/01	PROJECT NAME: Oregon City Retail

DIRECT SHEAR TEST RESULTS
ASTM D-3080

SAMPLE LOCATION	DEPTH (ft)	CLASSIFICATION	FRICTION ANGLE (degrees)	APPARENT COHESION (psf)	DRY DENSITY (pcf)	MOISTURE CONTENT (%)
B-15	2.5-3.0	(CL) reddish-brown, lean clay (remolded)	18	990	90.5	32
B-15	7.5-15.0	Reddish-brown, silty sand (remolded)	33	380	66.3	43.5

UNCONFINED COMPRESSION TEST RESULTS
ASTM D-2938

SAMPLE LOCATION	DEPTH (ft)	MOISTURE CONTENT (%)	COMPRESSIVE STRENGTH (psi)
B-2, RUN-1	19.0-19.8	3	8,800

SOIL CHEMICAL ANALYSIS RESULTS

SAMPLE LOCATION	DEPTH (ft)	pH	RESISTIVITY (ohm-cm)	SULFATES (ppm)
B-7, S-3	7	5.9	14,000	<10
TP-9, S-2	2½	5.8	11,000	10
TP-25, S-2	5½	6.1	10,000	37

ORGANIC CONTENT BY LOSS ON IGNITION AASHTO T-267

TEST PIT AND SAMPLE NUMBER	DEPTH (ft)	ORGANIC CONTENT (%)
TP-7, S-1	6	12
TP-7, S-2	24	8
TP-13, S-1	4	10
TP-40, S-1	12	9

SUPPORTING INFORMATION

Contents:

General Notes
Unified Soil Classification System
Rock Properties

Note: All attachments are one page unless noted above.

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS
Oregon City Development ■ Oregon City, OR
Terracon Project No. 82215043

Terracon GeoReport

SAMPLING	WATER LEVEL	FIELD TESTS
Rock Core Grab Sample Standard Penetration Test	**Water Initially Encountered** **Water Level After a Specified Period of Time** **Water Level After a Specified Period of Time** **Cave In Encountered** Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.	**N** Standard Penetration Test Resistance (Blows/Ft.) **(HP)** Hand Penetrometer **(T)** Torvane **(DCP)** Dynamic Cone Penetrometer **UC** Unconfined Compressive Strength **(PID)** Photo-Ionization Detector **(OVA)** Organic Vapor Analyzer

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification as noted on the soil boring logs is based Unified Soil Classification System. Where sufficient laboratory data exist to classify the soils consistent with ASTM D2487 "Classification of Soils for Engineering Purposes" this procedure is used. ASTM D2488 "Description and Identification of Soils (Visual-Manual Procedure)" is also used to classify the soils, particularly where insufficient laboratory data exist to classify the soils in accordance with ASTM D2487. In addition to USCS classification, coarse grained soils are classified on the basis of their in-place relative density, and fine-grained soils are classified on the basis of their consistency. See "Strength Terms" table below for details. The ASTM standards noted above are for reference to methodology in general. In some cases, variations to methods are applied as a result of local practice or professional judgment.

LOCATION AND ELEVATION NOTES

Exploration point locations as shown on the Exploration Plan and as noted on the soil boring logs in the form of Latitude and Longitude are approximate. See Exploration and Testing Procedures in the report for the methods used to locate the exploration points for this project. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance		CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance		
Descriptive Term (Density)	**Standard Penetration or N-Value Blows/Ft.**	**Descriptive Term (Consistency)**	**Unconfined Compressive Strength Qu, (tsf)**	**Standard Penetration or N-Value Blows/Ft.**
Very Loose	0 - 3	Very Soft	less than 0.25	0 - 1
Loose	4 - 9	Soft	0.25 to 0.50	2 - 4
Medium Dense	10 - 29	Medium Stiff	0.50 to 1.00	4 - 8
Dense	30 - 50	Stiff	1.00 to 2.00	8 - 15
Very Dense	> 50	Very Stiff	2.00 to 4.00	15 - 30
		Hard	> 4.00	> 30

RELEVANCE OF SOIL BORING LOG

The soil boring logs contained within this document are intended for application to the project as described in this document. Use of these soil boring logs for any other purpose may not be appropriate.

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse-Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	Cu ≥ 4 and 1 ≤ Cc ≤ 3 [E]		GW	Well-graded gravel [F]
			Cu < 4 and/or [Cc<1 or Cc>3.0] [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F, G, H]
			Fines classify as CL or CH		GC	Clayey gravel [F, G, H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	Cu ≥ 6 and 1 ≤ Cc ≤ 3 [E]		SW	Well-graded sand [I]
			Cu < 6 and/or [Cc<1 or Cc>3.0] [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G, H, I]
			Fines classify as CL or CH		SC	Clayey sand [G, H, I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A"		CL	Lean clay [K, L, M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K, L, M]
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay [K, L, M, N]
			Liquid limit - not dried			Organic silt [K, L, M, O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line		CH	Fat clay [K, L, M]
			PI plots below "A" line		MH	Elastic Silt [K, L, M]
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay [K, L, M, P]
			Liquid limit - not dried			Organic silt [K, L, M, Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve.

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay.

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.

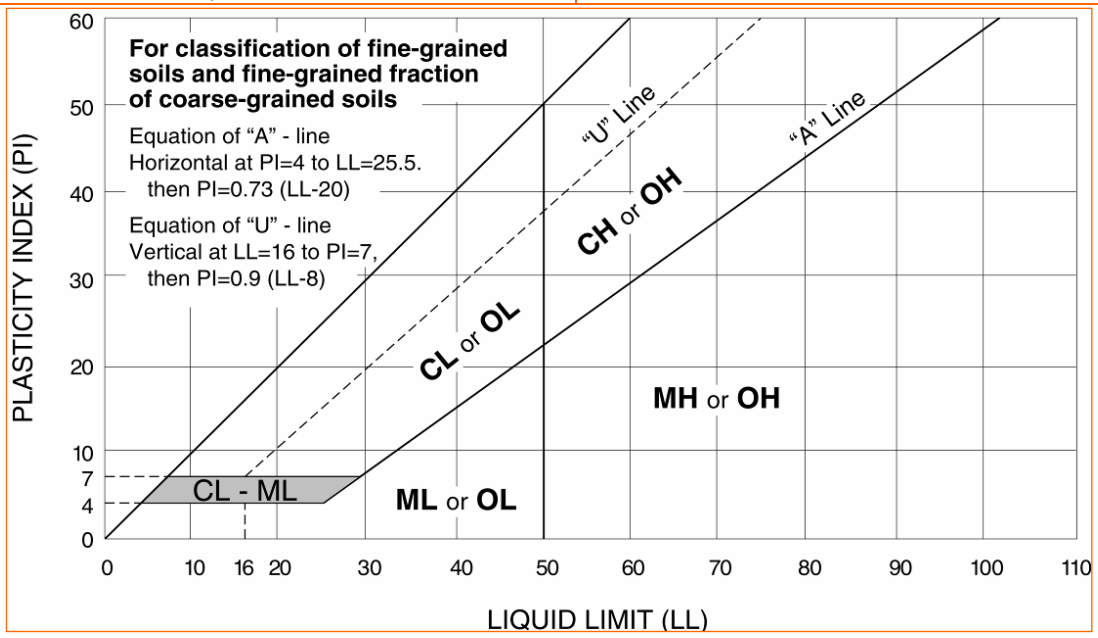
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.



WEATHERING	
Term	**Description**
Unweathered	No visible sign of rock material weathering, perhaps slight discoloration on major discontinuity surfaces.
Slightly weathered	Discoloration indicates weathering of rock material and discontinuity surfaces. All the rock material may be discolored by weathering and may be somewhat weaker externally than in its fresh condition.
Moderately weathered	Less than half of the rock material is decomposed and/or disintegrated to a soil. Fresh or discolored rock is present either as a continuous framework or as corestones.
Highly weathered	More than half of the rock material is decomposed and/or disintegrated to a soil. Fresh or discolored rock is present either as a discontinuous framework or as corestones.
Completely weathered	All rock material is decomposed and/or disintegrated to soil. The original mass structure is still largely intact.
Residual soil	All rock material is converted to soil. The mass structure and material fabric are destroyed. There is a large change in volume, but the soil has not been significantly transported.

STRENGTH OR HARDNESS		
Description	**Field Identification**	**Uniaxial Compressive Strength, psi (MPa)**
Extremely weak	Indented by thumbnail	40-150 (0.3-1)
Very weak	Crumbles under firm blows with point of geological hammer, can be peeled by a pocket knife	150-700 (1-5)
Weak rock	Can be peeled by a pocket knife with difficulty, shallow indentations made by firm blow with point of geological hammer	700-4,000 (5-30)
Medium strong	Cannot be scraped or peeled with a pocket knife, specimen can be fractured with single firm blow of geological hammer	4,000-7,000 (30-50)
Strong rock	Specimen requires more than one blow of geological hammer to fracture it	7,000-15,000 (50-100)
Very strong	Specimen requires many blows of geological hammer to fracture it	15,000-36,000 (100-250)
Extremely strong	Specimen can only be chipped with geological hammer	>36,000 (>250)

DISCONTINUITY DESCRIPTION			
Fracture Spacing (Joints, Faults, Other Fractures)		**Bedding Spacing (May Include Foliation or Banding)**	
Description	**Spacing**	**Description**	**Spacing**
Extremely close	< ¾ in (<19 mm)	**Laminated**	< ½ in (<12 mm)
Very close	¾ in – 2-1/2 in (19 - 60 mm)	**Very thin**	½ in – 2 in (12 – 50 mm)
Close	2-1/2 in – 8 in (60 – 200 mm)	**Thin**	2 in – 1 ft. (50 – 300 mm)
Moderate	8 in – 2 ft. (200 – 600 mm)	**Medium**	1 ft. – 3 ft. (300 – 900 mm)
Wide	2 ft. – 6 ft. (600 mm – 2.0 m)	**Thick**	3 ft. – 10 ft. (900 mm – 3 m)
Very Wide	6 ft. – 20 ft. (2.0 – 6 m)	**Massive**	> 10 ft. (3 m)

Discontinuity Orientation (Angle): Measure the angle of discontinuity relative to a plane perpendicular to the longitudinal axis of the core. (For most cases, the core axis is vertical; therefore, the plane perpendicular to the core axis is horizontal.) For example, a horizontal bedding plane would have a 0-degree angle.

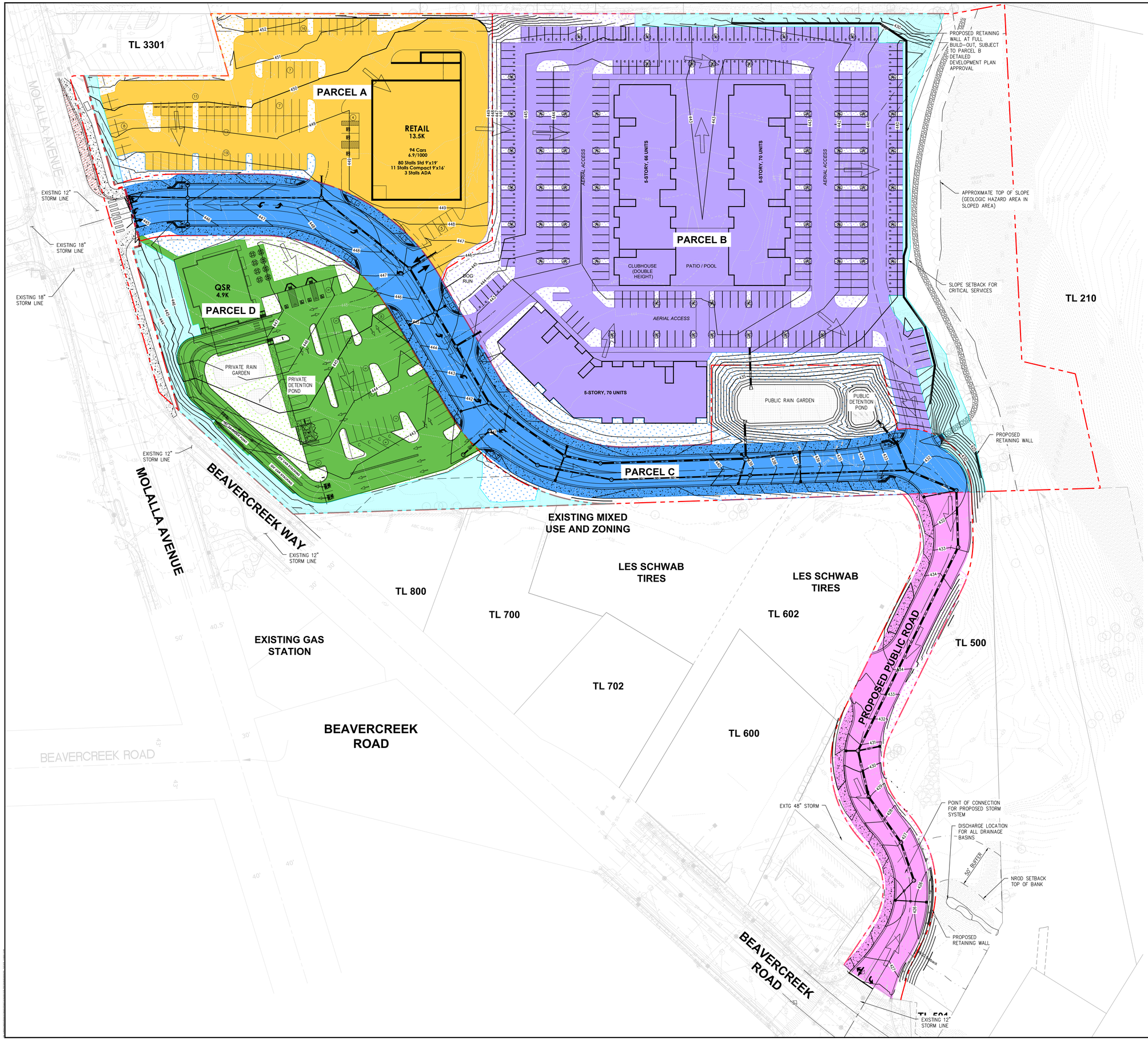
ROCK QUALITY DESIGNATION (RQD) [1]	
Description	**RQD Value (%)**
Very Poor	0 - 25
Poor	25 – 50
Fair	50 – 75
Good	75 – 90
Excellent	90 - 100

1. The combined length of all sound and intact core segments equal to or greater than 4 inches in length, expressed as a percentage of the total core run length.

Reference: U.S. Department of Transportation, Federal Highway Administration, Publication No FHWA-NHI-10-034, December 2009 Technical Manual for Design and Construction of Road Tunnels – Civil Elements

APPENDIX B

DRAINAGE BASIN MAP



LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture, and Geology, D.P.C.
10135 SE Sunnyside Road Suite 200
Clackamas, OR 97015
T: 503.659.9500 www.langan.com

CLIENT/OWNER

CYPRESS EQUITIES

PROJECT NAME

OREGON CITY MIXED USE DETAILED DEVELOPMENT PLAN

LANGAN PROJECT NUMBER: 794-002-701

PROJECT ADDRESS

1367 MOLALLA AVENUE
OREGON CITY, OR 97045

STAMP

REVISIONS

REV	ISSUED FOR:	DATE
0	DDP SUBMITTAL	11/14/2025

SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

DRAINAGE BASIN MAP

SHEET NUMBER

DB-1.0

APPENDIX C

HYDROCAD REPORT

Summary for Pond 10P: Public Detention Pond 100 yr Overflow

Inflow Area = 9.233 ac, 87.81% Impervious, Inflow Depth > 3.67" for 100-yr 24-hr event
Inflow = 8.02 cfs @ 8.15 hrs, Volume= 2.821 af
Outflow = 5.59 cfs @ 8.22 hrs, Volume= 2.821 af, Atten= 30%, Lag= 3.9 min
Primary = 5.59 cfs @ 8.22 hrs, Volume= 2.821 af

Routing by Stor-Ind method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 428.93' @ 8.22 hrs Surf.Area= 1,114 sf Storage= 1,430 cf

Plug-Flow detention time= 9.6 min calculated for 2.821 af (100% of inflow)
Center-of-Mass det. time= 9.5 min (758.9 - 749.4)

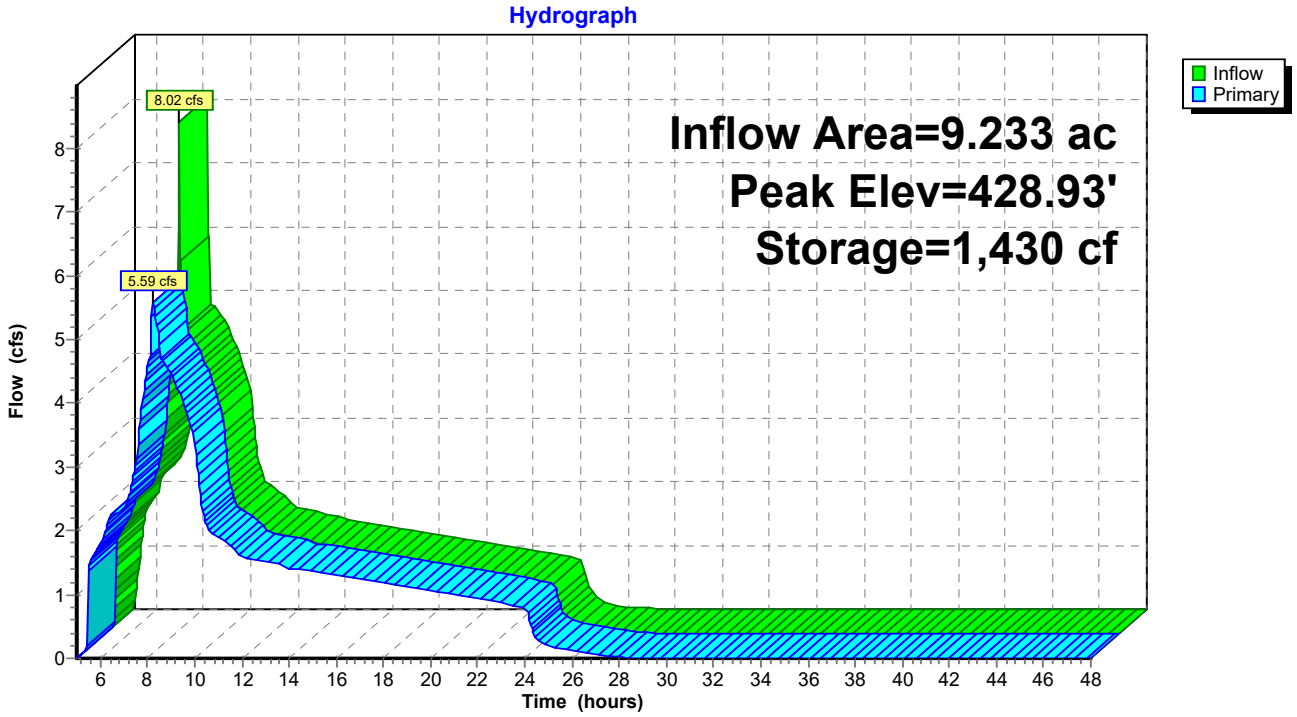
Volume	Invert	Avail.Storage	Storage Description
#1	426.25'	10,030 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
426.25	1,756	0.0	0	0
426.75	1,756	40.0	351	351
427.00	1,756	30.0	132	483
428.50	937	25.0	505	988
430.50	1,756	100.0	2,693	3,681
433.00	3,323	100.0	6,349	10,030

Device	Routing	Invert	Outlet Devices
#1	Primary	426.25'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 426.25' / 426.20' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	425.25'	**2.5" Horiz. Lower Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	427.95'	**9.0" Horiz. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	428.25'	**6.3' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=5.56 cfs @ 8.22 hrs HW=428.91' (Free Discharge)
└**1=Culvert** (Inlet Controls 5.56 cfs @ 7.08 fps)
  ├**2=Lower Orifice** (Passes < 0.27 cfs potential flow)
  ├**3=Upper Orifice** (Passes < 2.08 cfs potential flow)
  └**4=Sharp-Crested Rectangular Weir** (Passes < 10.83 cfs potential flow)

Pond 10P: Public Detention Pond 100 yr Overflow



APPENDIX D

WES BMP SIZING TOOL REPORT

WES BMP Sizing Report

Project Information

Project Name	Oregon City Commercial Masterplan
Project Type	Commercial
Location	Mollala Ave and Beavercreek Rd, Oregon City
Stormwater Management Area	0
Project Applicant	Cypress Acquisitions LLC
Jurisdiction	CCSD1NCSA

Drainage Management Area

Name	Area (sq-ft)	Pre-Project Cover	Post-Project Cover	DMA Soil Type	BMP
PUP-1	7,003	Forested	LandscapeCsoil	C	Public Rain Garden
PUI-1	30,169	Forested	ConventionalConcrete	C	Public Rain Garden
PRI-2	180,369	Forested	ConventionalConcrete	C	Public Rain Garden
PRP-2	20,596	Forested	LandscapeCsoil	C	Public Rain Garden
PRI-1	73,175	Forested	ConventionalConcrete	C	Public Rain Garden
PRP-1	6,613	Forested	LandscapeCsoil	C	Public Rain Garden
PUI-2	70,148	Forested	ConventionalConcrete	C	Public Rain Garden
PUP-2	15,527	Forested	LandscapeCsoil	C	Public Rain Garden
PRI-3	53,636	Forested	ConventionalConcrete	C	Private Rain Garden
PRP-3	17,366	Forested	LandscapeCsoil	C	Private Rain Garden

LID Facility Sizing Details

LID ID	Design Criteria	BMP Type	Facility Soil Type	Minimum Area (sq-ft)	Planned Areas (sq-ft)	Orifice Diameter (in)
Public Rain Garden	WaterQuality	Rain Garden - Filtration	Lined	5,681.0	6,000.0	3.1
Private Rain Garden	WaterQuality	Rain Garden - Filtration	Lined	934.8	1,700.0	1.3

Pond Sizing Details

Pond ID	Design Criteria(1)	Facility Soil Type	Max Depth (ft)(2)	Top Area (sq-ft)	Side Slope (1:H)	Facility Vol. (cu-ft)(3)	Water Storage Vol. (cu-ft)(4)	Adequate Size?
Public Detention Pond	FCWQT	Lined	4.00	1,450.0	3	2,911.8	1,904.8	Yes
Private Detention Pond	FCWQT	Lined	4.00	700.0	3	1,027.7	743.0	Yes

1. FCWQT = Flow control and water quality treatment, WQT = Water quality treatment only

2. Depth is measured from the bottom of the facility and includes the three feet of media (drain rock, separation layer and growing media).

3. Maximum volume of the facility. Includes the volume occupied by the media at the bottom of the facility.

4. Maximum water storage volume of the facility. Includes water storage in the three feet of soil media assuming a 40 percent porosity.

Simple Pond Geometry Configuration

Pond ID: Public Detention Pond
Design: FlowControlAndTreatment

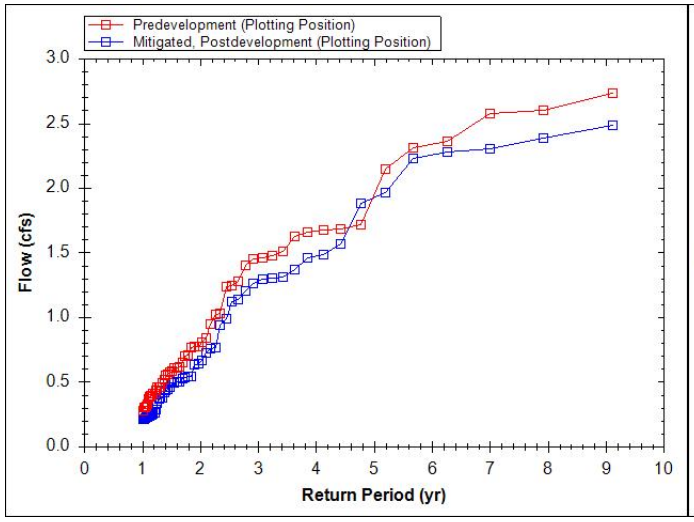
Shape Curve

Depth (ft)	Area (sq ft)
4.0	1,450.0

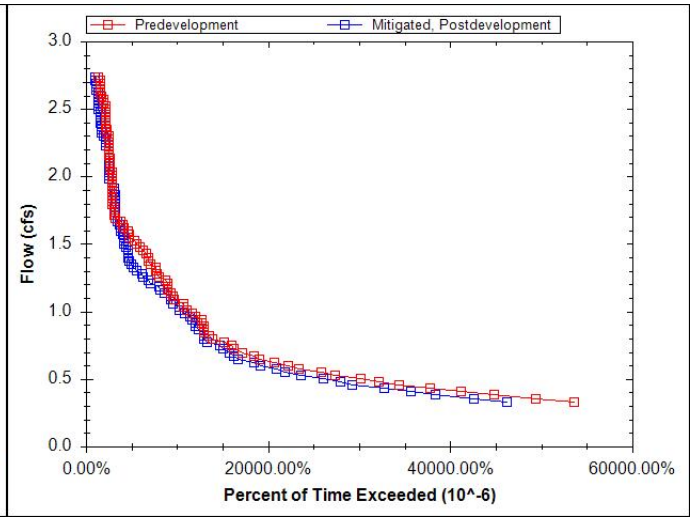
Outlet Structure Details

Lower Orifice Invert (ft)	0.0
Lower Orifice Dia (in)	2.5
Upper Orifice Invert(ft)	2.7
Upper Orifice Dia (in)	9.0
Overflow Weir Invert(ft)	3.0
Overflow Weir Length (ft)	6.3

Flow Frequency Chart



Flow Duration Chart



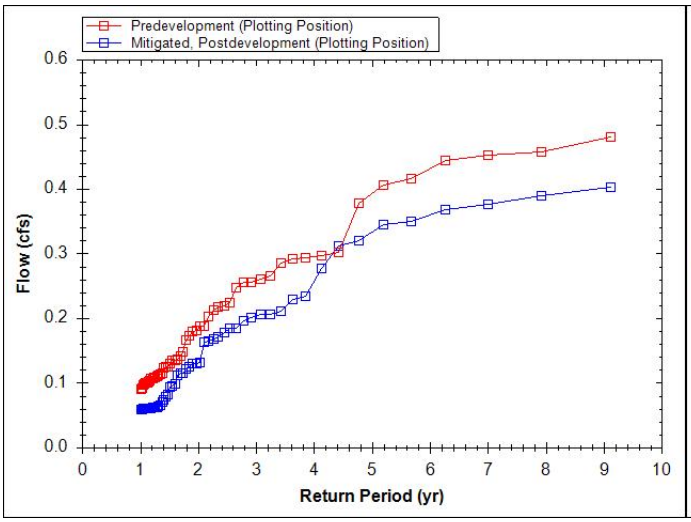
Custom Pond Geometry Configuration

Pond ID: Private Detention Pond
Design: FlowControlAndTreatment

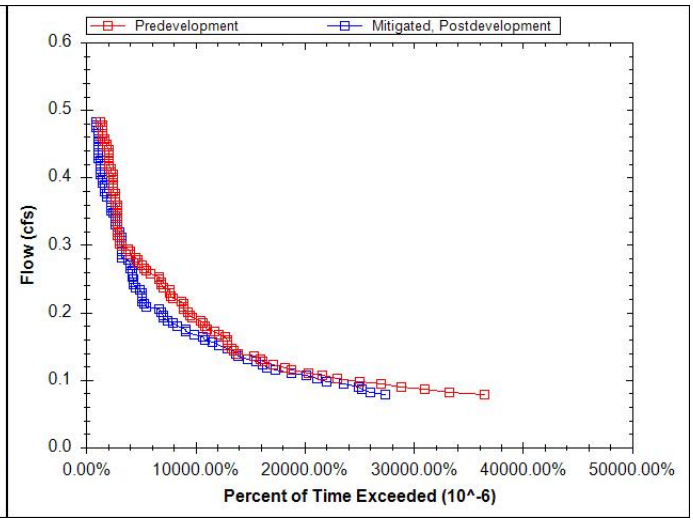
Shape Curve

Depth (ft)	Area (sq ft)	Discharge (cfs)
NaN	700.0	NaN
NaN	NaN	NaN

Flow Frequency Chart



Flow Duration Chart



APPENDIX G
Geotechnical Engineering Report

Geotechnical Engineering Report

Oregon City Development
Oregon City, Clackamas County, Oregon
September 12, 2022
Terracon Project No. 82215043

Prepared for:
The Wolff Company LLC
Scottsdale, AZ

Prepared by:
Terracon Consultants, Inc.
Portland, Oregon

September 12, 2022

The Wolff Company LLC
6710 E. Camelback Road, Suite 100
Scottsdale, AZ 85251

Attn: Chris Rossman
P: (503) 544.9595
E: jsakamoto@awolff.com
mdarr@awolff.com

Re: Geotechnical Engineering Report
Oregon City Development
1367 Molalla Avenue
Oregon City, Clackamas County, Oregon
Terracon Project No. 82215043

Dear Mr. Rossman:

We have completed a Geotechnical Engineering evaluation for the above referenced project. Our services were performed in accordance with our Master Services Agreement dated November 20, 2017, and the Task Order dated June 22, 2021, and our Change Orders dated December 9, 2021, and June 10, 2022.

This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning slope stability, earthwork and the design and construction of foundations, floor slabs, and pavements for the proposed project.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.



Ryan T. Houser, CEG
Project Geologist



Kristopher T. Hauck, P.E.
Senior Principal | Office Manager

REPORT TOPICS

INTRODUCTION 1
SITE CONDITIONS 1
PROJECT DESCRIPTION 2
EXISTING GEOTECHNICAL REPORTS 4
GEOTECHNICAL CHARACTERIZATION 4
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LATERAL EARTH PRESSURES 25
SOLDIER PILE WALLS 27
PAVEMENTS 30
GENERAL COMMENTS 32
FIGURES 34

Note: This report was originally delivered in a web-based format. For more interactive features, please view your project online at client.terracon.com.

FIGURES

ATTACHMENTS

2012 ENGINEERING GEOLOGY REPORT
EXPLORATION AND TESTING PROCEDURES
PHOTOGRAPHY LOG
EXPLORATION RESULTS
SUPPORTING INFORMATION

Note: Refer to each individual Attachment for a listing of contents.

Geotechnical Engineering Report

Oregon City Development
1367 Molalla Avenue
Oregon City, Clackamas County, Oregon

Terracon Project No. 82215043
September 12, 2022

INTRODUCTION

This report presents the results of our subsurface exploration and geotechnical engineering services performed for the proposed apartment complex, retail pads, and related pavements and utilities to be located at 1367 Molalla Avenue in Oregon City, Clackamas County, Oregon. The purpose of these services is to provide information and geotechnical engineering recommendations relative to:

- Subsurface soil conditions
- Groundwater conditions
- Site preparation and earthwork
- Demolition considerations
- Excavation considerations
- Slope stability considerations
- Foundation design and construction
- Floor slab design and construction
- Seismic site class per IBC
- Lateral earth pressures
- Pavement design and construction
- Slope hazard mitigation

The geotechnical engineering Scope of Services for this project included the advancement of one drilled boring and installation of a piezometer to monitor groundwater levels. Previous investigations at the site included advancement of 29 drilled borings and excavation of 68 test pits to depths ranging from approximately 3 to 50 feet below existing site grades. Logs of current and previous explorations are included in the **Exploration Results** section.

Maps showing the site and exploration locations are shown on **Figure 1 - Site Location** and **Figures 2 through 4 - Exploration Plans** in the **Figures** section. The results of the laboratory testing performed on soil samples obtained from the site during the field exploration are included on the boring logs and/or as separate graphs in the **Exploration Results** section.

SITE CONDITIONS

The following description of site conditions is derived from our site visit in association with the field exploration and our review of publicly available topographic maps.

Item	Description
Parcel Information	The project is located at 1367 Molalla Avenue in Oregon City, Clackamas County, Oregon. The site consists of 4 tax lots totaling approximately 12.86 acres. The approximate center of the site is located at the following coordinates: ■ Latitude: 45.3356° N ■ Longitude: 122.5881° W
Existing Improvements	Former buildings were removed, although several retaining walls, foundations, and floor slabs remained as of our last site visit in 2022.
Current Ground Cover	The majority of the site was covered with grass, blackberry bushes, and scattered trees. The eastern edge of the site was densely vegetated with trees and blackberry bushes.
Existing Topography	The majority of the site consisted of three graded benches that stepped down to the east. Each bench was nearly level to gently sloping and were separated by graded slopes up to about 10 feet high with gradients up to about 3 horizontal to 1 vertical (3H:1V). The eastern edge of the site drops steeply down at inclinations in the range of 1½H:1V to ½H:1V to the east toward Newell Creek. The overall slope system height is on the order of 200 feet in vertical drop. We understand that this steep slope area contains active and ancient landslide complexes and has been studied extensively by Portland State University geologists and other researchers.

We also collected photographs at the time of our field exploration program. Representative photos are provided in our **Photography Log**.

PROJECT DESCRIPTION

Our initial understanding of the project was provided in our proposal and was discussed during project planning. Several iterations of collaboration has transpired since the project was initiated, and our final understanding of the project conditions is as follows:

Item	Description
Information Provided	The following documents were provided to us: ■ "Site Plan," Sheet 1.11, prepared by Studio 15 Architecture, Inc., dated June 4, 2021. ■ "Preliminary Existing Conditions Survey," prepared by S&F Land Services, dated June 2021. ■ Oregon City Multi-Family Concept Grading Pavement Plans, Sheets C1.0, C2.0, C2.1, C3.0, C3.1, C4.00," prepared by Kimley-Horn, dated May 27, 2022. We were also provided the geotechnical report for the original planned structure.
Project Description	The proposed development is shown on the attached **Exploration Plans** (**Figures 2 through 4**), and includes construction of: ■ 15 multi-story (2 to 3) apartment buildings with a total of 236 dwelling units. Some of the buildings will incorporate ground level parking structures with apartments above. ■ Covered parking areas (carports). ■ 2 "pad-ready" development pads along the Molalla Avenue frontage for single story retail development. ■ A clubhouse building ■ Swimming pool Associated paved parking and drive lane areas
Building Construction	The proposed apartment and clubhouse buildings will be wood-framed with a slab-on-grade ground floor.
Finished Floor Elevation	The proposed apartment complex will be developed close to existing site grades. Final finish floor elevations are undetermined at this time.
Maximum Loads (Assumed)	■ Columns: 40 kips ■ Walls: 4 kips per linear foot (klf) ■ Slabs: 150 pounds per square foot (psf)
Below-Grade Structures	Development will include construction of a subsurface utility vault that will incorporate restrained retaining walls.
Free-Standing Retaining Walls	Development may include construction of free-standing retaining walls to accommodate grade changes along the eastern edge of the site and for the southeast road extension. We understand retaining walls up to 11 feet in height may be constructed.

Item	Description
Pavements	Paved driveway and parking will be constructed on the perimeter of the site. The Site Plan indicates parking will include 423 parking spaces. Both rigid (concrete) and flexible (asphalt) pavement sections will be incorporated into the final design. Anticipated traffic is as follows: ■ Autos/light trucks: 1,393 vehicles per day ■ Light delivery and trash collection vehicles: 20 vehicles per week ■ Tractor-trailer trucks: <5 vehicles per week The pavement design period is 20 years.
Estimated Start of Construction	Summer 2023

EXISTING GEOTECHNICAL REPORTS

Our Scope of Services is based on our understanding of the project as described by The Wolff Company and the expected subsurface conditions as described below. Terracon previously completed the following reports for the project site:

- "Preliminary Results of Slope Stability Evaluation, Proposed Retail Project, Molalla Avenue and Beavercreek Road, Oregon City, Oregon," prepared by Zipper Zeman Associates (ZZA, now Terracon since 2005), dated July 3, 2002.
- "Subsurface Exploration and Geotechnical Engineering Evaluation, Proposed Retail Project, Molalla Avenue and Beavercreek Road, Oregon City, Oregon," prepared by ZZA, dated February 13, 2004.
- "Preliminary Engineering Geology and Soil Engineering Report, Proposed Retail Development, Molalla Avenue and Beavercreek Road Oregon City, Oregon," prepared by Terracon, dated October 8, 2012.

GEOTECHNICAL CHARACTERIZATION

Geology

The site is located in the northern Willamette Valley geologic province, which consists of a structural trough between the Coastal Range and the Cascade Range. This basin is underlain by thick deposits of sand and gravel washed into it during the Pliocene epoch when the climate in the area was very dry. These granular deposits are locally covered by the Boring lavas (Qtb) in northwest Clackamas County.

Based on the *Oregon Geologic Data Standard v. 2.1* and Oregon Department of Geology and Mineral Industries *Geologic Map of the Oregon City 7.5' Quadrangle, Clackamas County, Oregon, 2009* this site is located within a geologic unit mapped as Tbc-Basalt of Canemah defined as flow or flows of grey medium-grained, olivine basalt. The Oregon Department of Geology and Mineral Industries (DOGAMI), Bulletin 99, *Geologic Map of the Canby and Oregon City Quadrangles, Oregon 1979*, maps the site as consisting of Boring lavas (Qtb), which it describes as Pliocene-Pleistocene lavas, light-gray, open-textured olivine basalt; flow structures common; includes some pyroclastic material of local extent; widely spaced joint pattern. Lavas and breccias have weathered to a residual red clay surface soil. Vertical exposures are susceptible to mass movement and deep bedrock sliding because of failure of underlying material (see the description below with clay materials within the Troutdale unit).

The Boring Lava deposits overly the Troutdale (Tpt), which are described as Pliocene sandstone and conglomerate; indurated beds and lenses of well-sorted sand and cobbly gravel with up to 30 percent quartzite clasts. Some sand originally composed of volcanic glass have altered to an impermeable high shrink-swell clay. The clay can be unstable and cause overlying competent units to fail by landslide. The publications indicate that on slopes where this clay layer daylights, one generally encounters a spring. Also, if layers dip out of the slope, it can become a failure plane for a slump or slump-earthflow when the pore water pressure has built up to a critical value on top of the clay layer.

Based on the *Map of Landslide Geomorphology of Oregon City, Oregon, and Vicinity Interpreted from Lidar Imagery and Aerial Photographs, O-06-27, 2006* and the *Landslide Inventory Map of the Northwest Quarter of the Oregon City Quadrangle, Clackamas County, Oregon, IMS-26, 2009,* a mapped landslide was identified adjacent to the site to the east. The landslide is identified as a prehistoric or ancient landslide (movement greater than 150 years ago). This is defined by landslide features that are slightly eroded and there is no evidence of historic (recent in last 150 years) movement. In some cases, the observed landslide features have been greatly eroded and/or covered with deposits that result in smoothed and subdued morphology.

The borings completed for this report and the previously referenced 2004 ZZA report are generally consistent with the above geologic mapping for the Boring Lavas/Basalt of Canemah, although the basalt has become deeply weathered in certain areas. The Troutdale unit was not encountered to the maximum depth of the borings at approximately 90½ feet below the ground surface. Although direct evidence of landslide features were not readily observed during our exploration programs for the 2004 report, we did observe the general headscarp area of the ancient landslide area during our 2012 and 2021 slope reconnaissances with the aid of the recent Lidar-based landslide maps.

Seismic Hazards

Seismic hazards resulting from earthquake motions can include slope stability, liquefaction, and surface rupture due to faulting or lateral spreading. Liquefaction is the phenomenon wherein soil strength is dramatically reduced when subjected to vibration or shaking.

We reviewed the Statewide Geohazards Viewer (HazVu) published by the Oregon Department of Geology and Mineral Studies (DOGAMI) and available online[1]. The viewer categorizes the expected earthquake shaking from light, moderate, strong, very strong, severe and violent; and the landslide susceptibility from low, moderate, high, and very high.

- Earthquake Liquefaction Hazard: Non-Liquefiable
- Expected Earthquake Shaking: Very Strong
- Landslide Susceptibility (due to earthquake): Low (Landsliding Unlikely) on the majority of the site, with Moderate (Landsliding Possible) to Very High (Existing Slide) on the eastern margin of the site. See **Engineering Geology Update** section for additional discussion.

Faults

The United States Geological Survey (USGS) Quaternary Fault and Fold Database of the United States published a report containing descriptions of nearby faults. Faults in the project vicinity include the Bolton fault (No.874), the Oatfield fault (No.875), and the Portland Hills fault (No.877). Published information pertaining to each fault or fault zone is provided in the following tables:

Bolton fault (Class B) No. 874

Information	Description
Length	9 km
Strike (degrees)	N53°W
Sense of Movement	Reverse
Dip Direction	SW
Slip-rate Category	Less than 0.2 mm/yr
Most recent prehistoric deformation	Undifferentiated Quaternary (<1.6 Ma)
Distance from Fault	1 km NE

[1] Statewide Geohazards Viewer (HazVu) published by the Oregon Department of Geology and Mineral Industries (DOGAMI) https://gis.dogami.oregon.gov/hazvu/

Oatfield fault (Class A) No. 875

Information	Description
Length	29 km
Strike (degrees)	N41W
Sense of Movement	Reverse, Right lateral
Dip Direction	NE
Slip-rate Category	Less than 0.2 mm/yr
Most recent prehistoric deformation	Undifferentiated Quaternary (<1.6 Ma)
Distance from Fault	2 km NNE

Portland Hills fault (Class A) No. 877

Information	Description
Length	49 km
Strike (degrees)	N37°W
Sense of Movement	Reverse, Right lateral
Dip Direction	SW
Slip-rate Category	Less than 0.2 mm/yr
Most recent prehistoric deformation	Undifferentiated Quaternary (<1.6 Ma)
Distance from Fault	5 km NE

Based on our review of the available fault information, the depth to bedrock, and the site's proximity to the nearest known faults, it is our opinion that the risk of surface rupture due to ground faulting is low.

Groundwater Conditions

We observed our explorations while drilling and after completion for the presence and level of groundwater. The water levels observed in the explorations are provided on the boring logs in **Exploration Results**, and are summarized below.

Boring Number	Approximate Ground Surface Elevation (feet) [1]	Observation Date	Approximate Depth to Groundwater/ Seepage while Drilling/Excavating (feet) [1]
02-B-3	447	October 29, 2001	19
02-B-22	451	March 7, 2002	20
02-MW-1	445	October 31, 2001	14
02-MW-1	445	November 2, 2001	8
02-MW-3	456	October 31, 2001	16
02-MW-3	456	November 2, 2001	17.5
02-MW-4	447	October 31, 2001	15
02-MW-4	447	November 2, 2001	11.2
02-MW-5	445	October 31, 2001	15
02-MW-5	445	November 2, 2001	11.5
02-TP-8	445	November 1, 2001	11
02-TP-43	426	March 4, 2002	9
02-TP-1A	435	March 1, 2002	9
02-TP-8A	442	March 1, 2002	6½
02-TP-12A	452	March 2, 2002	4
02-TP-20A	452	March 2, 2002	9½
21-B-1[2]	429	December 2021 – July 1, 2022	(not encountered)

1. Based on elevations obtained from the site topographic plan. Elevations may differ from those presented on the attached logs, which were based on a previous topographic map of the site.
2. A vibrating wire piezometer was installed at a depth of 30¾ feet below the ground surface (bgs), at the top of the basaltic bedrock.

Groundwater observations presented above appear to represent perched groundwater and does not appear to be continuous in nature. Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff and other factors not evident at the time the borings were performed. Therefore, groundwater levels during construction or at other times in the life of the structure may be higher or lower than the levels indicated on the boring logs. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

A vibrating wire piezometer was installed in Boring 21-B-1 near the top of the descending slope at the east end of the site. The instrument was placed immediately above the basaltic andesite within the boring at a depth of approximately 30 feet bgs. As of the date of this report, groundwater

was not recorded by this instrument. Groundwater levels will continue to be measured within this boring throughout 2022.

GeoModel

We have developed a general characterization of the subsurface conditions based upon our review of the subsurface exploration, laboratory data, geologic setting and our understanding of the project. This characterization, termed GeoModel, forms the basis of our geotechnical calculations and evaluation of site preparation and foundation options. Conditions encountered at each exploration point are indicated on the individual logs. The individual logs can be found in the **Exploration Results** section and the GeoModel can be found on **Sections A-A', B-B', and C-C'** (Figures 10 through 12) in the **Figures** section of this report. As part of our analyses, we identified the following model layers within the subsurface profile.

Model Layer	Layer Name	General Description
1	**Existing Fill**	Topsoil, Asphalt, Silty Sand Fill, Clayey Silt Fill, Poorly Graded Gravel Fill, Gravelly Silt Fill placed during previous grading at the site
2	**Residual Soil (Native)**	Silt with trace Clay, Clayey Sand with Gravel, contains a variable amount of basaltic andesite boulders and cobbles
3	**Boring Lava**	Basaltic Andesite, fresh to slightly weathered, slightly fractured to very fractured

ENGINEERING GEOLOGY UPDATE

Terracon previously prepared an engineering geology report for the site, the results of which were presented in our referenced October 8, 2012, report. A copy of the 2012 report is attached at the end of this report. As part of our current scope of work, Terracon performed an engineering geology reconnaissance of the site slopes to document current site conditions. In addition, we reviewed aerial photographs, geologic maps, and geologic hazard maps produced since completion of our 2012 report, as detailed in the following sections.

RESEARCH

Geologic and Geologic Hazards Maps Review

Terracon reviewed the following geologic and geologic hazard maps that include the project site that have become available since our 2012 reports were issued:

- 2012 Oregon Department of Geology and Mineral Industries (DOGAMI) Open-File Report O-12-02, Lidar-based surficial geologic map and database of the greater Portland, Oregon, area, Clackamas, Columbia, Marion, Multnomah, Washington, and Yamhill Counties, Oregon,

and Clark County, Washington, by Lina Ma, Ian P. Madin, Serin Duplantis, and Kendra J. Williams

- 2013 DOGAMI Open-File Report O-13-08, Landslide hazard and risk study of northwestern Clackamas County, Oregon, by William J. Burns, Katherine A. Mickelson, Cullen B. Jones, Sean G. Pickner, Kaleena L. B. Hughes, and Rachel Sleeter.
- 2020 U.S. Geological Survey Scientific Investigations Map SIM-3443, Geologic map of the greater Portland metropolitan area and surrounding region, Oregon and Washington, by Wells, R.E., Haugerud, R.A., Niem, A.R., Niem, W.A., Ma, Lina, Evarts, R.C., O'Connor, J.E., Madin, I.P., Sherrod, D.R., Beeson, M.H., Tolan, T.L., Wheeler, K.L., Hanson, W.B., and Sawlan, M.G.

Based on our review, the geologic mapping presented on these maps is consistent with the mapped publications discussed in our referenced engineering geology report. The Landslide Hazard mapping (2013) indicates the eastern portion of the site, including the area of the headscarp and recommended setback, has a "high" potential for deep-seated landslides. The mapping indicates the eastern approximate quarter of the area of proposed development has a "moderate" potential for deep-seated landslides. The shallow landslide potential is "high" along the landslide scarp, and "moderate" directly above the landslide scarp. The slope between the site and the residential properties to the north also shows a "moderate" potential for shallow landslides. The landslide hazard susceptibility depicted on these maps is consistent with those discussed in the referenced reports prepared for the site. Portions of the landslide susceptibility maps showing the approximate site boundaries are attached as **Figure 6 - Deep Landslide Susceptibility Map** and **Figure 7 - Shallow Landslide Susceptibility Map** in the **Figures** section of this report.

Aerial Photograph Review

We reviewed aerial photographs taken from 2012 to 2020 showing the site to determine if significant changes to vegetation or slope configuration are apparent, which may indicate a slope failure. Our aerial photograph review did not identify any areas showing significant changes to vegetation or slope configuration on the scarp; however, two areas below the landslide headscarp showed vegetation patterns that appeared to be inconsistent with the surrounding areas. These areas were specifically visited during our site reconnaissance, which is described in the following section.

ENGINEERING GEOLOGIC RECONNAISSANCE

Terracon Consultants, Inc., Project Geologist Ryan T. Houser, CEG, performed a surface reconnaissance of the subject property and adjacent slopes on July 1, 2021.

The property was bordered to the west by Molalla Avenue, to the north by single-family and multi-family residences fronting on Hilltop Avenue, to the south by businesses fronting on Beavercreek

Road, and to the east by a forested natural area (Newell Creek Canyon Natural Area). The majority of the site consisted of three graded benches that stepped down to the east. Each bench was nearly level to gently sloping and were separated by graded slopes up to about 10 feet high with gradients up to about 3 horizontal to 1 vertical (3H:1V). Topography of the site is consistent with that shown on the existing conditions survey map provided by the client, as shown on **Figure 8 - Topographic Map** in the **Figures** section of this report. Photographs taken at the time of our reconnaissance are presented in the **Photography Log**.

The former building pad portions of the site above the headscarp were vacant and free of structures. This portion of the site appeared to be in a condition virtually identical to that described in the referenced reports. No signs of slope instability were noted on this portion of the site.

The headscarp appeared to be in a condition identical to that described in the referenced reports, with no indicators of additional failures noted during our reconnaissance. The slope was generally vegetated with fir and oak trees. The majority of the trees on the slope exhibited straight trunks. We noticed several recent treefalls on the slope, which appeared to be the result of wind and/or ice and not slope failures since the disturbed soils were limited to the root wads of the fallen trees.

The areas of variable vegetation noted during our review of aerial photographs were located near the toe of the headscarp within the natural area, as shown on **Figure 9 - Reconnaissance Plan** in the **Figures** section of this report. Both areas contained vegetation different than the surrounding trees. The soils in these areas had a higher moisture content than the slope or surrounding areas at the base of the headscarp. A spring was located at the base of the slope east of the northeastern property corner at the northern “wet soils” area shown on **Figure 9 - Reconnaissance Plan** in the **Figures** section of this report. Based on topography, these areas represent “sag ponds” that often form at the base of headscarps after a landslide. In this case, the sag ponds did not contain standing water but did maintain a higher soil moisture content than the surrounding soils that was not conducive to tree growth. The areas surrounding the sag ponds were vegetated with mature trees, with no indications of recent reactivations of the landslide.

SEISMIC CONSIDERATIONS

Seismic Design

The seismic design requirements for structures are based on the Seismic Design Category. Site Classification is required to determine the Seismic Design Category for a structure. The Site Classification is based on the upper 100 feet of the site profile defined by a weighted average value of either shear wave velocity, standard penetration resistance, or undrained shear strength in accordance with Section 20.4 of ASCE 7-16.

Description	Value
2019 Oregon Structural Specialty Code (OSSC) [1]	D[2]
Site Latitude	45.3360°N
Site Longitude	122.5880°W
S_S MCE_R Ground Motion for a Short Period [3]	0.812g
S_1 MCE_R Ground Motion for a 1-Second Period [3]	0.366g
PGA_M Site Modified Peak Ground Acceleration	0.451

1. Seismic site classification in general accordance with the *2019 Oregon Structural Specialty Code (OSSC)*, which refers to ASCE 7-16.
2. ASCE 7-16 requires a site soil profile extending to a depth of 100 feet be used for seismic site classification. Borings at this site were extended to a maximum depth of 90½ feet. The site properties below the boring depth to 100 feet were estimated based on our experience and knowledge of geologic conditions of the general area.
3. These values were obtained using online seismic design maps and tools available on the Applied Technology Council (ATC) website referenced in Section 1613.2.1 of the 2019 OSSC.

Liquefaction

Liquefaction is the phenomenon where saturated soils develop high pore-water pressures during seismic shaking and lose their strength characteristics. This phenomenon generally occurs in areas of high seismicity, where groundwater is shallow and loose granular soils or relatively low- to non-plastic fine-grained soils are present.

Based on their plasticity characteristics, the shallow high-plasticity soils are considered non-liquefiable. Based on their very stiff/dense nature, the underlying residual soil is considered non-liquefiable within the depths explored. In addition, relatively shallow, non-liquefiable basaltic andesite bedrock underlies the site. These findings are consistent with liquefaction hazard mapping for the site described above, which indicates soils at the site are non-liquefiable.

SLOPE STABILITY

Published geologic maps referenced in the attached October 8, 2012, engineering geology report and in the **Engineering Geology Update** section referenced above indicate that shallow surficial landsliding and debris flows are the primary types of slope failure in Newell Creek Canyon. In addition, recent hazard mapping indicates a moderate to high risk of deep-seated failures on the eastern portion of the site. It is our opinion that the previously discussed deep-seated failure of the mapped landslide was due to significant undercutting of lower-strength materials that underly the basalt by the ancestral Newell Creek. The resultant landslide debris covered the lower strength materials, forcing Newell Creek further to the east. In our opinion, the landslide debris and current location of Newell Creek provide a level of protection against erosion of the lower

strength materials, and a reduced risk of deep seated failures for the life of the current development.

Mechanics of Stability

Slope stability analyses take into consideration material strength, presence and orientation of weak layers, water (piezometric) pressures, surcharge loads, and the slope geometry. Mathematical computations are performed using computer-assisted simulations to calculate a Factor of Safety (FS). Minor changes to slope geometry, surface water flow and/or groundwater levels could result in slope instability. Reasonable FS values are dependent upon the confidence in the parameters utilized in the analyses performed, among other factors related to the project itself.

Geometric Analysis Results

Slope stability analyses were performed for the cross-section geometries based on the provided topographic map and publicly available topographic information. Parameters for the analyses were derived from our exploration program, experience, and laboratory tests. Stability analyses were conducted using the computer program Slope/W Version 7.16 developed by Geo-Slope International.

Unstable or Potentially Unstable Slopes

Based on the results of our field investigation, laboratory testing program, and geotechnical analysis, development of the site is considered feasible from a geotechnical viewpoint provided the conclusions and considerations provided herein are incorporated into the design and construction of the project. A horizontal acceleration of 0.225 (1/2 of the PGA_M) was entered for the seismic stability calculations.

The stability of the slopes at the cross-section locations shown on **Figure 3 –Exploration Plan East** were analyzed based on the provided topography, proposed grading, soil properties derived from our geotechnical exploration, laboratory test results and our experience with similar soil conditions. Soil and bedrock properties used in the analyses are shown below:

Material	Moist Unit Weight (pcf)	Drained Cohesion (psf)	Drained Friction Angle (degrees)
Existing Fill	120	0	27
Proposed Fill	125	0	32
Probable Slide Material	120	100	5
Residual Soil	125	250	30
Fresh Bedrock	150	500	45

Based on the analyses, the calculated FS for the critical surface identified in each section is shown below. It's important to note that these results incorporate the planned grading at this time. However, these analyses do not include any risk mitigation elements recommended later in this section.

Cross-Section	Minimum Calculated Factor-of-Safety for Slopes With Proposed Grading (no mitigation)	
	Static	Seismic
A-A'	1.65	1.06
B-B'	1.36	0.81
C-C'	1.91	1.17

The typically accepted minimum FS for static long-term slope stability supporting improvements is 1.5, and 1.15 for seismic slope stability. As shown in the table above, the proposed fill placement at the top of the slope will result in a factor of safety below the accepted minimums.

Slope Hazard Mitigation Recommendations

We evaluated multiple slope stability mitigation options including the use us deep foundations to support the proposed parking areas, the use of lightweight fill materials, and incorporating geogrid into the new structural fill areas. Based on our analyses, we recommend the proposed retaining wall incorporate a row of soldier piles to reinforce the top of the slope. The soldier piles should consist of a row of drilled shaft cast-in-place concrete piers. In addition, we recommend buildings setback a minimum of 35 feet from the top of the headscarp at the east end of the site. This line is shown on the attached **Figure 9 - Reconnaissance Map** and **Figure 3 - Exploration Plan East**. These piles should be embedded a minimum of 5 feet into the bedrock materials. Additional discussion of these recommendations is provided in **Geotechnical Overview** section. Details of the pile recommendations are provided in the **Soldier Pile Walls** section.

Incorporating these recommendations into the slope stability analyses results in the following calculated FS for the critical surfaces:

Cross-Section	Minimum Calculated Factor-of-Safety for Slopes Mitigated with Soldier Piles	
	Static	Seismic
A-A'	2.48	1.61
B-B'	2.87	1.56
C-C'	2.80	1.75

While these factors of safety appear significantly higher than the goal of design of 1.5 for static and 1.15 for seismic, these are the minimums provided the piles are embedded into the bedrock. Our analyses for piles not embedded into the bedrock did not achieve adequate factors of safety. As indicated in the preceding table, installation of soldier piles will provide sufficient increase in

the factors of safety. The slope stability results for each cross section representing the proposed grading incorporating soldier piles are included as **Figures 13 through 18** in the **Figures** section of this report.

GEOTECHNICAL OVERVIEW

Based on the results of our slope stability and engineering analyses, it is our opinion that the proposed development is feasible from the geotechnical engineering standpoint. The primary geotechnical considerations for development of the site are:

- **Existing Landslide Hazard:** As indicated above, we recommend the retaining wall at the east end of the site incorporate a row of soldier piles to aid in slope stability. The soldier piles should consist of drilled shaft cast-in-place concrete piers that are designed to provide lateral support for new fill and existing native soils (above the bedrock) west of the proposed retaining wall. Soldier pile recommendations are provided in the **Soldier Pile Walls** section. In addition, we recommend a 35-foot building setback from the top of the descending slope at the east end of the site (See **Figure 3 - Exploration Plan East**). The recommended setback is for habitable structures, so minor encroachments of parking and grading can be considered an acceptable use provided the following considerations are incorporated into final grading plans in order to minimize impact to slope stability:
  - Drainage should be controlled so that no water is discharged onto or over the descending slope.
  - Additional area loading of the top of the slope should be avoided (i.e. no additional fill that would increase weight at the top of the slope beyond that included in our slope stability model as shown on the proposed grading plan and cross sections).

- **Existing Fill Pad:** Up to about 7 feet of undocumented fill soils underlie the proposed parking and drive lane area at the east end of the site. “Undocumented” fill is fill that lacks documentation regarding its subgrade conditions or evaluation of compaction while it was placed. Due to the potential of long-term settlement of such fill, we recommend the fill be removed and replaced with properly placed and compacted structural fill as described in the **Earthwork** section. The approximate area of the fill (based on topography) is shown on **Figure 8 - Topographic Map**.

- **Previous Tank Excavations:** Several underground storage tanks related to a former gas station were removed from within the southwest corner of the site in the parking area southwest of southern building pad fronting on Molalla Avenue. The approximate location of the former gas station is shown on the **Figure 8 - Topographic Map**. We are not aware of density test or observation reports regarding the placement of backfill within the excavations remaining after removal of the tanks. Therefore, we recommend the fill be treated as “undocumented,” and that it be removed and replaced with properly placed and compacted

structural fill. The suitability of existing fill for reuse as structural fill can be evaluated during construction. As an alternative, additional test pits could be advanced into the existing fill to determine if it can be reused as structural fill.

- **Moisture Sensitivity:** The near surface, silt soils could become unstable with typical earthwork and construction traffic, especially after precipitation events. The effective drainage should be completed early in the construction sequence and maintained after construction to avoid potential issues. If possible, the grading should be performed during the warmer and drier times of the year. If grading is performed during the winter months, an increased risk for possible undercutting and replacement of unstable subgrade will persist. Additional site preparation recommendations, including subgrade improvement and fill placement, are provided in the **Earthwork** section.

The **General Comments** section provides an understanding of the report limitations.

EARTHWORK

Earthwork is anticipated to include demolition, clearing and grubbing, excavations, and fill placement. The following sections provide recommendations for use in the preparation of specifications for the work. Recommendations include critical quality criteria, as necessary, to render the site in the state considered in our geotechnical engineering evaluation for foundations, floor slabs, and pavements.

Site Preparation

Prior to placing new fill, existing vegetation and root mat should be removed. Complete stripping of the topsoil should be performed in the proposed building and parking/driveway areas. Existing pavements, foundations, subsurface structures, and utilities remaining from previous development should be removed in their entirety. Existing fill soils should be removed and replaced with controlled structural fill.

The subgrade should be proof rolled with an adequately loaded vehicle such as a fully-loaded tandem-axle dump truck. The proof rolling should be performed under the direction of the Geotechnical Engineer. Areas excessively deflecting under the proof roll should be delineated and subsequently addressed by the Geotechnical Engineer. Such areas should either be removed or modified by stabilizing with cement. Excessively wet or dry material should either be removed or moisture conditioned and recompacted.

Terracon completed an Environmental Site Assessment (ESA) report for the project under separate cover. The ESA indicates contaminated soils within portions of the former wrecking yard at the east end of the site near the top of the descending slope. Any contaminated soils removed

near the top of the descending slope during remediation practices should be replaced with properly controlled, low-permeability structural fill soils. A former fueling station was also identified on the western portion of the site. We understand that the fuel tank was previously removed and the resulting excavation was loosely backfilled with excavated soils. The contractor should be aware that earthwork activities associated with the proposed development may encounter contaminated native and/or undocumented fill soils within these areas. The ESA reports completed for the site should be thoroughly reviewed prior to the start of earthwork activities.

Existing Fill

As noted in **Geotechnical Characterization**, many of the explorations encountered existing fill to depths of up to about 7 feet. The consistency/density of the fill is highly variable. Therefore, we recommend the fill be completely removed and replaced with properly placed and compacted structural fill in proposed building and pavement areas. Removal of undocumented fill soils should extend a minimum of 10 feet beyond building and pavement areas. Once materials have been removed, the entire area should be proof rolled with heavy, rubber tire construction equipment, to aid in delineating areas of soft or otherwise unsuitable soil. Areas of soft or otherwise unsuitable material should be undercut and replaced with either new structural fill or suitable, existing on site materials. Once unsuitable materials have been remediated, and the subgrade has passed the proof roll test, the existing and undocumented fill that was removed can be evaluated for reuse as structural fill.

Subgrade Stabilization

For this site, improvement of working surfaces subgrade with Portland cement could be considered. Cement amendment of soils should be performed by a pre-qualified contractor having experience with successfully stabilizing subgrades in the project area on similar sized projects with similar soil conditions.

For planning purposes, we estimate that pavement subgrades would need to be amended with an approximate 7 to 8 percent cement by dry weight in order to provide a stabilized subgrade for both wet weather and pavement support. We recommend a cement-amendment design be prepared during the full design phase to refine this estimate for construction specifications.

Fill Material Types

Fill required to achieve design grades should be classified as select fill, structural fill and general fill. Select fill is material used below turbine foundations, whereas structural fill is material used above or within 10 feet of foundation structures and within roadways or constructed slopes. General fill is material used to achieve grade outside of these structural areas. Fill materials used should meet the following material property requirements:

Soil Type[1]	Specification	Acceptable Parameters (for Structural Fill)
Common Fill	2021 ODOT Standard Specifications for Construction (ODOT SSC) Section 00330.13 Selected General Backfill[2]	All locations across the site, except beneath footing pads Dry weather only
Granular Common Fill	ODOT SSC Section 0030.13 Selected General Backfill[3]	All locations across the site. Dry weather only
Select Fill	ODOT SSC Section 00330.14 Selected Granular Backfill[4]	All locations across the site. Wet and Dry weather acceptable.
Crushed Aggregate Base (CAB)	ODOT SSC Section 02630.10 Dense Graded Aggregate (2"-0 to 1"-0) with the modification that less than 8% pass the No. 200 sieve as determined by ASTM D 422.	Finished base course materials for roadways and footing subgrades.
Lean Concrete (Mud-Mat)	ODOT SSC 00442 with the exception that minimum 28-day strength shall be 500 psi. Higher strength minimums may be specified by the Structural Engineer as needed.	All locations underneath mat foundations and spread foundations.

1. Controlled, compacted fill should consist of approved materials that are free (free = less than 3% by weight) of organic matter and debris (i.e. wood sticks greater than ½ inch in diameter). Frozen material should not be used, and fill should not be placed on a frozen subgrade. A sample of each material type should be submitted to the geotechnical engineer for evaluation.
2. Material should have a liquid limit less than 40 and plasticity index of less than 10.
3. Material should have less than 50% passing the No. 200 sieve and be non-plastic in nature.
4. Material should have a maximum aggregate size of 2 inches and no more than 8% passing the No. 200 sieve by weight determined by ASTM D 422.
5. Decomposed bedrock and basalt bedrock can be used as fill/backfill provided it is properly processed to a "soil-like consistency" to meet the USCS Classifications presented above with no pieces larger than 2 inches.
6. The contractor shall select the appropriate material for use based on the current and forecasted weather conditions at the time of construction.

Fill Compaction Requirements

Recommended compaction and moisture content criteria for structural fill materials are as follows:

Material Type and Location	Minimum Compaction Requirement (%)	Range of Moisture Contents for Compaction	
		Minimum	Maximum
Common Fill	**Per the Modified Proctor Test (ASTM D 1557)**		
All locations where used	95	-2%	+2%
Select Fill & CAB	**Per the Modified Proctor Test (ASTM D 1557)**		

Material Type and Location	Minimum Compaction Requirement (%)	Range of Moisture Contents for Compaction	
		Minimum	Maximum
All locations where used (e.g. beneath foundations, slabs, pavements)	95	-4%	+2%

Utility Trench Backfill

For low permeability subgrades, utility trenches are a common source of water infiltration and migration. Utility trenches penetrating beneath the buildings should be effectively sealed to restrict water intrusion and flow through the trenches, which could migrate below the buildings. The trench should provide an effective trench plug that extends at least 5 feet from the face of building exteriors. The plug material should consist of cementitious flowable fill or low permeability clay. The trench plug material should be placed to surround the utility line. If used, the clay trench plug material should be placed and compacted to comply with the water content and compaction recommendations for structural fill stated previously in this report.

Grading and Drainage

All grades must provide effective drainage away from the buildings during and after construction and should be maintained throughout the life of the structure. Water retained next to the buildings can result in soil movements greater than those discussed in this report. Greater movements can result in unacceptable differential floor slab and/or foundation movements, cracked slabs and walls, and roof leaks. The roofs should have gutters/drains with downspouts that discharge onto splash blocks at a distance of at least 10 feet from the buildings.

Exposed ground should be sloped and maintained at a minimum 5% away from the buildings for at least 10 feet beyond the perimeter of the buildings. Locally, flatter grades may be necessary to transition ADA access requirements for flatwork. After building construction and landscaping have been completed, final grades should be verified to document effective drainage has been achieved. Grades around the structure should also be periodically inspected and adjusted, as necessary, as part of the structure's maintenance program. Where paving or flatwork abuts the structure, a maintenance program should be established to effectively seal and maintain joints and prevent surface water infiltration.

Earthwork Construction Considerations

Shallow excavations for the proposed structures are anticipated to be accomplished with conventional construction equipment. Upon completion of filling and grading, care should be taken to maintain the subgrade water content prior to construction of floor slabs. Construction traffic over the completed subgrades should be avoided. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. Water collecting over or

adjacent to construction areas should be removed. If the subgrade freezes, desiccates, saturates, or is disturbed, the affected material should be removed, or the materials should be scarified, moisture conditioned, and recompacted prior to floor slab construction.

As a minimum, excavations should be performed in accordance with OSHA 29 CFR, Part 1926, Subpart P, “Excavations” and its appendices, and in accordance with any applicable local, and/or state regulations.

Construction site safety is the sole responsibility of the contractor who controls the means, methods, and sequencing of construction operations. Under no circumstances shall the information provided herein be interpreted to mean Terracon is assuming responsibility for construction site safety, or the contractor's activities; such responsibility shall neither be implied nor inferred.

Construction Observation and Testing

The earthwork efforts should be monitored under the direction of the Geotechnical Engineer. Monitoring should include documentation of adequate removal of vegetation and topsoil, proof rolling, and mitigation of areas delineated by the proof roll to require mitigation.

Each lift of compacted fill should be tested, evaluated, and reworked, as necessary, until approved by the Geotechnical Engineer prior to placement of additional lifts. Each lift of fill should be tested for density and water content at a frequency of at least one test for every 2,500 square feet of compacted fill in the building areas and 5,000 square feet in pavement areas. One density and water content test should be performed for every 50 linear feet of compacted utility trench backfill. In areas of foundation excavations, the bearing subgrade should be evaluated under the direction of the Geotechnical Engineer. If unanticipated conditions are encountered, the Geotechnical Engineer should prescribe mitigation options.

In addition to the documentation of the essential parameters necessary for construction, the continuation of the Geotechnical Engineer into the construction phase of the project provides the continuity to maintain the Geotechnical Engineer’s evaluation of subsurface conditions, including assessing variations and associated design changes.

SHALLOW FOUNDATIONS

If the site has been prepared in accordance with the requirements noted in the **Earthwork** section, the following design parameters are applicable for shallow foundations.

Design Parameters – Compressive Loads

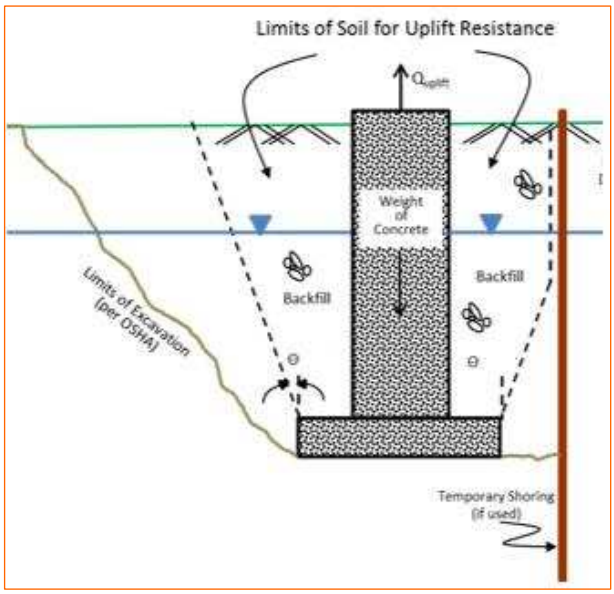
Item	Description
Maximum Net Allowable Bearing Pressure[1,2]	2,000 psf
Required Bearing Stratum[3]	Structural fill or undisturbed native residual soil
Minimum Foundation Dimensions	Columns: 24 inches Continuous: 18 inches
Ultimate Passive Resistance[4] **(equivalent fluid pressures)**	150 pcf (cohesive backfill) 360 pcf (granular backfill)
Ultimate Coefficient of Sliding Friction[5]	0.30 (native silt soils) 0.50 (granular structural fill material)
Minimum Embedment below Finished Grade[6]	Exterior footings in unheated areas: 12 inches Exterior footings in heated areas: 12 inches Interior footings in heated areas: 12 inches
Estimated Total Settlement from Structural Loads[2]	Less than about 1 inch
Estimated Differential Settlement[2,7]	About ⅔ of total settlement

1. The maximum net allowable bearing pressure is the pressure in excess of the minimum surrounding overburden pressure at the footing base elevation. An appropriate factor of safety has been applied. Values assume that exterior grades are no steeper than 20% within 10 feet of structure.
2. Values provided are for maximum loads noted in **Project Description**.
3. Unsuitable or soft soils should be overexcavated and replaced per the recommendations presented in the **Earthwork**.
4. Use of passive earth pressures require the sides of the excavation for the spread footing foundation to be nearly vertical and the concrete placed neat against these vertical faces or that the footing forms be removed and compacted structural fill be placed against the vertical footing face.
5. Can be used to compute sliding resistance where foundations are placed on suitable soil/materials. Should be neglected for foundations subject to net uplift conditions.
6. Embedment necessary to minimize the effects of frost and/or seasonal water content variations. For sloping ground, maintain depth below the lowest adjacent exterior grade within 5 horizontal feet of the structure.
7. Differential settlements are as measured over a span of 50 feet.

Design Parameters - Uplift Loads

Uplift resistance of spread footings can be developed from the effective weight of the footing and the overlying soils. As illustrated on the subsequent figure, the effective weight of the soil prism defined by diagonal planes extending up from the top of the perimeter of the foundation to the ground surface at an angle, θ, of 20 degrees from the vertical can be included in uplift resistance. The maximum allowable uplift capacity should be taken as a sum of the effective weight of soil plus the dead weight of the foundation, divided by an appropriate factor of safety. A maximum

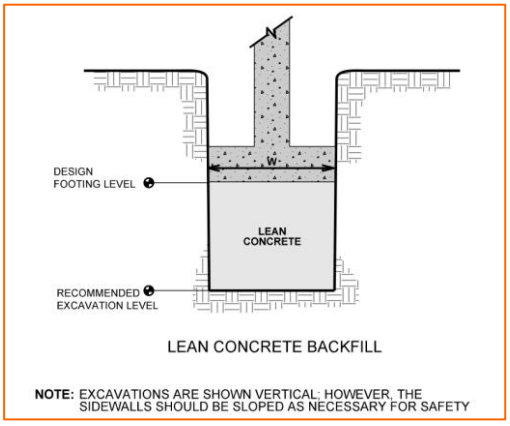
total unit weight of 100 pcf should be used for the backfill. This unit weight should be reduced to 40 pcf for portions of the backfill or natural soils below the groundwater elevation.



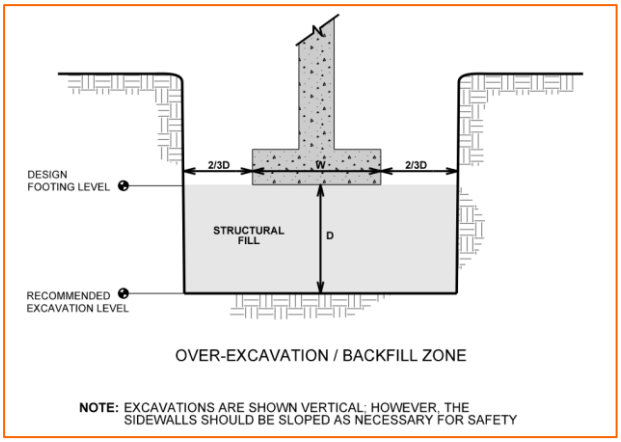
Foundation Construction Considerations

As noted in **Earthwork**, the footing excavations should be evaluated under the direction of the Geotechnical Engineer. The base of all foundation excavations should be free of water and loose soil, prior to placing concrete. Concrete should be placed soon after excavating to reduce bearing soil disturbance. Care should be taken to prevent wetting or drying of the bearing materials during construction. Excessively wet or dry material or any loose/disturbed material in the bottom of the footing excavations should be removed/reconditioned before foundation concrete is placed.

If unsuitable bearing soils are encountered at the base of the planned footing excavation, the excavation should be extended deeper to suitable soils, and the footings could bear directly on these soils at the lower level or on lean concrete backfill placed in the excavations. This is illustrated on the sketch below.



Overexcavation for structural fill placement below footings should be conducted as shown below. The overexcavation should be backfilled up to the footing base elevation, with structural fill placed, as recommended in the **Earthwork** section.



FLOOR SLABS

Depending upon the finished floor elevation, unsuitable, undocumented fills may be encountered at the floor slab subgrade levels. These soils should be replaced with structural fill so the floor slab is supported on suitable natural soils or newly placed structural fill.

Design parameters for floor slabs assume the requirements for **Earthwork** have been followed. Specific attention should be given to positive drainage away from the structure and positive drainage of the aggregate base beneath the floor slab.

Floor Slab Design Parameters

Item	Description
Floor Slab Support [1]	Minimum 6 inches of free-draining (less than 6% passing the U.S. No. 200 sieve) crushed aggregate compacted to at least 95% of ASTM D 698 [2, 3]
Estimated Modulus of Subgrade Reaction [2]	100 pounds per square inch per inch (psi/in) for point loads

1. Floor slabs should be structurally independent of building footings or walls to reduce the possibility of floor slab cracking caused by differential movements between the slab and foundation.
2. Modulus of subgrade reaction is an estimated value based upon our experience with the subgrade condition, the requirements noted in **Earthwork**, and the floor slab support as noted in this table. It is provided for point loads. For large area loads the modulus of subgrade reaction would be lower.
3. Free-draining granular material should have less than 5% fines (material passing the No. 200 sieve). Other design considerations such as cold temperatures and condensation development could warrant more extensive design provisions.

The use of a vapor retarder should be considered beneath concrete slabs on grade covered with wood, tile, carpet, or other moisture sensitive or impervious coverings, or when the slab will support equipment sensitive to moisture. When conditions warrant the use of a vapor retarder, the slab designer should refer to ACI 302 and/or ACI 360 for procedures and cautions regarding the use and placement of a vapor retarder.

Saw-cut control joints should be placed in the slab to help control the location and extent of cracking. For additional recommendations refer to the ACI Design Manual. Joints or cracks should be sealed with a water-proof, non-extruding compressible compound specifically recommended for heavy duty concrete pavement and wet environments.

Where floor slabs are tied to perimeter walls or turn-down slabs to meet structural or other construction objectives, our experience indicates differential movement between the walls and slabs will likely be observed in adjacent slab expansion joints or floor slab cracks beyond the length of the structural dowels. The Structural Engineer should account for potential differential settlement through use of sufficient control joints, appropriate reinforcing or other means.

Mitigation measures, as noted in **Existing Fill** within the **Earthwork** section, are critical to the performance of floor slabs. In addition to the mitigation measures, the floor slab can be stiffened by adding steel reinforcement, grade beams and/or post-tensioned elements.

Floor Slab Construction Considerations

Finished subgrade, within and for at least 10 feet beyond the floor slab, should be protected from traffic, rutting, or other disturbance and maintained in a relatively moist condition until floor slabs are constructed. If the subgrade should become damaged or desiccated prior to construction of floor

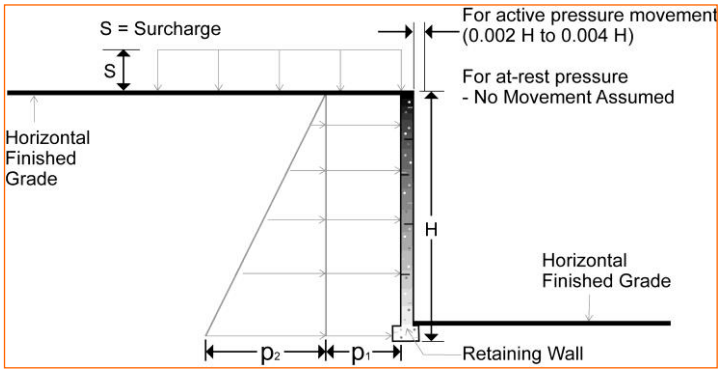
slabs, the affected material should be removed and structural fill should be added to replace the resulting excavation. Final conditioning of the finished subgrade should be performed immediately prior to placement of the floor slab support course.

The Geotechnical Engineer should approve the condition of the floor slab subgrades immediately prior to placement of the floor slab support course, reinforcing steel, and concrete. Attention should be paid to high traffic areas that were rutted and disturbed earlier, and to areas where backfilled trenches are located.

LATERAL EARTH PRESSURES

Design Parameters

Structures with unbalanced backfill levels on opposite sides should be designed for earth pressures at least equal to values indicated in the following table. Earth pressures will be influenced by structural design of the walls, conditions of wall restraint, methods of construction and/or compaction and the strength of the materials being restrained. Two wall restraint conditions are shown in the diagram below. Active earth pressure is commonly used for design of free-standing cantilever retaining walls and assumes wall movement. The “at-rest” condition assumes no wall movement and is commonly used for basement walls, loading dock walls, or other walls restrained at the top. The recommended design lateral earth pressures do not include a factor of safety and do not provide for possible hydrostatic pressure on the walls (unless stated).



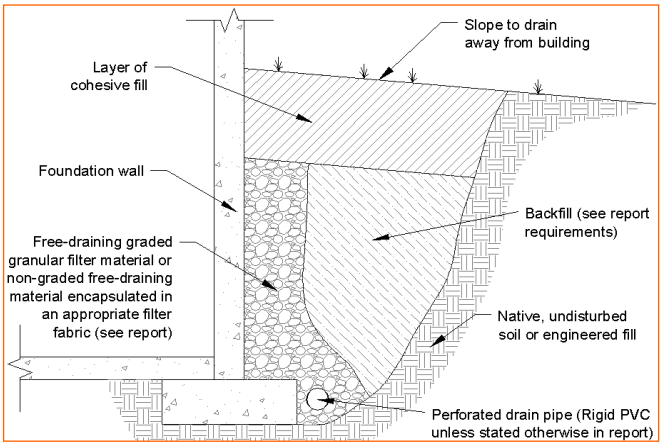
Lateral Earth Pressure Design Parameters				
Earth Pressure Condition [1]	Coefficient for Select Fill Backfill [2]	Surcharge Pressure [3, 4, 5] p_1 (psf)	Effective Fluid Pressures (psf) [2, 4, 5]	
			Unsaturated [6]	Submerged [6]
Active (Ka)	0.31	(0.27)S	(35)H	0.27
At-Rest (Ko)	0.47	(0.43)S	(55)H	0.43
Passive (Kp)	3.25	---	(480)H	3.69

1. For active earth pressure, wall must rotate about base, with top lateral movements 0.002 H to 0.004 H, where H is wall height. For passive earth pressure, wall must move horizontally to mobilize resistance.
2. Uniform, horizontal backfill, compacted to at least 95% of the ASTM D 1557 maximum dry density, rendering a maximum unit weight of 120 pcf.
3. Uniform surcharge, where S is surcharge pressure.
4. Loading from heavy compaction equipment is not included.
5. No safety factor is included in these values.
6. To achieve "Unsaturated" conditions, follow guidelines in Subsurface Drainage for Below-Grade Walls section below. "Submerged" conditions are recommended when drainage behind walls is not incorporated into the design.

Backfill placed against structures should consist of granular soils or low plasticity cohesive soils. For the granular values to be valid, the granular backfill must extend out and up from the base of the wall at an angle of at least 45 and 60 degrees from vertical for the active and passive cases, respectively.

Subsurface Drainage for Below-Grade Walls

A perforated rigid plastic drain line installed behind the base of walls and extends below adjacent grade is recommended to prevent hydrostatic loading on the walls. The invert of a drain line around a below-grade building area or exterior retaining wall should be placed near foundation bearing level. The drain line should be sloped to provide positive gravity drainage to daylight or to a sump pit and pump. The drain line should be surrounded by clean, free-draining granular material having less than 5% passing the No. 200 sieve, such as No. 57 aggregate. The free-draining aggregate should be encapsulated in a filter fabric. The granular fill should extend to within 2 feet of final grade, where it should be capped with compacted cohesive fill to reduce infiltration of surface water into the drain system.



As an alternative to free-draining granular fill, a pre-fabricated drainage structure may be used. A pre-fabricated drainage structure is a plastic drainage core or mesh which is covered with filter fabric to prevent soil intrusion, and is fastened to the wall prior to placing backfill.

SOLDIER PILE WALLS

Based on the slope stability analyses and the proposed development plan, we recommend that the retaining wall along the east end of the proposed fill pad be supported on deep foundations consisting of a row of cast in place concrete piles. Based on our analyses, the piles should be spaced no more than 8 feet apart. The piles should be embedded a minimum of 5 feet into the basalt bedrock encountered at the site, and should be designed to retain the proposed structural fill (under the parking and drive lanes), and underlying native residual soils to the surface of the bedrock. Based on our explorations, the surface of the bedrock ranges from about 20 to 33 feet below site grades along the wall alignment. This depth will likely have more variation during construction to the variable thickness of the fill present at the site.

Lateral Earth Pressures

Based on slope stability analyses attached to this report, we recommend the piles be designed to retain the soils from the proposed finished grade to the surface of the basalt bedrock. The parameters defined in the table below should be utilized in the design of the drilled shafts to determine required embedment depth and spacing, taking into consideration a minimum spacing between piles of 8 feet along the top of the slope and a minimum embedment of 5 feet into the bedrock. Additional embedment into the bedrock may be necessary to provide adequate resistance to overturning.

The design of lateral earth stabilization piers is conventionally accomplished using empirical relationships and apparent earth pressure distributions. These earth pressure distributions or envelopes do not represent the precise distribution of earth pressures but rather constitute

hypothetical pressures from loads can be calculated which would not likely be exceeded in the event of a landslide.

Design of these systems could be based on either “active” or “at-rest” lateral earth pressures, depending on the degree of deformation that can be tolerated. Piers which are free to deform on the order of 0.001 to 0.002 times the height of the exposed potential height is considered to be capable of mobilizing active earth pressures. This lateral deformation is likely to be accomplished by vertical settlement of up to roughly 0.002 times the height of the piers, which may extend back from the side of the slide face a distance equal to roughly the height of the exposed height. A greater amount of lateral deformation could allow greater vertical settlements. Since there are structural elements within the zone considered to be at risk during a potential slide, we believe it is appropriate to design utilizing at-rest earth pressures.

An assumed “at-rest” earth pressure condition theoretically assumes no movement of the soil behind the stabilization piers; however, some settlement should realistically be anticipated due to construction practices and/or the fact that it is not possible to construct a perfectly stiff system and the space between the piers are reliant on soil arching for support should be piers be exposed.

Material	Equivalent Fluid Weight		Strength Parameters (Drained)	
	At Rest (pcf)	Allowable Passive (pcf)	Drained Cohesion (psf)	Drained Friction Angle (degrees)
Existing Fill	120	320	0	27
Proposed Fill	125	407	0	32
Residual Soil	125	375	250	30
Fresh Bedrock	150	874	500	45

In the table above, the at-rest pressures act on the pile spacing above the bedrock and on the pier diameter below that depth. The passive pressures act on twice the pier diameter. We recommend a minimum pier embedment of at least 5 feet into competent basalt bedrock.

Construction Considerations

If soldier piles are installed prior to removal of the existing debris-laden undocumented fill, caving conditions should be expected in the fill materials. Therefore, drilled shaft excavations may require the use of temporary casing and drilling fluid to maintain integrity of the excavation walls and bottom. Groundwater was not encountered within the anticipated depth of drilling, but isolated perched zones may be encountered within the residual soil or at the top of the underlying bedrock, particularly following periods of heavy rainfall. Thick drilling fluid and/or casing may be required to offset the groundwater and caving conditions. Following completion of the excavation and prior

to installing reinforcement or concrete the bottom of the shaft must be cleaned of any soft or loose material.

Caving of the sidewalls and/or heaving of the shaft bottoms may occur during wet weather conditions. We recommend that the contractor be prepared to use casing and/or slurry installation methods in the event that wall sloughing, caving, or heave occurs. The contractor should also be equipped to clean out the bottom of the shafts if loose soil is observed or suspected.

If less than 3 inches of water is present in the bottom of the excavation, groundwater seepage into the excavation is at a rate of no more than 12 inches per hour and the shaft diameter is greater than or equal to 3 feet; concrete may be placed by free-fall. Under free-fall placement, deposit concrete through the center of the reinforcement cage by a method which prevents segregation of aggregates and splashing of concrete on the reinforcement cage. Place concrete so that the free-fall is vertical down the center of the shaft without hitting the sides, the steel reinforcing bars or steel cage bracing.

If the drilled shaft does not meet the above requirements, we recommend placing concrete from the bottom of the holes with a tremie pipe to form a continuous column and prevent aggregate separation. Concrete should be placed with a higher than average slump into the excavation through a tremie pipe extending to the bottom of the excavation. An uninterrupted supply and placement of concrete should be performed to produce a monolithic pier. Use clean, watertight tremie pipes large enough in diameter to allow the free flow of concrete. The tremie pipes should be placed within one to two feet above the bottom of the excavation prior to the commencement of concrete placement. Maintain a minimum 5 feet embedment of the tremie pipe in the concrete during concrete placement.

The bottom of the shaft must be observed or tested to verify that all loose material has been removed and dense granular soil is exposed. The contractor should review the conditions encountered and reported on the boring logs and in this report and provide appropriate equipment to excavate the shafts to the design depths at this site.

Reinforcing steel and concrete should be placed inside the temporary casing. The casing should be pulled as the concrete is placed to provide final contact between the soil and the concrete. A minimum head of 5 feet of concrete should be maintained above the lower edge of the casing as it is pulled to prevent intrusion of soil during extraction.

PAVEMENTS

General Pavement Comments

Pavement designs are provided for the traffic conditions and pavement life conditions as noted in **Project Description** and in the following sections of this report. A critical aspect of pavement performance is site preparation. Pavement designs noted in this section must be applied to the site which has been prepared as recommended in the **Earthwork** section.

Pavement Design Parameters

Design of Asphaltic Concrete (AC) pavements are based on the procedures outlined in the American Association of State Highway and Transportation Officials (AASHTO), 1993. Design of Portland Cement Concrete (PCC) pavements are based upon American Concrete Institute (ACI) 330; Guide for Design and Construction of Concrete Parking Lots.

A subgrade CBR of 9 (from attached laboratory testing) was used for the AC pavement designs, and a modulus of subgrade reaction (k) of 100 pci was used for the PCC pavement designs where subgrade stabilization consisting of CAB or cement treated soil is employed. The values were empirically derived based upon our experience with the fine-grained subgrade soils and our understanding of the quality of the subgrade as prescribed by the **Site Preparation** conditions as outlined in **Earthwork**. A modulus of rupture of 580 psi was used for pavement concrete.

Pavement Section Thicknesses with Subgrade Stabilization

As a minimum, we suggest the following pavement section be considered:

Asphaltic Concrete Design		
Layer	Thickness (inches)	
	Light Duty [1]	Heavy Duty [1]
AC [2]	3	4
Aggregate Base [3]	7	8

1. See **Project Description** for more specifics regarding Light Duty and Medium Duty traffic.
2. All materials should meet the Oregon Department of Transportation (ODOT) Standard Specifications for Construction (2018).
   - Asphaltic Surface - ODOT Type A Asphaltic Cement Concrete: Section 00744
   - Asphaltic Base - ODOT Type B Asphaltic Cement Concrete, Class I: Section 00745
3. A minimum 1.5-inch surface course should be used on ACC pavements.

Portland Cement Concrete Design		
Layer	Thickness (inches)	
	Light Duty [1]	Heavy Duty [3]
PCC [2]	5	6
Aggregate Base [3]	7	8

1. See **Project Description** for more specifics regarding traffic classifications.
2. All materials should meet the current State Department of Transportation ODOT) Standard Specifications for Highway and Construction (2018).
   - Concrete Pavement - ODOT Portland Cement Concrete Type C: Section 00756
3. In areas of anticipated heavy traffic, fire trucks, delivery trucks, or concentrated loads (e.g. dumpster pads), and areas with repeated turning or maneuvering of heavy vehicles.

We understand that typical fire departments require that the proposed pavement sections at the site will support a fire emergency truck once the apartment complex is constructed. Typically, we estimate total fire-truck load of 80,000 pounds for a three axle (single tire) truck. Based on these assumptions and the proposed loading conditions, we computed the ultimate bearing capacity of the pavement sections relative to a 20 percent increase of the factored load of the fire truck. From a bearing failure standpoint, the Truck Loading Section pavements are estimated to be adequate for support of the fire truck vehicle (with a factor of safety of 2.5). Pavement areas may experience some localized cracking from these large fire truck vehicle loads but are not expected to experience bearing failure of the pavement section. Based on this analysis, it is our opinion that pavement will provide adequate support for the temporary use of an emergency fire truck at the site.

Pavement Drainage

Pavements should be sloped to provide rapid drainage of surface water. Water allowed to pond on or adjacent to the pavements could saturate the subgrade and contribute to premature pavement deterioration. In addition, the pavement subgrade should be graded to provide positive drainage within the granular base section. The subgrade and the pavement surface should have a minimum ¼ inch per foot slope to promote drainage. Appropriate sub-drainage or connection to a suitable daylight outlet should be provided to remove water from the base layer.

Pavement Maintenance

The pavement sections represent minimum recommended thicknesses and, as such, periodic maintenance should be anticipated. Therefore, preventive maintenance should be planned and provided for through an on-going pavement management program. Maintenance activities are intended to slow the rate of pavement deterioration and to preserve the pavement investment. Maintenance consists of both localized maintenance (e.g., crack and joint sealing and patching) and global maintenance (e.g., surface sealing). Preventive maintenance is usually the priority when implementing a pavement maintenance program. Additional engineering observation is

recommended to determine the type and extent of a cost-effective program. Even with periodic maintenance, some movements and related cracking may still occur and repairs may be required. Pavement performance is affected by its surroundings. In addition to providing preventive maintenance, the civil engineer should consider the following recommendations in the design and layout of pavements:

- Final grade adjacent to paved areas should slope down from the edges at a minimum 2%.
- Subgrade and pavement surfaces should have a minimum 2% slope to promote proper surface drainage.
- Install below pavement drainage systems surrounding areas anticipated for frequent wetting.
- Install joint sealant and seal cracks immediately.
- Seal all landscaped areas in or adjacent to pavements to reduce moisture migration to subgrade soils.
- Place compacted, low permeability backfill against the exterior side of curb and gutter.
- Place curb, gutter and/or sidewalk directly on clay subgrade soils rather than on unbound granular base course materials.

GENERAL COMMENTS

Our analysis and opinions are based upon our understanding of the project, the geotechnical conditions in the area, and the data obtained from our site exploration. Natural variations will occur between exploration point locations or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. Terracon should be retained as the Geotechnical Engineer, where noted in this report, to provide observation and testing services during pertinent construction phases. If variations appear, we can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

Our Scope of Services does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

Our services and any correspondence or collaboration through this system are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices with no third-party beneficiaries intended. Any third-party access to services or correspondence is solely for information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client, and is not intended for

third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly impact excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing. Site safety, and cost estimating including, excavation support, and dewatering requirements/design are the responsibility of others. If changes in the nature, design, or location of the project are planned, our conclusions and recommendations shall not be considered valid unless we review the changes and either verify or modify our conclusions in writing.

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FIGURE 1 - SITE LOCATION

Oregon City Development ■ Oregon City, OR

September 12, 2022 ■ Terracon Project No. 82215043

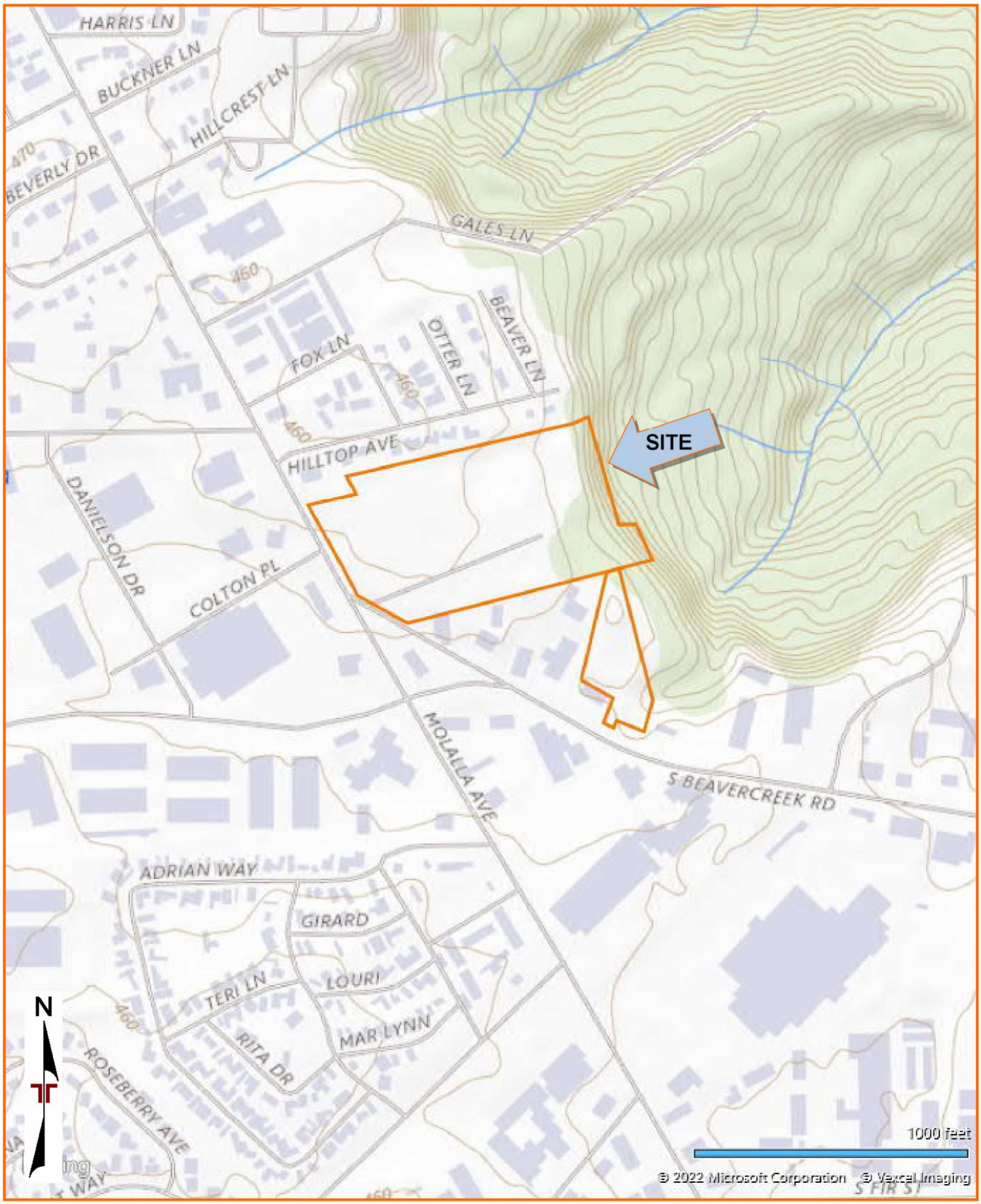


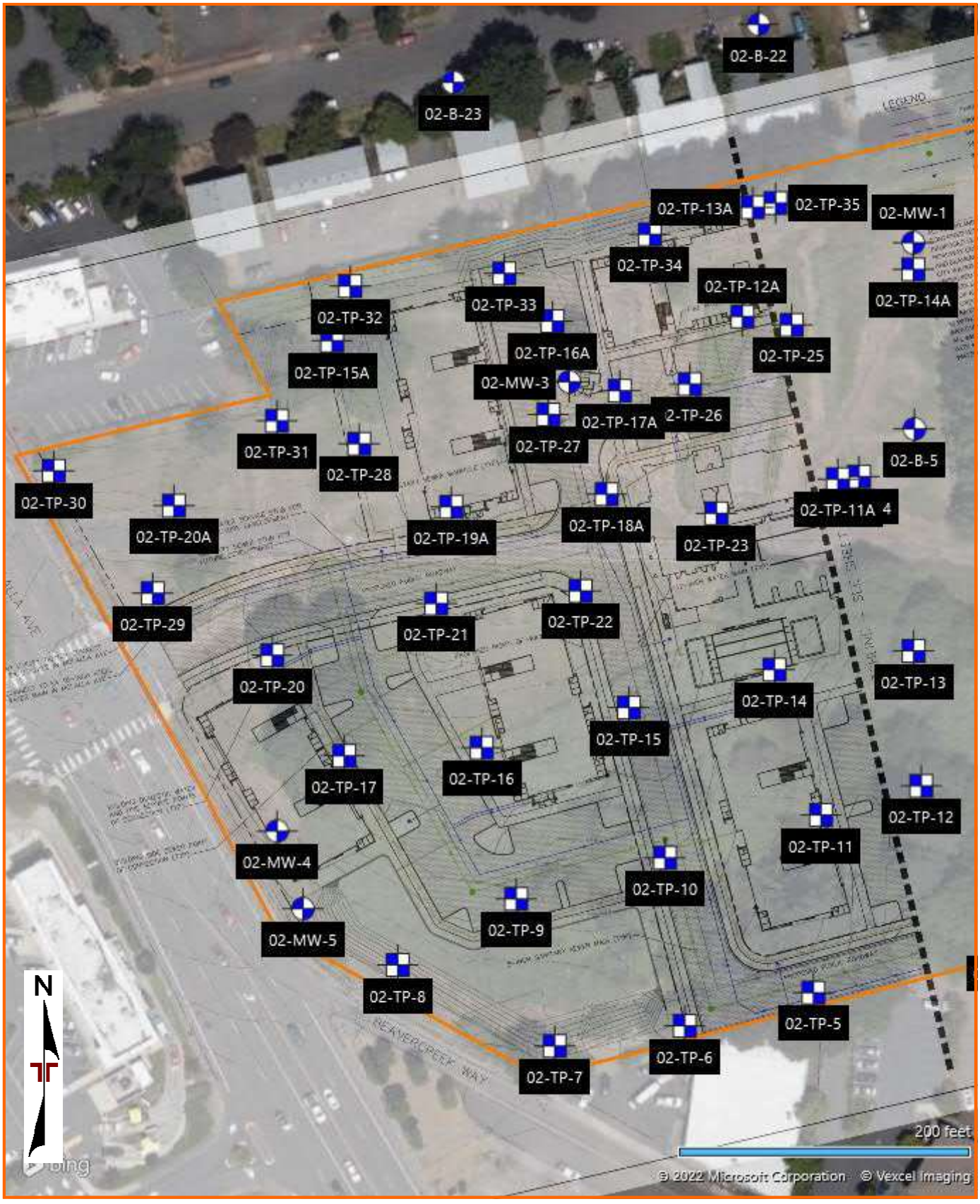
DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

TOPOGRAPHIC MAP IMAGE COURTESY OF THE U.S. GEOLOGICAL SURVEY QUADRANGLES INCLUDE: OREGON CITY, OR (1/1/1985).

FIGURE 2 - EXPLORATION PLAN WEST

Oregon City Development ■ Oregon City, OR

September 12, 2022 ■ Terracon Project No. 82215043



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AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

FIGURE 3 - EXPLORATION PLAN EAST
Oregon City Development ■ Oregon City, OR
September 12, 2022 ■ Terracon Project No. 82215043

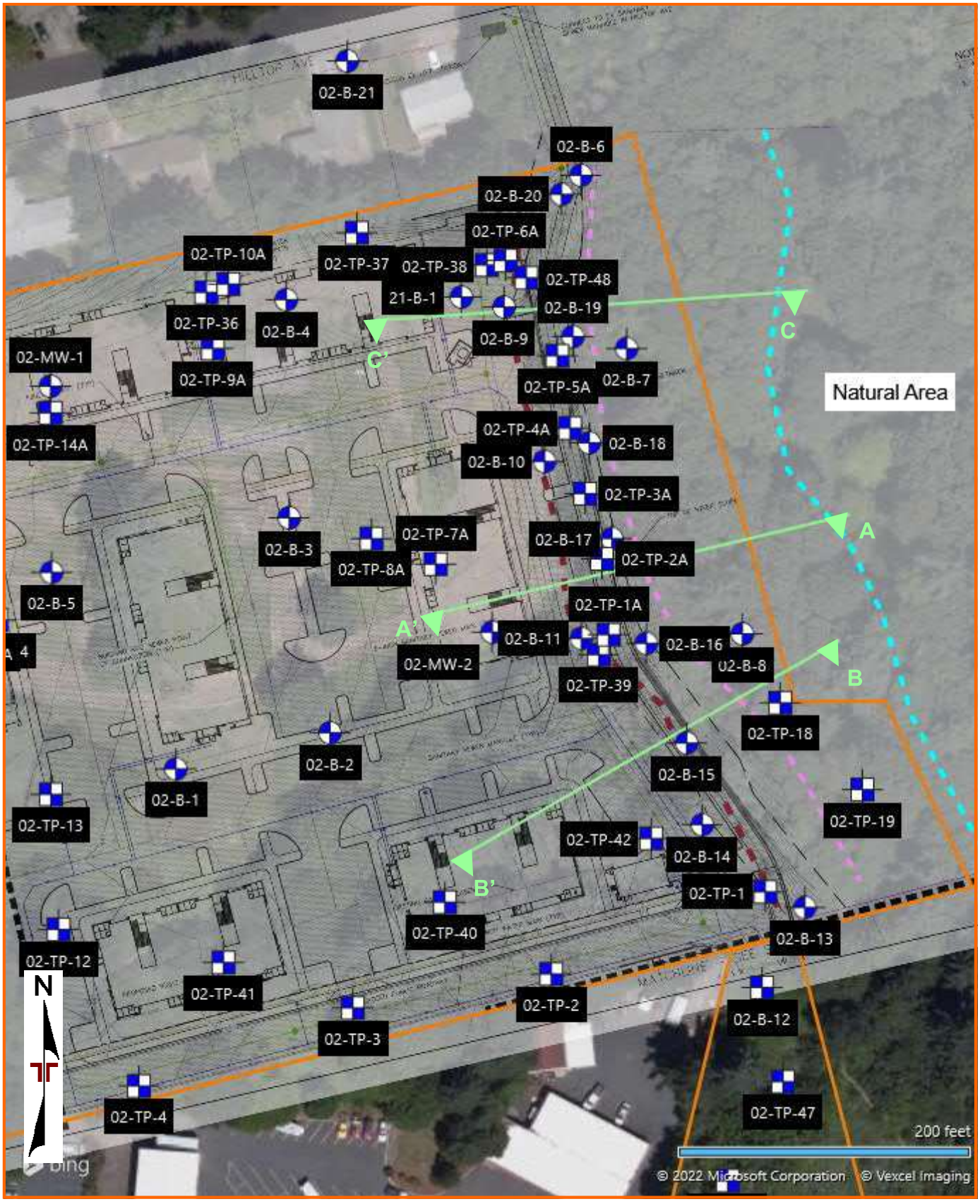

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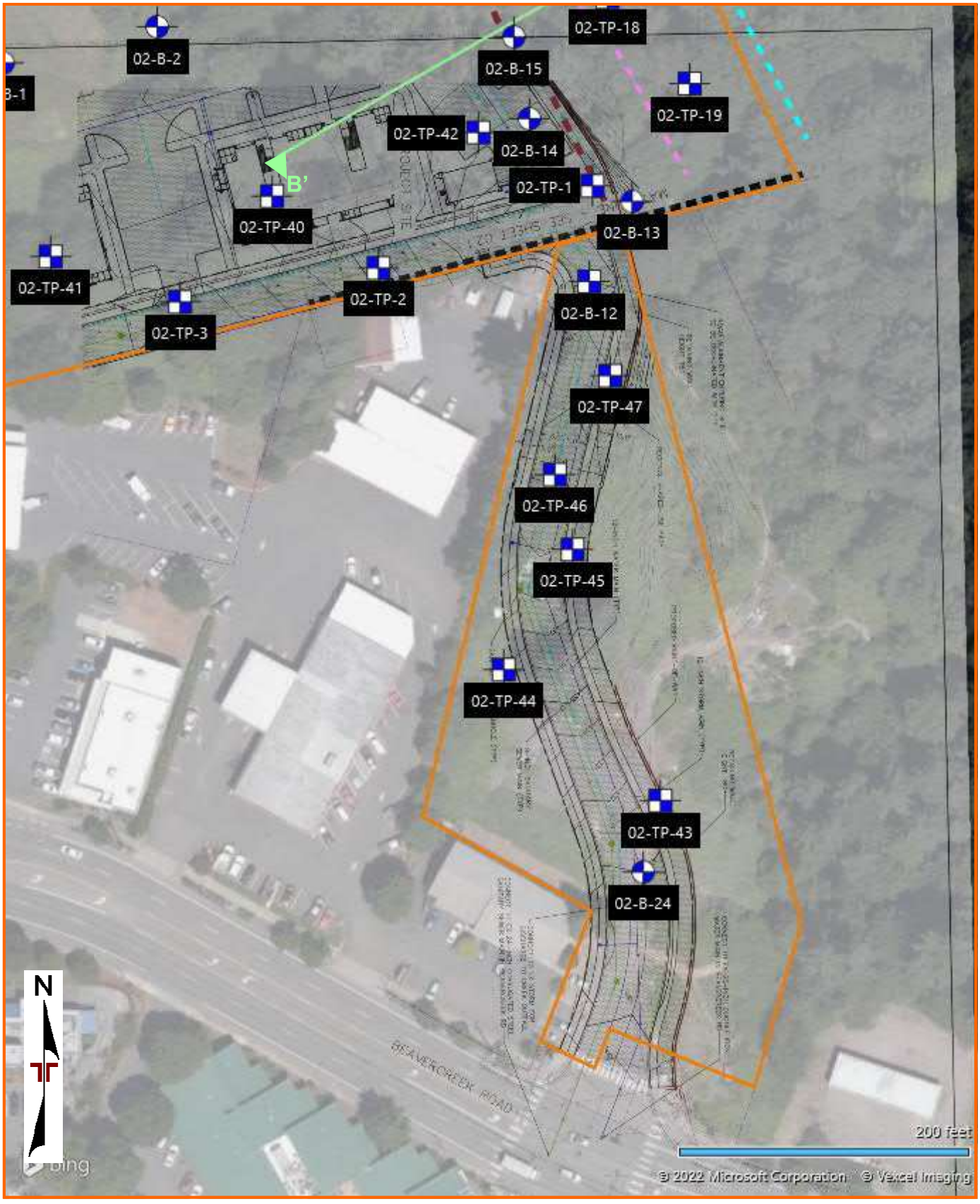
FIGURE 4 – EXPLORATION PLAN SOUTH

Oregon City Development ■ Oregon City, OR

September 12, 2022 ■ Terracon Project No. 82215043



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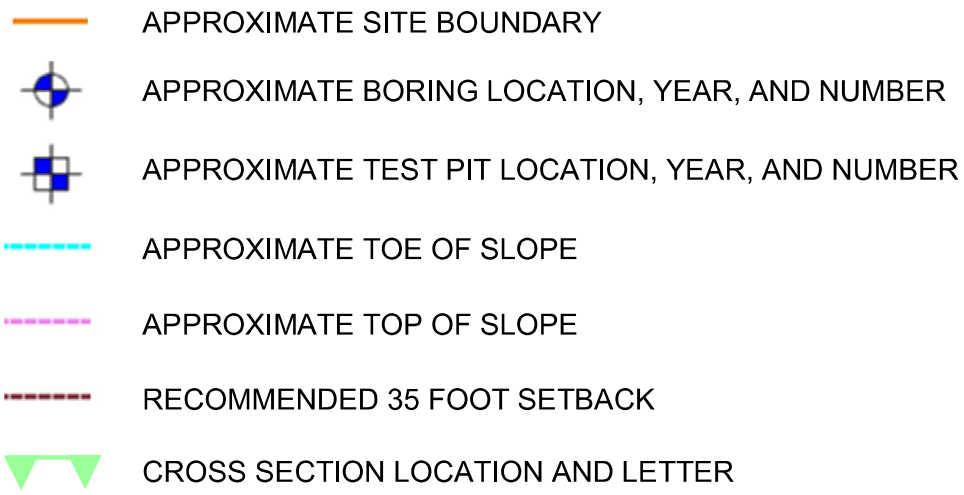
AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

FIGURE 5 - EXPLORATION PLAN LEGEND
Oregon City Development ■ Oregon City, OR
September 12, 2022 ■ Terracon Project No. 82215043

LEGEND



AERIAL PHOTOGRAPHY PROVIDED
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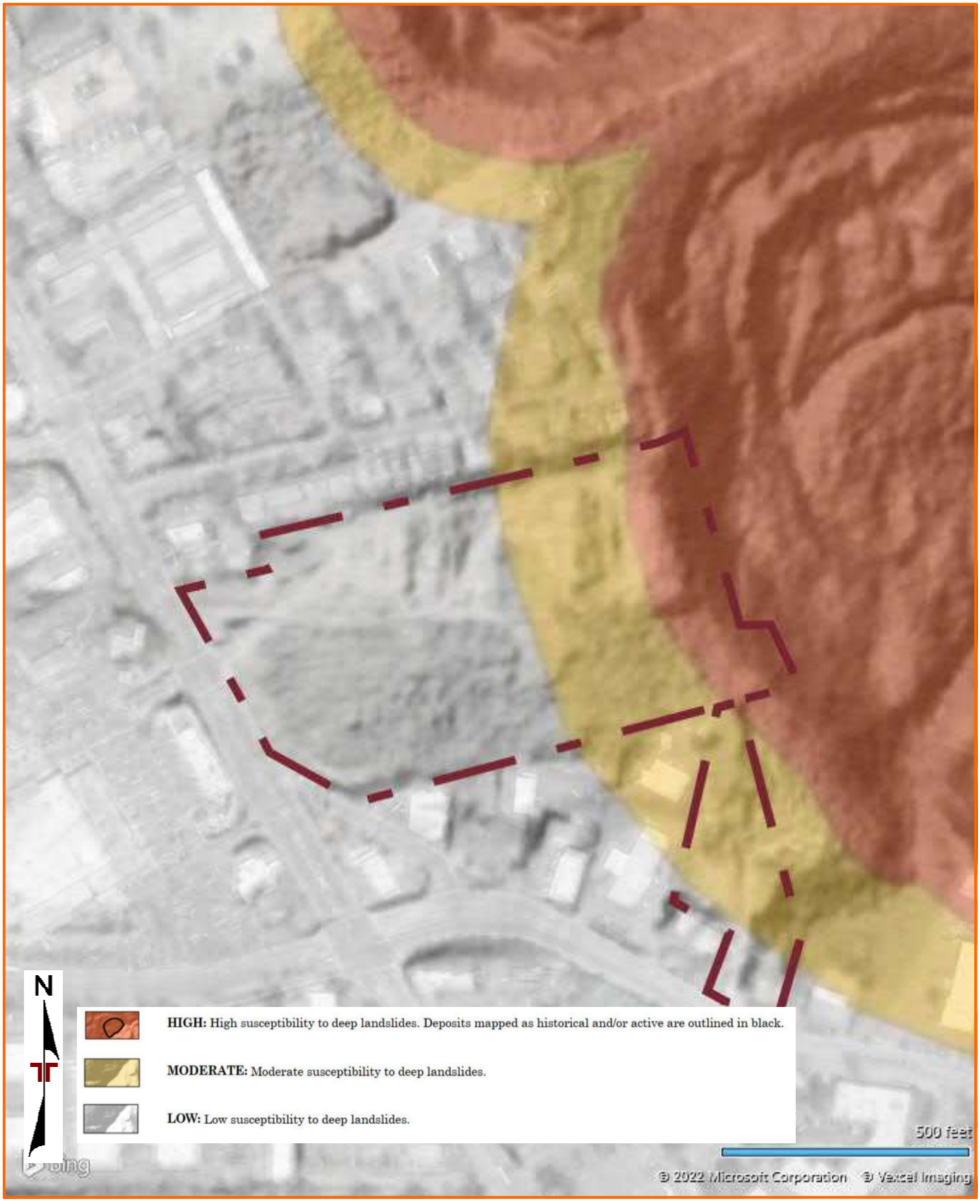


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Excerpted from 2013 DOGAMI Open-File Report O-13-08, Landslide hazard and risk study of northwestern Clackamas County, Oregon

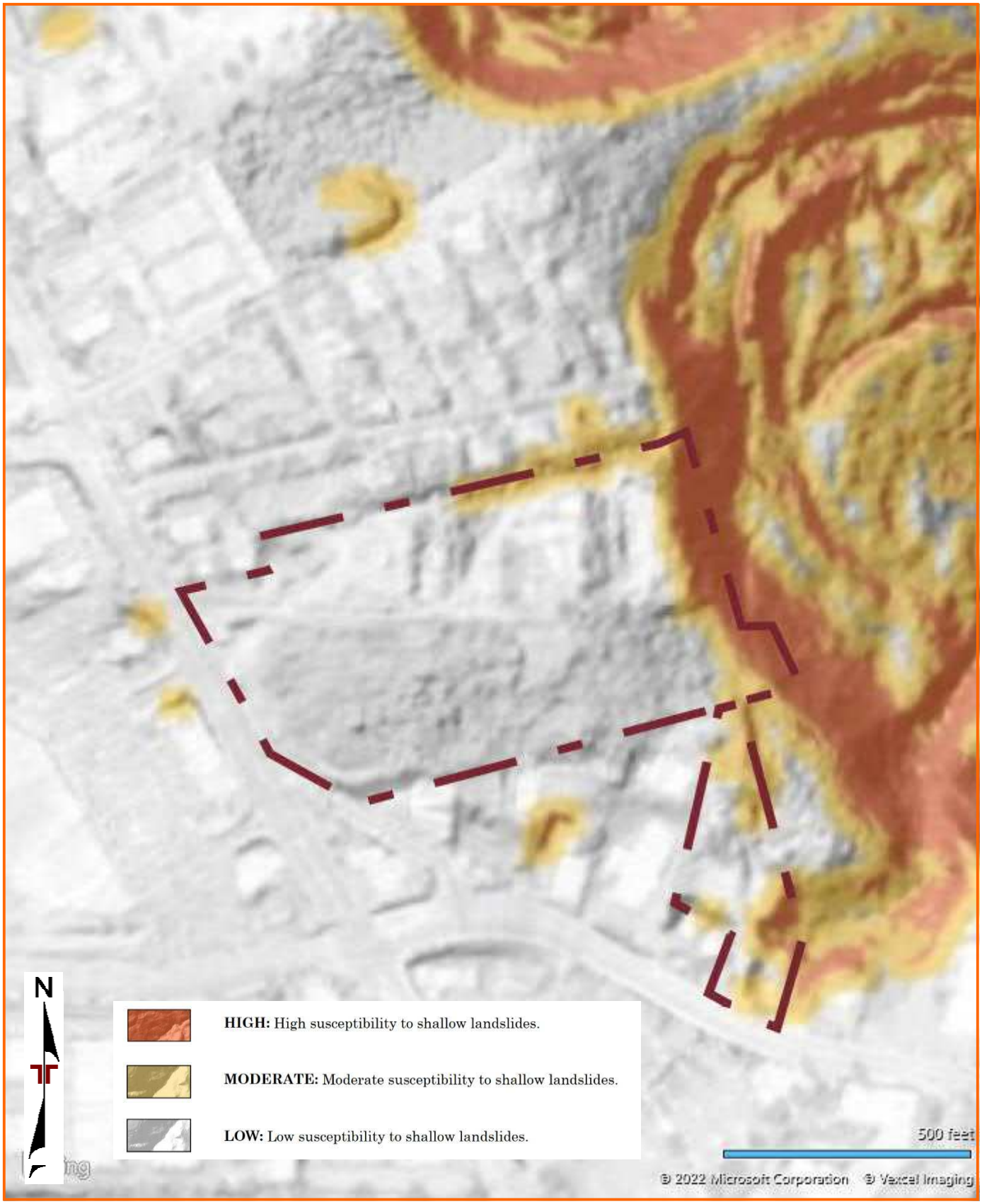


Figure
DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Excerpted from 2013 DOGAMI Open-File Report O-13-08, Landslide hazard and risk study of northwestern Clackamas County, Oregon

FIGURE 8 - TOPOGRAPHIC MAP

Oregon City Development ■ Oregon City, OR
September 12, 2022 ■ Terracon Project No. 82215043

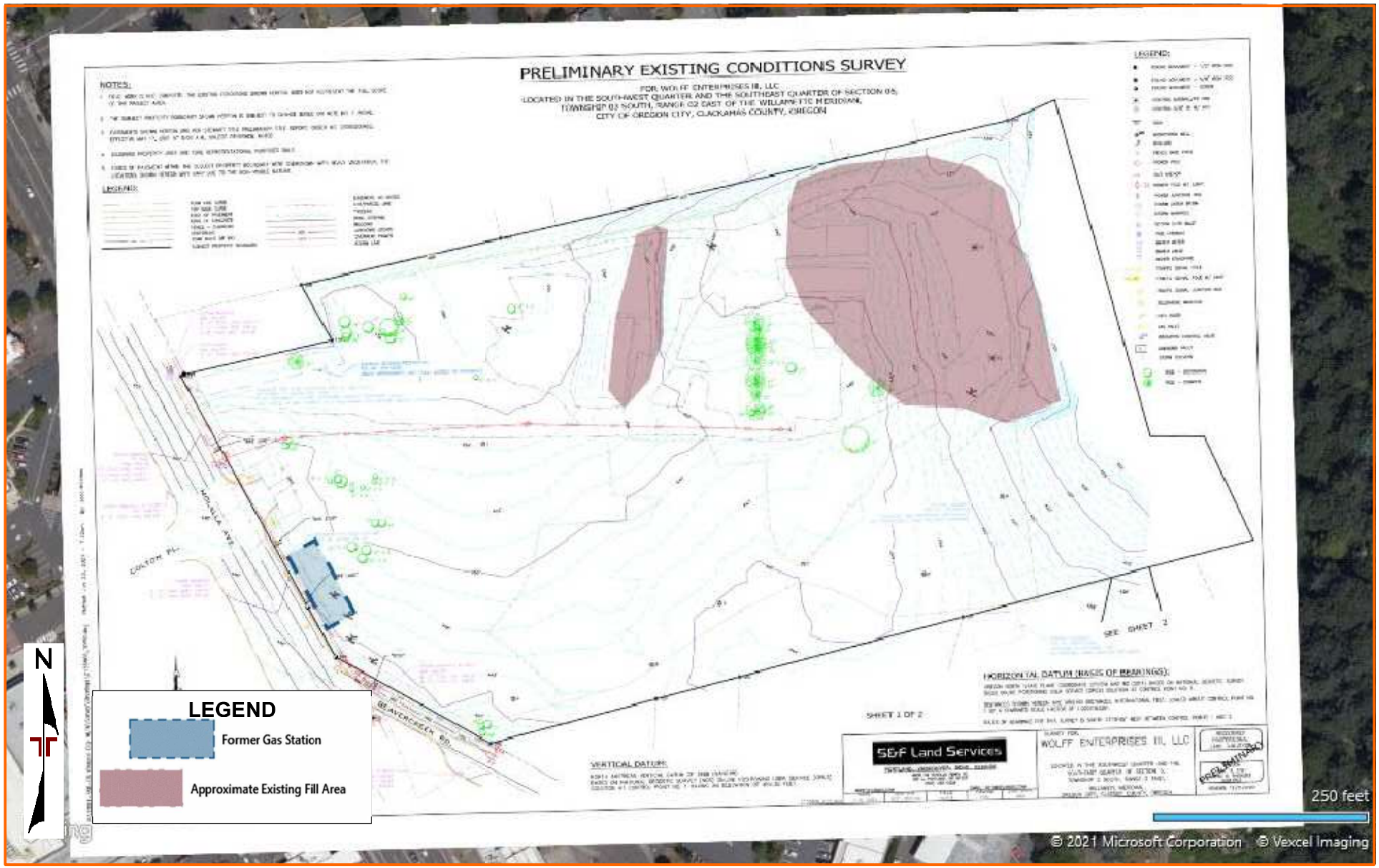
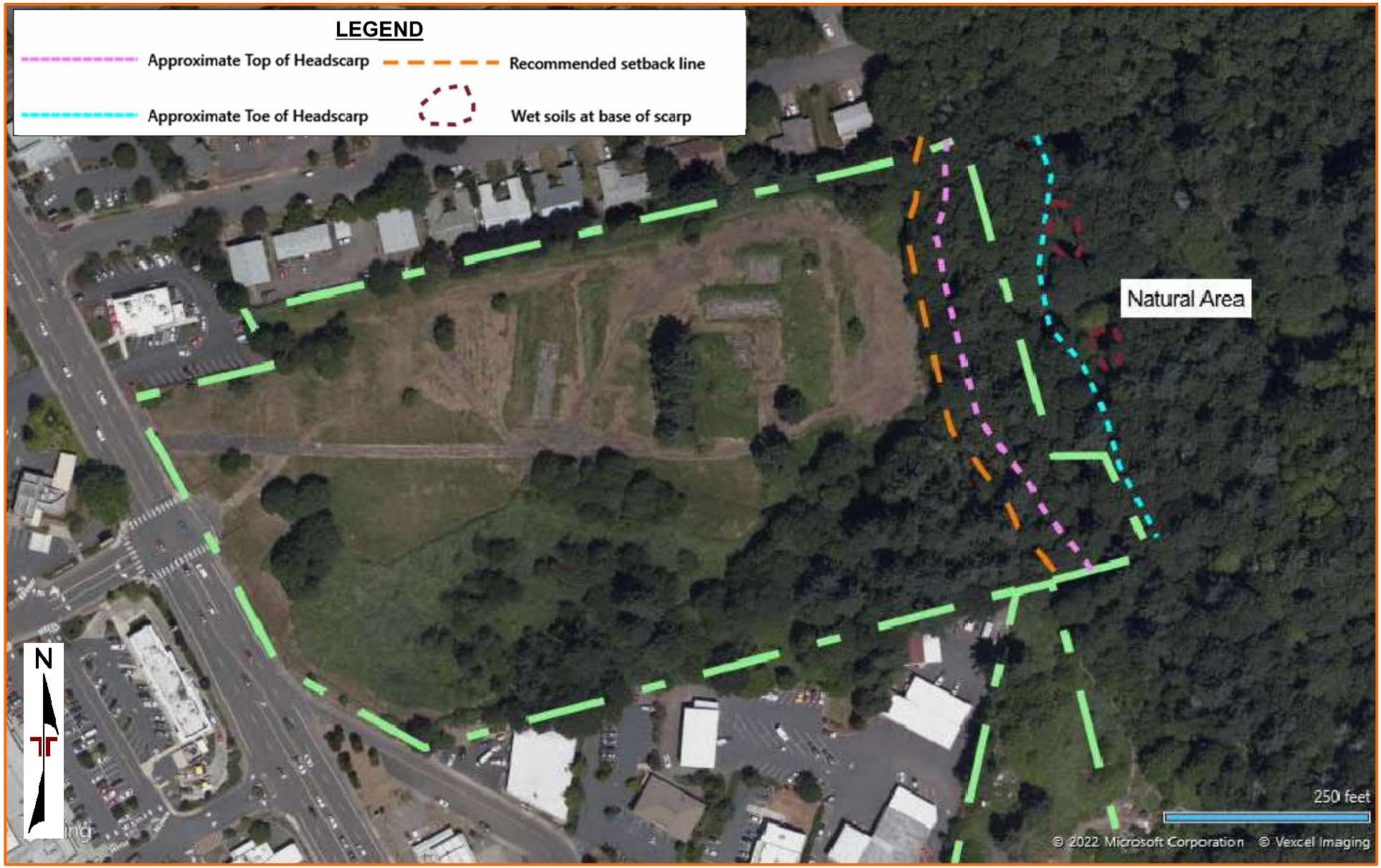


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP BASED ON PRELIMINARY EXISTING CONDITIONS SURVEY BY S&F LAND SERVICES, DATED JUNE 2021, AND MODIFIED BY TERRACON

FIGURE 9 - RECONNAISSANCE PLAN

Oregon City Development ■ Oregon City, OR
September 12, 2022 ■ Terracon Project No. 82215043



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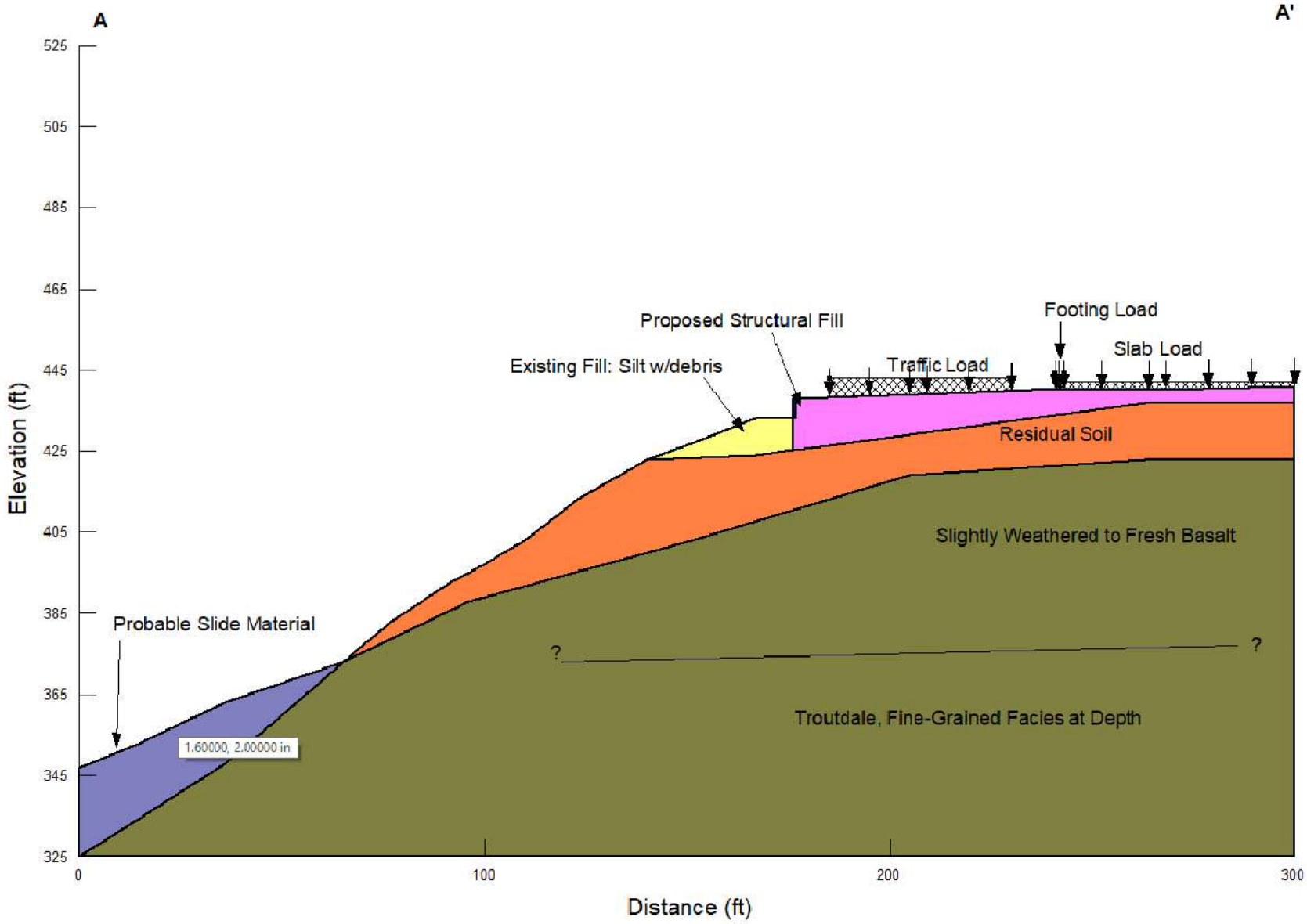
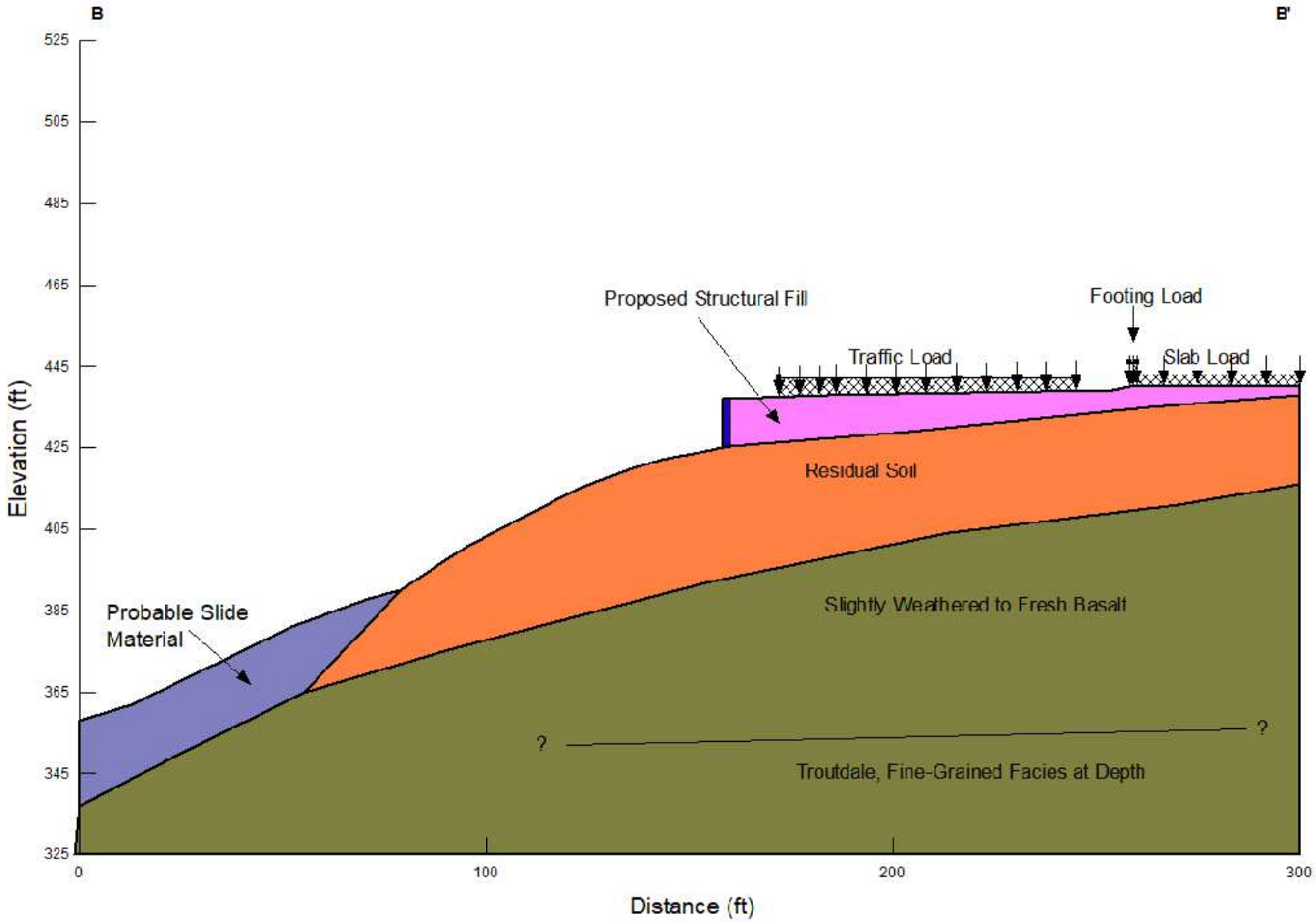
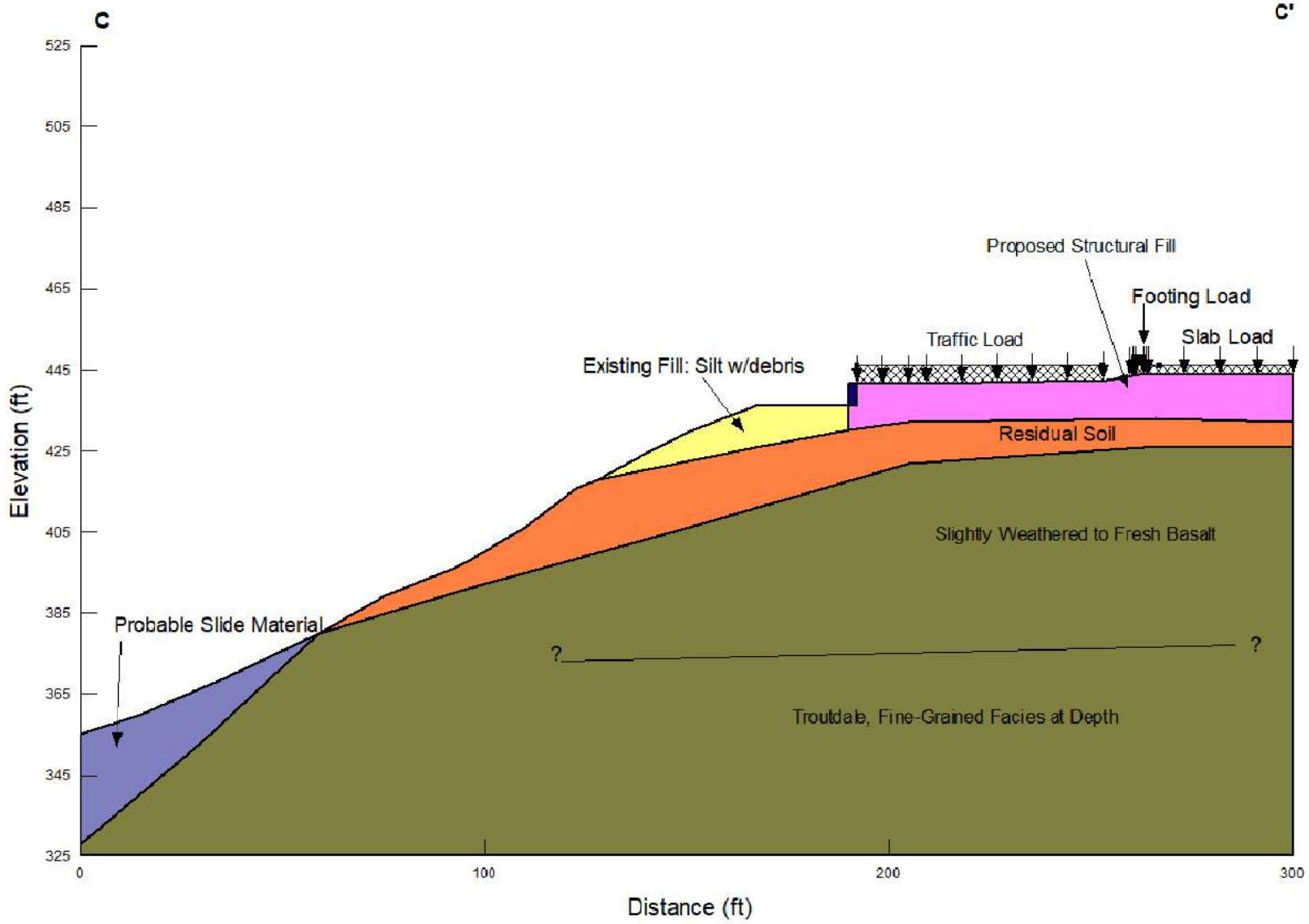
AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS



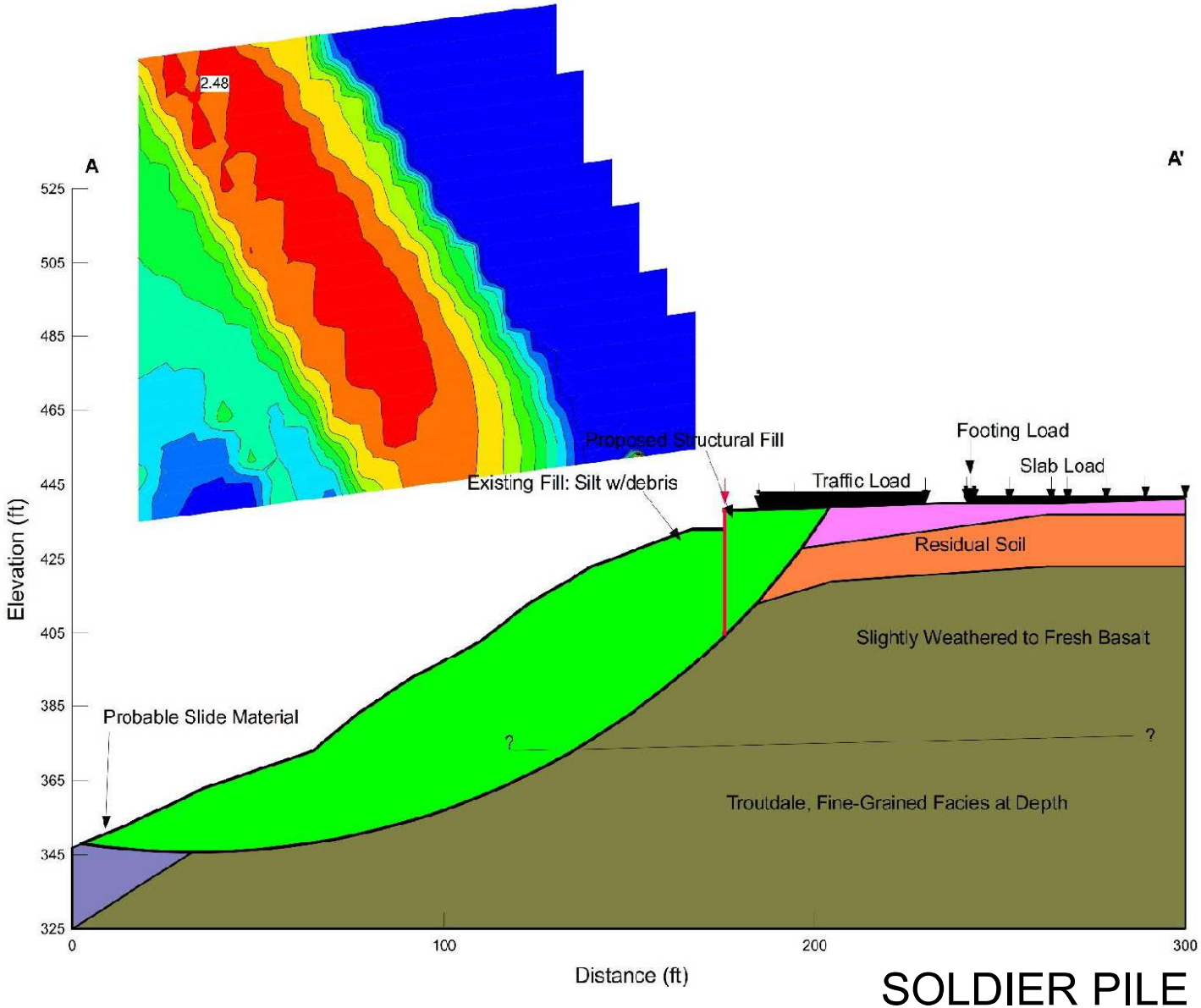
Project Manager: RTH	Project No. 82215043	Terracon Consulting Engineers & Scientists	GEOLOGIC CROSS SECTION A-A'
Drawn by: RTH	Scale: N.T.S.	700 NE 55th Avenue Portland, OR 97203	OREGON CITY DEVELOPMENT Molalla Avenue and Beavercreek Road Oregon City, Oregon
Checked by: KTH	File Name: CrossSectA	PH. (503) 659-3281 FAX. (503) 659-1287	Figure 10
Approved by: KTH	Date: September 2022		



Project Manager: RTH	Project No. 82215043	Terracon Consulting Engineers & Scientists	GEOLOGIC CROSS SECTION B-B'
Drawn by: RTH	Scale: N.T.S.	700 NE 55th Avenue Portland, OR 97203	OREGON CITY DEVELOPMENT Molalla Avenue and Beavercreek Road Oregon City, Oregon
Checked by: KTH	File Name: CrossSectB	PH. (503) 659-3281 FAX. (503) 659-1287	Figure 11
Approved by: KTH	Date: September 2022		

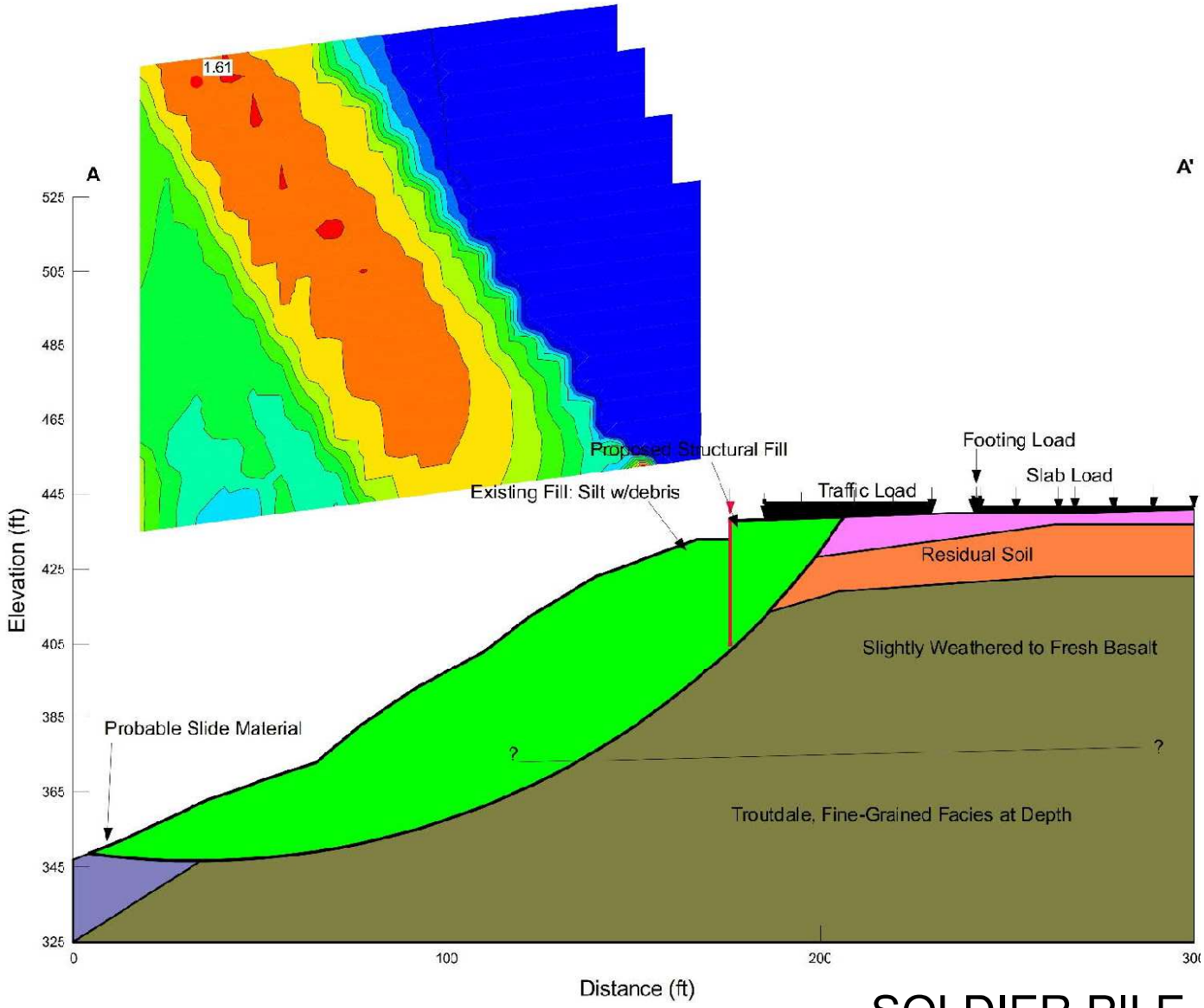


Project Manager: RTH	Project No. 82215043	Terracon Consulting Engineers & Scientists	GEOLOGIC CROSS SECTION C-C'
Drawn by: RTH	Scale: N.T.S.	700 NE 55th Avenue Portland, OR 97203	OREGON CITY DEVELOPMENT Molalla Avenue and Beavercreek Road Oregon City, Oregon
Checked by: KTH	File Name: CrossSectC	PH. (503) 659-3281 FAX. (503) 659-1287	Figure 12
Approved by: KTH	Date: September 2022		



SOLDIER PILE

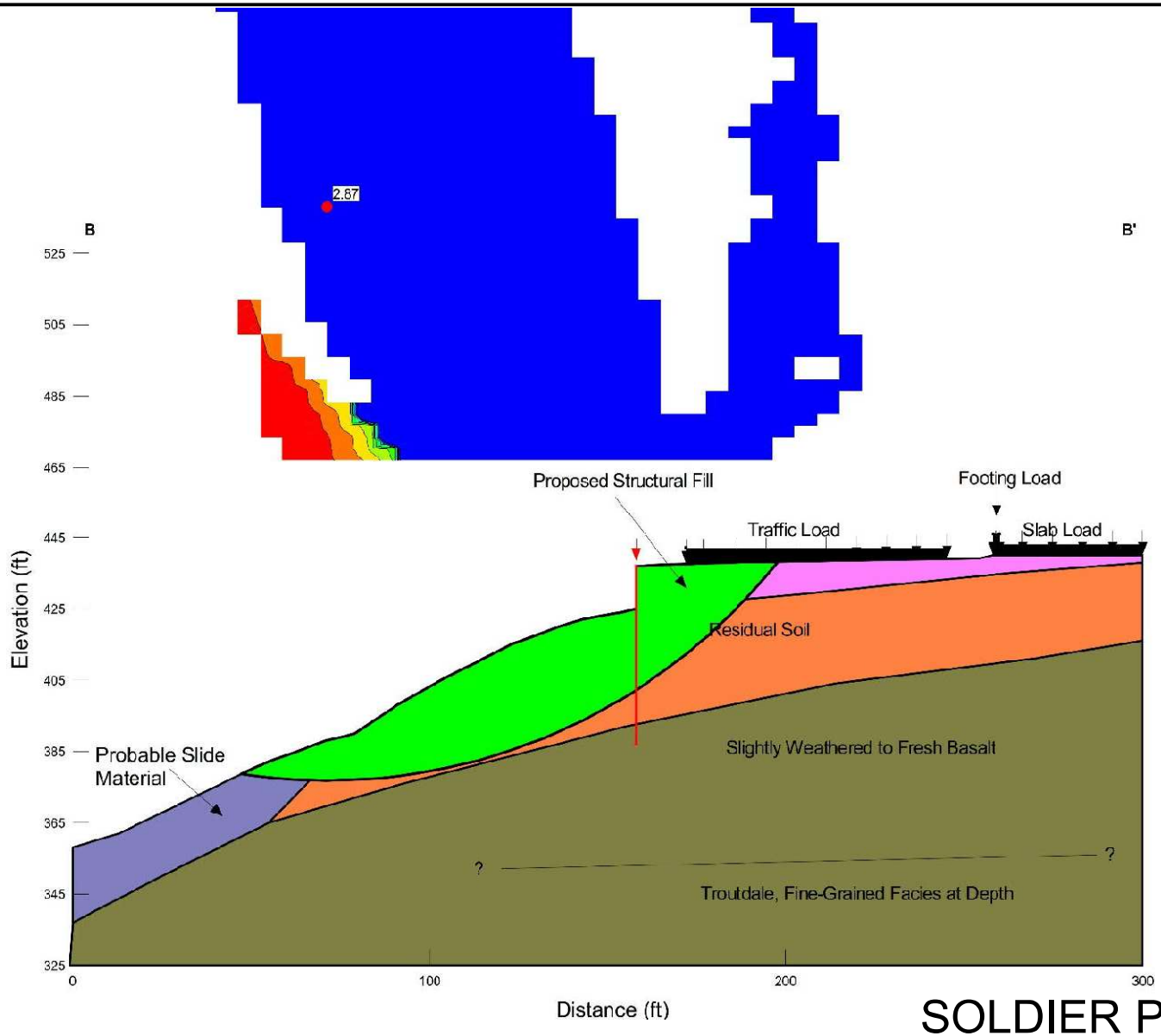
Project Manager: RTH	Project No. 82215043	Terracon Consulting Engineers & Scientists	STATIC SLOPE STABILITY CROSS SECTION A-A'
Drawn by: RTH	Scale: N.T.S.	700 NE 55th Avenue Portland, OR 97203	OREGON CITY DEVELOPMENT Molalla Avenue and Beavercreek Road Oregon City, Oregon
Checked by: KTH	File Name: CrossSectA	PH. (503) 659-3281 FAX. (503) 659-1287	Figure 13
Approved by: KTH	Date: September 2022		



SOLDIER PILE

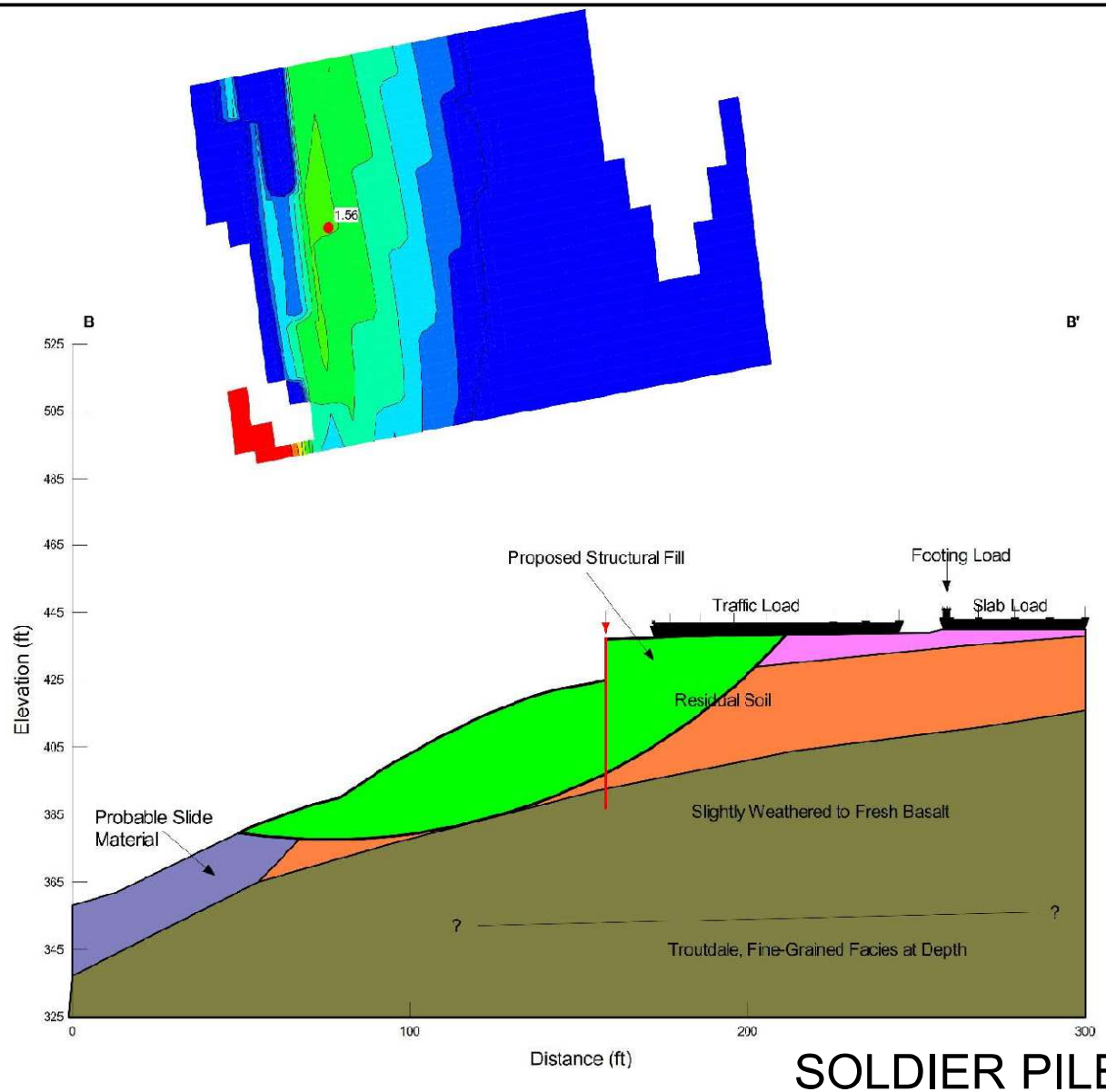
Project Manager: RTH	Project No. 82215043	Terracon Consulting Engineers & Scientists	SEISMIC SLOPE STABILITY CROSS SECTION A-A'
Drawn by: RTH	Scale: N.T.S.	700 NE 55th Avenue Portland, OR 97203	OREGON CITY DEVELOPMENT
Checked by: KTH	File Name: CrossSectA	PH. (503) 659-3281 FAX. (503) 659-1287	Molalla Avenue and Beavercreek Road
Approved by: KTH	Date: September 2022		Oregon City, Oregon

Figure 14



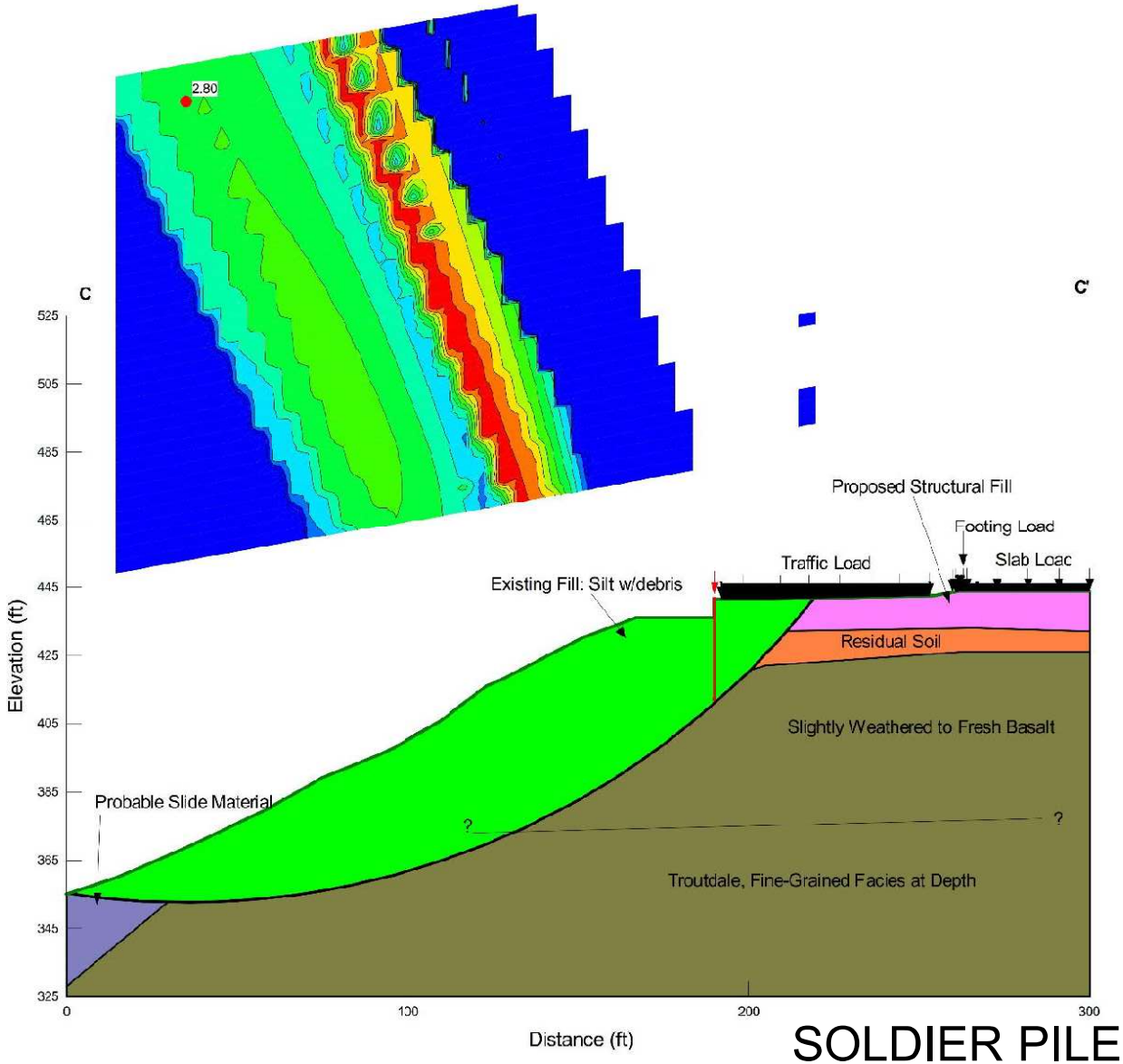
SOLDIER PILE

Project Manager: RTH	Project No. 82215043	Terracon Consulting Engineers & Scientists	STATIC SLOPE STABILITY CROSS SECTION B-B'
Drawn by: RTH	Scale: N.T.S.	700 NE 55th Avenue Portland, OR 97203	OREGON CITY DEVELOPMENT Molalla Avenue and Beavercreek Road Oregon City, Oregon
Checked by: KTH	File Name: CrossSectB	PH. (503) 659-3281 FAX. (503) 659-1287	Figure 15
Approved by: KTH	Date: September 2022		



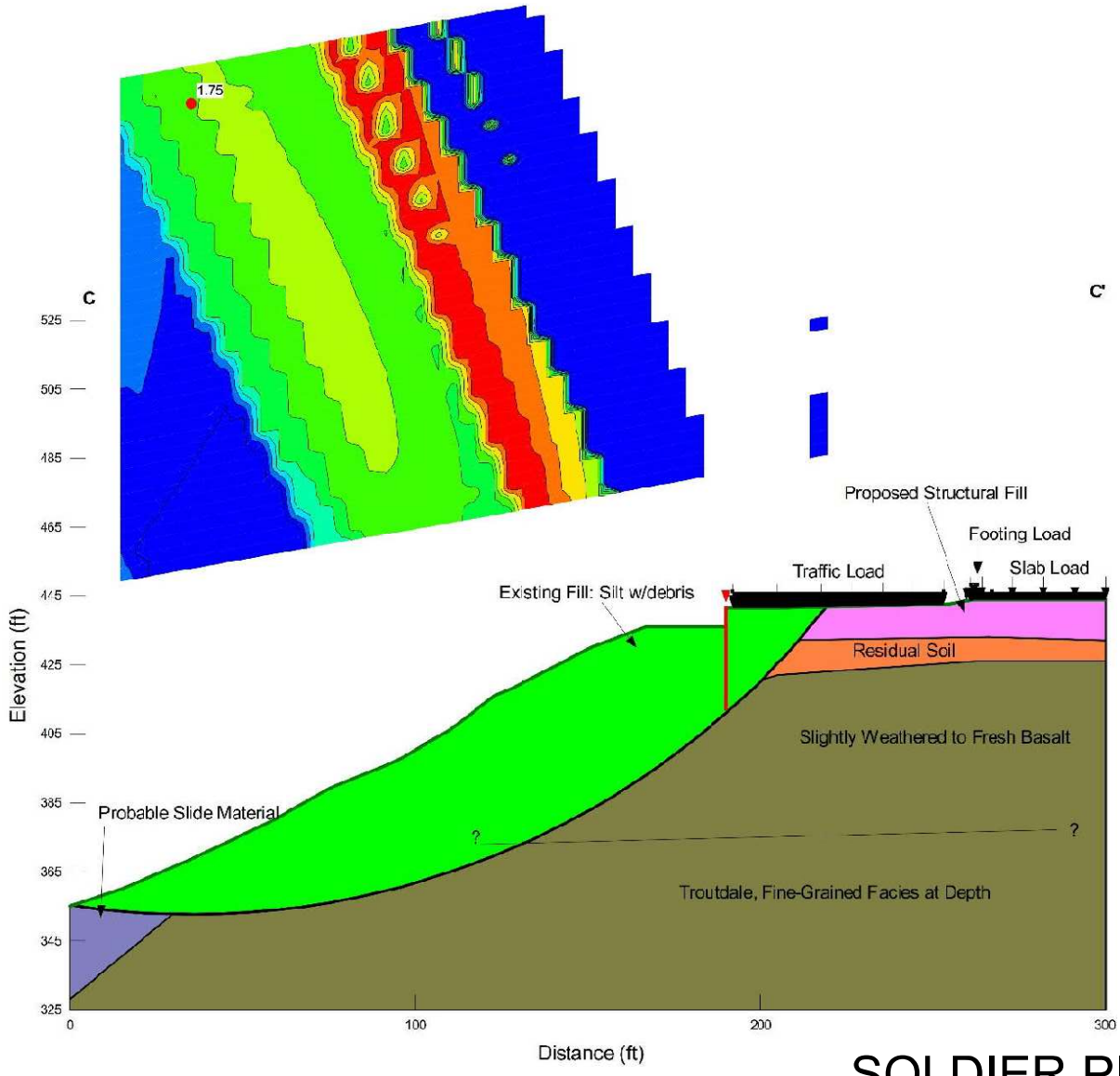
SOLDIER PILE

Project Manager: RTH	Project No. 82215043	Terracon Consulting Engineers & Scientists	SEISMIC SLOPE STABILITY CROSS SECTION B-B'
Drawn by: RTH	Scale: N.T.S.	700 NE 55th Avenue Portland, OR 97203	OREGON CITY DEVELOPMENT Molalla Avenue and Beavercreek Road Oregon City, Oregon
Checked by: KTH	File Name: CrossSectB	PH. (503) 659-3281 FAX. (503) 659-1287	Figure 16
Approved by: KTH	Date: September 2022		



SOLDIER PILE

Project Manager: RTH	Project No. 82215043	Terracon Consulting Engineers & Scientists	STATIC SLOPE STABILITY CROSS SECTION C-C'
Drawn by: RTH	Scale: N.T.S.	700 NE 55th Avenue Portland, OR 97203	OREGON CITY DEVELOPMENT Molalla Avenue and Beavercreek Road Oregon City, Oregon
Checked by: KTH	File Name: CrossSectC	PH. (503) 659-3281 FAX. (503) 659-1287	Figure 17
Approved by: KTH	Date: September 2022		



SOLDIER PILE

Project Manager: RTH	Project No. 82215043	Terracon Consulting Engineers & Scientists	SEISMIC SLOPE STABILITY CROSS SECTION C-C'
Drawn by: RTH	Scale: N.T.S.	700 NE 55th Avenue Portland, OR 97203	OREGON CITY DEVELOPMENT Molalla Avenue and Beavercreek Road Oregon City, Oregon
Checked by: KTH	File Name: CrossSectC	PH. (503) 659-3281 FAX. (503) 659-1287	Figure 18
Approved by: KTH	Date: September 2022		

ATTACHMENTS

ENGINEERING GEOLOGY REPORT

Contents:

October 8, 2012, Preliminary Engineering Geology and Soil Engineering Report

Preliminary Engineering Geology and Soil Engineering Report

Proposed Retail Development
Molalla Avenue and Beavercreek Road
Oregon City, Oregon

October 8, 2012
Project No. 82125030

Prepared for:
PACLAND

Prepared by:
Terracon Consultants, Inc.
Portland, Oregon

Offices Nationwide
Employee-Owned
Established in 1965
terracon.com

Terracon

Geotechnical ■ Environmental ■ Construction Materials ■ Facilities

October 8, 2012

PACLAND
6400 SE Lake Road, Suite 300
Portland, Oregon 97222

Attn: Mr. Jeff Vanderdasson, P.E.

Re: Preliminary Engineering Geology and Soil Engineering Report
Proposed Retail Development
Molalla Avenue and Beavercreek Road
Oregon City, Oregon
Terracon Project No. 82125030

Dear Mr. Vanderdasson:

Terracon Consultants, Inc. (Terracon) is pleased to present our *Preliminary Engineering Geology and Soil Engineering Report* for the Proposed Retail Development project in Oregon City, Oregon. Our services were completed in general accordance with our *Proposal for Geotechnical Engineering Services – Revised* (P82110035R1), dated July 20, 2012. Email authorization to proceed with our services was provided by PACLAND on July 20, 2012. This report presents our preliminary conclusions regarding the stability of the slopes and soils from the proposed development.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report, or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.

GEOTECHNICAL REGISTERED PROFESSIONAL ENGINEER 82194 OREGON Nov. 10, 2009 ERIC J. LIM
RENEWS: 12/31/2012

Eric J. Lim, P.E., G.E.
Geotechnical Department Manager

David A. Baska, Ph.D., C.E.G.
Senior Consultant

Kristopher T. Hauck, P.E.
Office Manager

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APPENDIX A – EXHIBITS

Exhibit A-1	Site Plan
Exhibit A-2	Landslide Map Excerpt
Exhibit A-3	Preliminary Geologic Cross Section
Exhibit A-4	Preliminary Static Slope Stability
Exhibit A-5	Preliminary Seismic Slope Stability

EXECUTIVE SUMMARY

The site's geology and associated geologic hazards were researched with regard to the proposed site development. The preliminary engineering geology and geotechnical considerations associated with the proposed project are summarized below.

- **Existing, Adjacent Landslide Hazards:** The steep slope area to the east is a well-documented landslide hazard area. However, the area immediately adjacent to the site is mapped as an ancient landslide. Recent surface reconnaissance of the steep slope area does not indicate recent movement of the weathered landslide features.

- **Proposed Development Feasibility:** The proposed development is feasible from a geotechnical standpoint provided structures, significant fills, and other loads are located outside a suitable setback. Previous engineering studies established a setback of 35 feet from the top of slope and may be used for planning purposes of the new development.

- **Retaining Walls:** A retaining wall is proposed along the east side of the truck route at the currently proposed 35-foot top of slope setback. Additional engineering design will be necessary for the retaining wall, although our preliminary slope stability models indicate the walls are setback sufficiently from the top of the slope and should not adversely impact the stability of the slope.

- **Site Drainage and Erosion Control:** Surface water should be collected and routed away from the steep slope area. Infiltration facilities should not be implemented due to the potential for the infiltrated water to daylight on the adjacent steep slope areas and decrease slope stability. The area within the setback at the top of the slope may be cleared of invasive vegetation, such as blackberries, and suitably vegetated to reduce erosion towards the steep slope area.

This summary should be used in conjunction with the entire report for design purposes. It should be recognized that details were not included or fully developed in this section, and the report must be read in its entirety for a comprehensive understanding of the items contained herein. The **GENERAL COMMENTS** section should be read for an understanding of the report limitation.

PRELIMINARY ENGINEERING GEOLOGY AND SOIL ENGINEERING REPORT PROPOSED RETAIL DEVELOPMENT MOLALLA AVENUE AND BEAVERCREEK ROAD OREGON CITY, OREGON

Project No. 82125030
October 8, 2012

1.0 INTRODUCTION

In accordance with your request and written authorization, Terracon has completed a Preliminary Engineering Geology and Soil Engineering Evaluation for the proposed retail development in Oregon City, Oregon. Terracon, formerly Zipper Zeman Associates (ZZA), previously completed the following reports:

- Preliminary Results of Slope Stability Evaluation, Proposed Retail Project, Molalla Avenue and Beavercreek Road, Oregon City, Oregon, by ZZA, dated July 3, 2002.
- Subsurface Exploration and Geotechnical Engineering Evaluation, Proposed Retail Project, Molalla Avenue and Beavercreek Road, Oregon City, Oregon, by ZZA, dated February 13, 2004.

2.0 PURPOSE AND SCOPE

The purpose of this report is to satisfy the requirement for both a Preliminary Engineering Geology Report and a Preliminary Soil Engineering Report as required by the Oregon City Geologic Hazards Checklist. An updated geotechnical engineering report will be provided at a later date with engineering recommendations to be used for final design of the development.

Our scope of services included a slope reconnaissance, review of previous subsurface boring and test pit explorations, review of published geologic literature, preliminary geotechnical engineering analysis, and preparation of this report.

3.0 PROJECT INFORMATION

3.1 Site Location

ITEM	DESCRIPTION
Location	The site is located at the northeast corner of Molalla Avenue and Beavercreek Road in Oregon City, Oregon as shown in Exhibit A-1 – Site Plan.
Existing improvements	The site is currently vacant and fenced off. All former buildings have been razed, although several slab and foundations remain. Several retaining walls and/or slopes on the order of 4 feet or less in height are on the site.
Surroundings	The site is bounded by single and multi-family residences to the north, Molalla Avenue and commercial properties to the west, commercial properties to the south, and an undeveloped steep slope area dropping off to the east.
Current ground cover	The site is covered with grass, shrubs (blackberries, etc.), and scattered to dense stands of trees. The southeast portion of the site is wooded, and the entire south edge of the property is overgrown with dense blackberry shrubs.
Existing topography	The majority of the site is relatively flat with several low retaining walls creating broad terraces stepping down to the east. The eastern edge of the site drops steeply down at inclinations in the range of 1½H:1V to ½H:1V to the east toward Newell Creek. The overall slope system height is on the order of 200 feet in vertical drop. We understand that this steep slope area contains active and ancient landslide complexes and has been studied extensively by Portland State University geologists and other researchers.

3.2 Project Description

ITEM	DESCRIPTION
Structures	Main Retail Building The project will include a new one-story retail building and loading dock with a proposed total footprint of approximately 60,000 square feet (SF). The building footprint is planned in the northeast portion of the site as shown on the attached Site Plan. Outlots 1- 4 Four outlots are currently planned for the western third of the site for three retail buildings ranging from approximately 3,600 SF to 7,200 SF and a one- to two-story commercial/office building of approximately 23,000 SF. Outlot 2 will potentially include a remote drive-thru banking structure.
Building construction	Main Retail Building We have assumed that the store will be constructed with masonry block load-bearing and non-load-bearing walls; steel columns, girders, and joists for support of the roof structure; and on-grade cast-in-place floor slabs. Outlots 1-4 No information is available on the outlot buildings, but we assume they will be either wood-framed or masonry block construction with slab-on-grade floors.
Finished floor elevations	Main Retail Building: Currently planned at elevation 445 feet. Outlot 1: Currently planned at elevation 448 feet. Outlot 2: Currently planned at elevation 444 feet. Outlot 3: Currently planned at elevation 442 feet. Outlot 4: Currently planned at elevation 448 feet.
Maximum loads	Main Retail Building Columns: 85 kips gravity and 150 kips maximum live loading. Walls: 1.5 to 2 klf non-load bearing and 4 to 6 klf for load bearing. Slabs: 125 psf uniform loading and 5-kip concentrated loading max. Outlot Buildings The loads for these buildings are not known at this time, but are assumed to not exceed those listed above for the main retail building.

ITEM	DESCRIPTION
Maximum allowable settlement	Main Retail Building Total Static Settlement: 1 inch Masonry Walls: L/900 or ½ inch over 40 feet Outlots Total Static Settlement: 1 inch (assumed) Differential: L/900 or ½ inch over 40 feet (assumed)
Grading	Significant fills on the order of 10 to 12 feet in maximum thickness are expected on the east half of the site and in the building pad. Excavation cuts (or removal of stockpile areas) up to approximately 10 feet may be needed in the proposed truck route off the southeast corner of the site in the existing stockpile areas.
Cut and fill slopes	3H:1V slopes approximately 4 feet or less in height are expected.
Free-standing retaining walls	An approximately 626-foot long by 5- to 12-foot high retaining wall is planned along the east edge of the truck route outside the steep slope setback. Guards rails and/or fall protection fencing are anticipated atop the retaining walls. Determination of the wall type, e.g., segmental block, soldier pile, etc., has not yet been determined along the east side of the truck route but will be determined as part of the final design to include slope stability concerns.
Below Grade Areas	A loading dock area is planned on the northeast corner of the building with a finish grade of 4 feet below the finish floor elevation.
Stormwater Management	A buried detention structure is planned in the southeast corner of the site under the parking area. We understand that the depth of the structure is currently planned at approximately 7 feet below finish grade.
Off-site Improvements	A public road and truck route is proposed from the southeast corner of the site south to Beavercreek Road.
Buried Utilities	We understand that stormwater and water pipes will run along the truck route on the east side of the site. Depths are anticipated to be 10 feet or less. A sanitary sewer line is proposed to run east-west from Molalla between Outlot 2 and Outlot 3 to the main retail building. The sanitary sewer will also run north-south up the Outlot 2 parking lot north to Outlots 1 and 4. Depths have not been determined yet, but may exceed 10 feet in depth.

4.0 LITERATURE REVIEW

Per Oregon City Municipal Code 17.44.050, we reviewed the following documents for this report:

- The State of Oregon Department of Geology and Mineral Industries (DOGAMI) in Bulletin 99, Geology and Geological Hazards of North Clackamas County, Oregon (1979), or in any subsequent DOGAMI mapping for the Oregon City area;
- Portland State University study entitled “Environmental Assessment of Newell Creek Canyon, Oregon City, Oregon (1992);
- Portland State University study, "Landslides in the Portland, Oregon, Metropolitan Area Resulting from the Storm of February 1996: Inventory Map, Database and Evaluation" (Burns and others, 1998);
- DOGAMI Open File Report O-06-27, "Map of Landslide Geomorphology of Oregon City, Oregon, and Vicinity Interpreted from LIDAR Imagery and Aerial Photographs" (Madin and Burns, 2006);
- "Preliminary Geologic Map of the Oregon City Quadrangle, Clackamas County, Oregon" (Madin, in press).

We also reviewed the following, more recently published documents:

- Map showing faults, bedrock geology, and sediment thickness of west half of Oregon City 1:100,000 quad, Washington, Multnomah, Clackamas and Marion Counties, Oregon, 1998, IMS-4, Burns et al., (DOGAMI)
- *Oregon Geologic Data Standard v. 2.1,* 2009 (DOGAMI)
- *Geologic Map of the Oregon City 7.5’ Quadrangle, Clackamas County, Oregon*, 2009, GMS-119 (DOGAMI)
- *Map of Landslide Geomorphology of Oregon City, Oregon, and Vicinity Interpreted from Lidar Imagery and Aerial Photographs*, O-06-27, 2006 (DOGAMI)
- *Landslide Inventory Map of the Northwest Quarter of the Oregon City Quadrangle, Clackamas County, Oregon*, IMS-26, 2009 (DOGAMI)

5.0 PRELIMINARY ENGINEERING GEOLOGY

According to Oregon City’s Geologic Hazards Checklist, a preliminary engineering geology report must be prepared that relates the following items to the actual development proposal:

- (5.1) A description of geologic formations, bedrock and surficial materials including artificial fill; location of any faults, folds, etc.
- (5.2) Structural data including bedding, jointing, and shear zones

- (5.3) Off-site geologic conditions that may pose a hazard to the site or that may be affected by on-site development
- (5.4) Cross sections showing subsurface structure, logs of subsurface explorations and analysis if necessary to evaluate the site
- (5.5) Signature and certification number of the engineering geologist
- (5.6) The report shall also contain a statement as to whether any hazard areas should not be disturbed because of the potential for damage to the site or neighboring properties
- (5.7) The report shall include specific comments resulting from their review of the civil plans for the project including recommendations on maximum cuts, structural fills, rockery walls, drainage behind any type of walls, maximum slopes above walls, removal of toe of slopes, the use of rock hammers and blasting, and so forth.

The above items are discussed individually in the following sections.

5.1 Geologic Description

Geologically, the site is located in the northern Willamette Valley, which consists of a structural trough between the Coastal Range and the Cascade Range. This basin is underlain by thick deposits of sand and gravel washed into it during the Pliocene epoch when the climate in the area was very dry. These granular deposits are locally covered by the Boring lavas (Qtb) in northwest Clackamas County.

Based on the *Oregon Geologic Data Standard v. 2.1* and Oregon Department of Geology and Mineral Industries *Geologic Map of the Oregon City 7.5' Quadrangle, Clackamas County, Oregon, 2009* this site is located within a geologic unit mapped as Tbc-Basalt of Canemah defined as flow or flows of grey medium-grained, olivine basalt. The Oregon Department of Geology and Mineral Industries (DOGAMI), Bulletin 99, *Geologic Map of the Canby and Oregon City Quadrangles, Oregon 1979*, maps the site as consisting of Boring lavas (Qtb), which it describes as Pliocene-Pleistocene lavas, light-gray, open-textured olivine basalt; flow structures common; includes some pyroclastic material of local extent; widely spaced joint pattern. Lavas and breccias have weathered to a residual red clay surface soil. Vertical exposures are susceptible to mass movement and deep bedrock sliding because of failure of underlying material (see the description below with clay materials within the Troutdale unit).

The Boring Lava deposits overly the Troutdale (Tpt), which are described as Pliocene sandstone and conglomerate; indurated beds and lenses of well-sorted sand and cobbly gravel with up to 30 percent quartzite clasts. Some sand originally composed of volcanic glass have altered to an impermeable high shrink-swell clay. The clay can be unstable and cause overlying competent units to fail by landslide. The publications indicate that on slopes where this clay layer daylights, one generally encounters a spring. Also, if layers dip out of the slope, it can become a failure

plane for a slump or slump-earthflow when the pore water pressure has built up to a critical value on top of the clay layer.

Based on the *Map of Landslide Geomorphology of Oregon City, Oregon, and Vicinity Interpreted from Lidar Imagery and Aerial Photographs, O-06-27, 2006* and the *Landslide Inventory Map of the Northwest Quarter of the Oregon City Quadrangle, Clackamas County, Oregon, IMS-26, 2009,* a mapped landslide was identified adjacent to the site to the east. The landslide is identified as a prehistoric or ancient landslide (movement greater than 150 years ago). This is defined by landslide features that are slightly eroded and there is no evidence of historic (recent in last 150 years) movement. In some cases, the observed landslide features have been greatly eroded and/or covered with deposits that result in smoothed and subdued morphology.

The borings completed for the previously referenced 2004 ZZA report are generally consistent with the above geologic mapping for the Boring Lavas/Basalt of Canemah, although the basalt has become deeply weathered in certain areas. The Troutdale unit was not encountered to the maximum depth of the borings at approximately 50½ feet below the ground surface. Although direct evidence of landslide features were not readily observed during our exploration programs for the 2004 report, we did observe the general headscarp area of the ancient landslide area during our 2012 slope reconnaissance with the aid of the recent Lidar-based landslide maps. An excerpt of the landslide map is appended as Exhibit A-2.

5.2 Structural Data

Bedrock outcrops or exposures were not observed during our site visits on the subject property or immediately downslope of the subject property. As discussed above, the bedrock in the site vicinity is mapped as Tbc-Basalt of Canemah defined as flow or flows of grey medium-grained, open-textured, olivine basalt. Flow structures are common, includes some pyroclastic material of local extent, and widely spaced joint pattern. Lavas and breccias have weathered to residual red clay surface soil. Vertical exposures are susceptible to mass movement and deep bedrock sliding because of failure of underlying material. The rock cores completed for the previously referenced 2004 ZZA report indicate close fracture spacing in the upper, weathered zones of the bedrock grading to wide fracture spacing in the fresh, competent bedrock at depth.

5.3 Off-Site Geologic Conditions

The *Map of Landslide Geomorphology of Oregon City, Oregon, and Vicinity Interpreted from Lidar Imagery and Aerial Photographs, O-06-27, 2006* and the *Landslide Inventory Map of the Northwest Quarter of the Oregon City Quadrangle, Clackamas County, Oregon, IMS-26, 2009,* indicate a mapped landslide area adjacent to the east side of the site. The landslide is identified as a prehistoric or ancient landslide (movement greater than 150 years ago). This is defined by landslide features that are slightly eroded and there is no evidence of historic (recent in last 150

years) movement. In some cases, the observed landslide features have been greatly eroded and/or covered with deposits that result in smoothed and subdued morphology.

During our initial exploration period during 2001-2002, we performed a surface reconnaissance of the steep slope area on the eastern edge of the site and immediately downslope of the site to the east. We also re-visited these areas on July 31, 2012 to determine the current conditions. During our slope reconnaissance visits, we walked and mapped the landslide area. We identified a main head scarp along the eastern site boundary, followed by numerous (3 to 5) internal scarps further east of the site within the ancient mapped landslide itself. A spring was observed at the base of the head scarp approximately 100 feet east of the northeast corner of the site at approximately 350 feet in elevation. A second spring was observed approximately 150 feet east of the southeast corner of the site at approximately 290 feet in elevation. Four nick points (i.e., drops in the streambed from erosion) were observed in the stream bed at the base of the ancient landslide ranging in height from 1½ feet to 6 feet. Gray, stiff to medium stiff, wet, lean clay with cemented clasts of gray clay was observed at various points along the stream bed. These deposits can be correlated to the fine grained portion of the Troutdale formation described above. At the time of our site reconnaissance Terracon did not identify new slide areas immediately downslope of the proposed development.

Our field observations agree with the above-referenced published landslide mapping. We did not observe indications of recent movement during our slope reconnaissance during the 2001-2002 ZZA exploration programs and our recent site visit in July 2012.

5.4 Geologic Cross-Sections

Our interpretation of the site's geologic cross-section is shown in Exhibit A-3 of this report.

5.5 Signature and Certification Number of Engineering Geologist

The signature and certification number of the engineering geologist is provided on the report signature page after the front cover.

5.6 Disturbance of Hazards Statement

The geologic hazards of concern for the site development are the steep slope area and ancient landslide to the east of the site. This geologic hazard area should not be disturbed due to the potential for damage to the site and/or neighboring properties. An exception for disturbance would be the removal of invasive vegetation, such as blackberry bushes, and replanting with species suitable for erosion control purposes. After removal of the invasive vegetation, minor grading may necessary, such as bucket smoothing and track walking the slope with a tracked

excavator, to reduce erosion and help temporary and permanent ground cover (e.g., hydroseed, mulch, bark, plantings, etc.) become established on the slope.

5.7 Civil Plans Review Comments

We have reviewed the current civil grading plans. The current site development plans are described in the Section 3 of this report and do not propose to disturb the geologic hazard area. These plans were developed using the 2004 ZZA report recommendations as a guideline. According to these plans, the maximum permanent cuts are relatively low, on the order of 2 to 3 feet for the retaining walls along the north property line. Fills will be up to approximately 12 feet along the east retaining wall area for the proposed truck route, but this wall will be located outside of a top of slope setback of 35 feet. The retaining walls, drainage behind the walls, and maximum slopes above and below the walls will be engineered as part of future design work for the site, and will consider the weight of the fill and loads on the retaining structure on the stability of the slope area. Consideration of the wall type, bedrock conditions, and associated installation procedures will also be included in the retaining wall design. In our opinion, the proposed site development is feasible from a geotechnical perspective without adverse impacts on the stability to the adjacent slope.

6.0 PRELIMINARY SOIL ENGINEERING REPORT

According to Oregon City's Geologic Hazards Checklist, a preliminary soil engineering report must be prepared that relates the following items to the actual development proposal:

- (6.1) The engineering feasibility of the proposed development and addressing strength properties of surface and subsurface soils with regard to stability of slopes
- (6.2) Appropriate types of foundations together with bearing values and settlement criteria for foundation design, soil erosion potential, permeability and infiltration rates
- (6.3) Excavation, filling and grading criteria including recommended final slopes
- (6.4) Surface and subsurface drainage; planting and maintenance of slopes
- (6.5) Other identified soil or subsurface constraints together with geotechnical remediation and other recommendations to alleviate or minimize their effects; and signature and seal of the geotechnical engineer
- (6.6) The report shall also contain a statement as to whether the proposed development, constructed in accordance with the recommended methods, is reasonably likely to be safe and prevent landslide or other damage to other properties over the long term, and whether any specific areas should not be disturbed by construction.

- (6.7) The report shall include specific comments resulting from their review of the civil plans for the project including recommendations on maximum cuts, structural fills, rockery walls, drainage behind any type of walls, maximum slopes above walls, removal of toe of slopes, the use of rock hammers and blasting, and so forth.

The above items are discussed individually in the following sections.

6.1 Engineering Feasibility

In our opinion, the proposed site development is feasible from a geotechnical perspective. Exhibits A-4 and A-5 show our preliminary slope stability models for static and seismic conditions, respectively. The following soil parameters were used in our analysis.

STRATA	FRICTION ANGLE (DEGREES)	COHESION (PSF)	UNIT WEIGHT (PCF)
Proposed Structural Fill	32	0	125
Existing Fill: Silt w/Debris	27	0	120
Highly – Moderately Weathered Basalt	30	250	125
Slightly Weathered to Fresh Basalt	45	250	150
Possible Slide Material	5	100	120

These parameters were partly based on the direct shear test results reported in the 2004 ZZA report and partly based on our engineering judgment. A horizontal seismic coefficient of 0.13g was used in our analysis, which is approximately one-half of the design earthquake peak ground acceleration determined per 2009 IBC methods. The models indicate factors of safety greater than 1.5 and 1.1 for static and seismic conditions, respectively. Based on the slope stability model, the proposed retaining wall and fill are far enough away from the slope and have low effect on the slope stability at the site from a preliminary standpoint.

6.2 Foundation Types, Soil Erosion Potential, Permeability/Infiltration

The appropriate type of foundation for the proposed buildings are conventional shallow spread footings. Allowable bearing values of 2,000 psf for up to 1 inch of settlement may be used for planning purposes.

According to the USDA Soil Conservation Service, the erosion potential of the site soils are "slight" on the relatively flat areas of the site and "severe" on the steep slope areas east of the site. Permeability ranges from 0.6 to 2.0 in the sites soils, however, infiltration systems are not recommended due to the location of the site adjacent the steep slope area.

6.3 Excavation, Filling, and Grading Criteria

Recommendations for excavation, filling and grading are included in the 2004 ZZA report and may be used for preliminary purposes. This information will be updated in the final geotechnical report.

6.4 Other Soil or Subsurface Constraints

Due to the previous development at the site, including existing foundations and floor slabs, existing fill will likely be encountered during subgrade preparation for fills and foundations. Within the proposed building pad, we recommend that all existing fill be removed down to suitable native soils, and the backfilled with compacted structural fill as recommended in the previous section and the 2004 report. Overexcavation of the existing fill soils will also likely be necessary in the retaining wall area along the east retaining wall (truck route). Alternatives, such as partial overexcavation and replacement or the use of aggregate pier ground improvement, should be considered during the final geotechnical report phase.

6.5 Proposed Development Stability Statement

In our opinion, the proposed development should not adversely affect the stability of the slope nor increase landslide risk to other properties with the incorporation of the 35-foot development setback. Additional fill or loads should not be placed over the unstable steep slope areas. The preliminary setback from the top of slope is currently 35 feet, but this may change on examination of new data and analysis from upcoming exploration and testing. It should be noted that there are documented, existing, ancient and recent landslides further downslope of the property that may continue to move but will not be adversely impacted by the subject site development. One benefit to the site development will actually be control of surface water, which currently is not being controlled above the steep slope area.

6.6 Civil Plans Review Comments

We have reviewed the current civil grading plans. The current site development plans are described in the Section 3 of this report and do not propose to disturb the geologic hazard area. These plans were developed using the 2004 ZZA report recommendations as a guideline. The maximum permanent cuts are relatively low, on the order of 2 to 3 feet for the retaining walls along the north property line. Fills will be up to approximately 12 feet along the east retaining

wall area for the proposed truck route, but this wall will be located outside of a top of slope setback of 35 feet. The retaining walls, drainage behind the walls, and maximum slopes above and below the walls will be engineered as part of future design work for the site, and will consider the weight of the fill and loads on the retaining structure on the stability of the slope area. Consideration of the wall type, bedrock conditions, and associated installation procedures will also be included in the retaining wall design. In our opinion, the proposed site development is feasible from a geotechnical perspective without adversely impacted the stability of the slope to the east.

7.0 GENERAL COMMENTS

Terracon should be retained to review the final design plans and specifications so comments can be made regarding interpretation and implementation of our geotechnical recommendations in the design and specifications. Terracon also should be retained to provide observation and testing services during grading, excavation, foundation construction and other earth-related construction phases of the project.

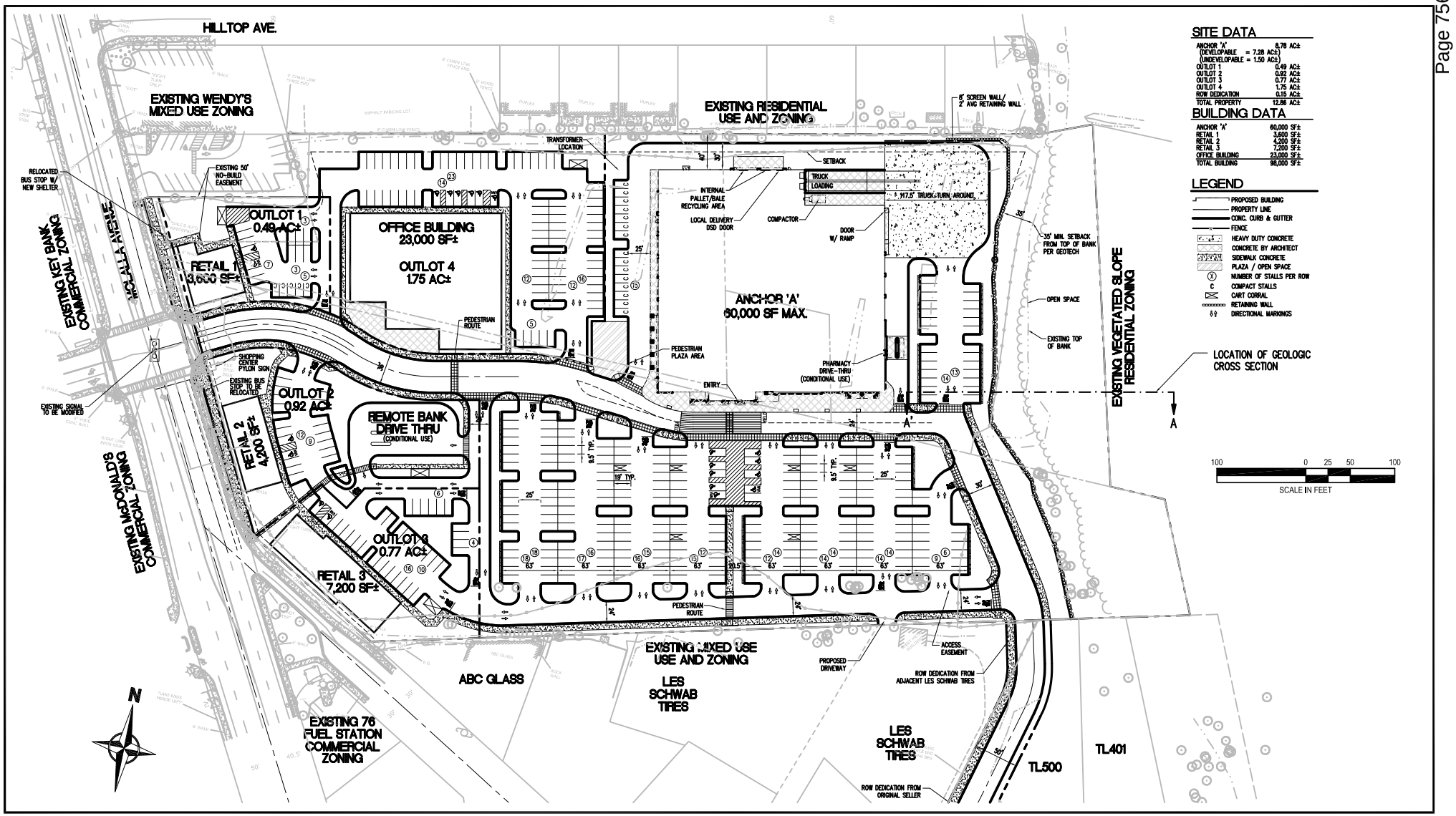
The analysis and recommendations presented in this report are based upon the data obtained from the borings performed at the indicated locations and from other information discussed in this report. This report does not reflect variations that may occur between borings, across the site, or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. If variations appear, we should be immediately notified so that further evaluation and supplemental recommendations can be provided.

The scope of services for this project does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

This report has been prepared in accordance with generally accepted geotechnical engineering practices for the exclusive use of PACLAND, and their respective successors and assigns, for specific application to the project location and stated purpose. No warranties, either express or implied, are intended or made. Site safety, excavation support, and dewatering requirements are the responsibility of others. In the event that changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless Terracon reviews the changes and either verifies or modifies the conclusions of this report in writing.

APPENDIX A

EXHIBITS A-1 to A-5



SITE DATA

ANCHOR 'A'	8.78 AC±
(DEVELOPABLE = 7.28 AC±)	
(UNDEVELOPABLE = 1.50 AC±)	
OUTLOT 1	0.49 AC±
OUTLOT 2	0.92 AC±
OUTLOT 3	0.77 AC±
OUTLOT 4	1.75 AC±
ROW DEDICATION	0.15 AC±
TOTAL PROPERTY	12.86 AC±

BUILDING DATA

ANCHOR 'A'	60,000 SF±
RETAIL 1	3,600 SF±
RETAIL 2	4,200 SF±
RETAIL 3	7,200 SF±
OFFICE BUILDING	23,000 SF±
TOTAL BUILDING	98,000 SF±

LEGEND

- PROPOSED BUILDING
- PROPERTY LINE
- CONC. CURB & GUTTER
- FENCE
- HEAVY DUTY CONCRETE
- CONCRETE BY ARCHITECT
- SIDEWALK CONCRETE
- PLAZA / OPEN SPACE
- (X) NUMBER OF STALLS PER ROW
- C COMPACT STALLS
- CART CORRAL
- RETAINING WALL
- DIRECTIONAL MARKINGS

REV.	DATE	BY	DESCRIPTION

Terracon
Consulting Engineers and Scientists
4103 SE INTERNATIONAL WAY, SUITE 300 PORTLAND, OREGON 97222
PH. (503) 659-3281 FAX. (503) 659-1287

SITE PLAN

PACLAND

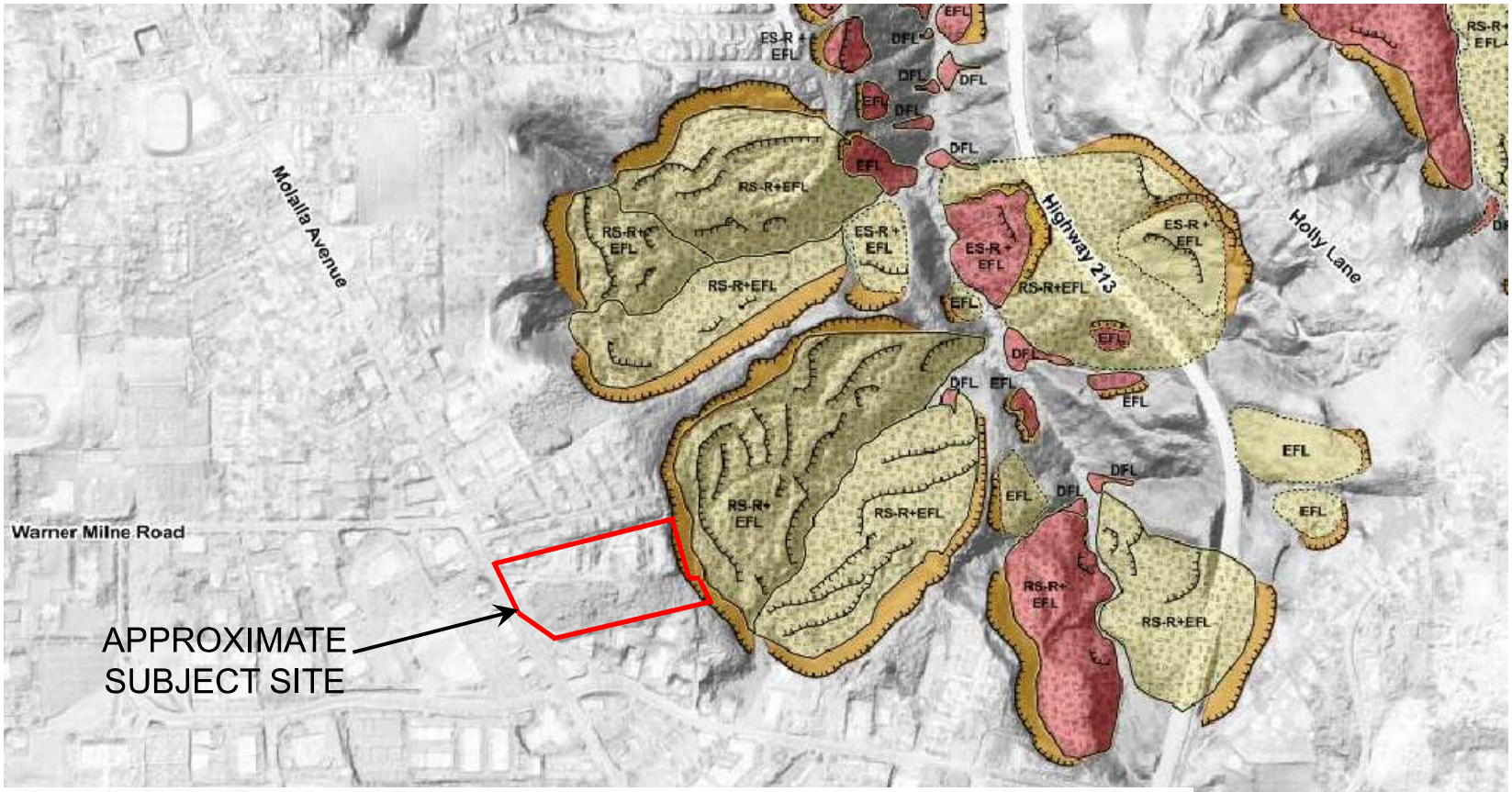
PROPOSED RETAIL DEVELOPMENT

MOLALLA AVENUE AND BEAVERCREEK ROAD

OREGON CITY OREGON

EXHIBIT A-1

DESIGNED BY:	EJL
DRAWN BY:	EJL
APPVD. BY:	EJL
SCALE:	AS SHOWN
DATE:	OCT 2012
JOB NO.	82125030
ACAD NO.	EXH A-1
SHEET NO.:	1 OF 1



LANDSLIDE ACTIVITY: Each landslide has been classified according to the relative age of last movement. This map display uses color to show the activity.

HISTORIC and/or ACTIVE (movement less than 150 years ago): The landslide appears to have moved within historic time or is currently moving (active).

PREHISTORIC or ANCIENT (movement greater than 150 years ago): Landslide features are slightly eroded and there is no evidence of historic movement. In some cases, the observed landslide features have been greatly eroded and/or covered with deposits that result in smoothed and subdued morphology.

REF: Landslide Inventory Map of the Northwest Quarter of the Oregon City Quadrangle, Clackamas County, Oregon (DOGAMI, IMS 26).

Project Manager:	EJL
Drawn by:	EJL
Checked by:	EJL
Approved by:	EJL
Project No.	82125030
Scale:	As Shown.
File Name:	Exhibit A-2
Date:	Oct. 2012

Terracon
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4103 SE International Way, #300 Portland, OR 97222
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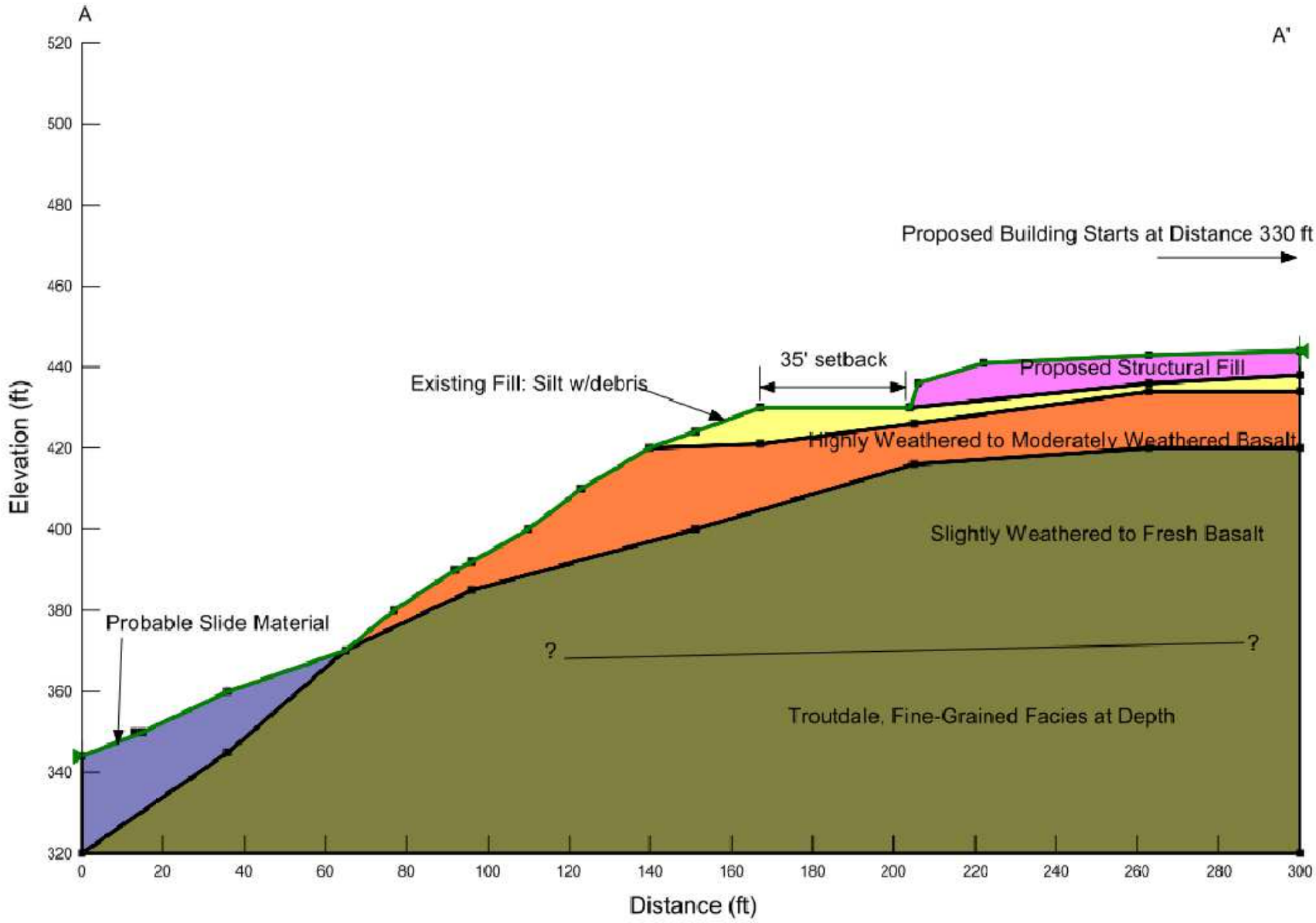
LANDSLIDE MAP EXCERPT

PROPOSED RETAIL DEVELOPMENT
Molalla Avenue and Beavercreek Road
Oregon City, Oregon

Exhibit
A-2



Project Manager:	EJL
Drawn by:	EJL
Checked by:	EJL
Approved by:	EJL

Project No.	82125030
Scale:	N.T.S.
File Name:	Exhibit A-2
Date:	Oct. 2012

Terracon
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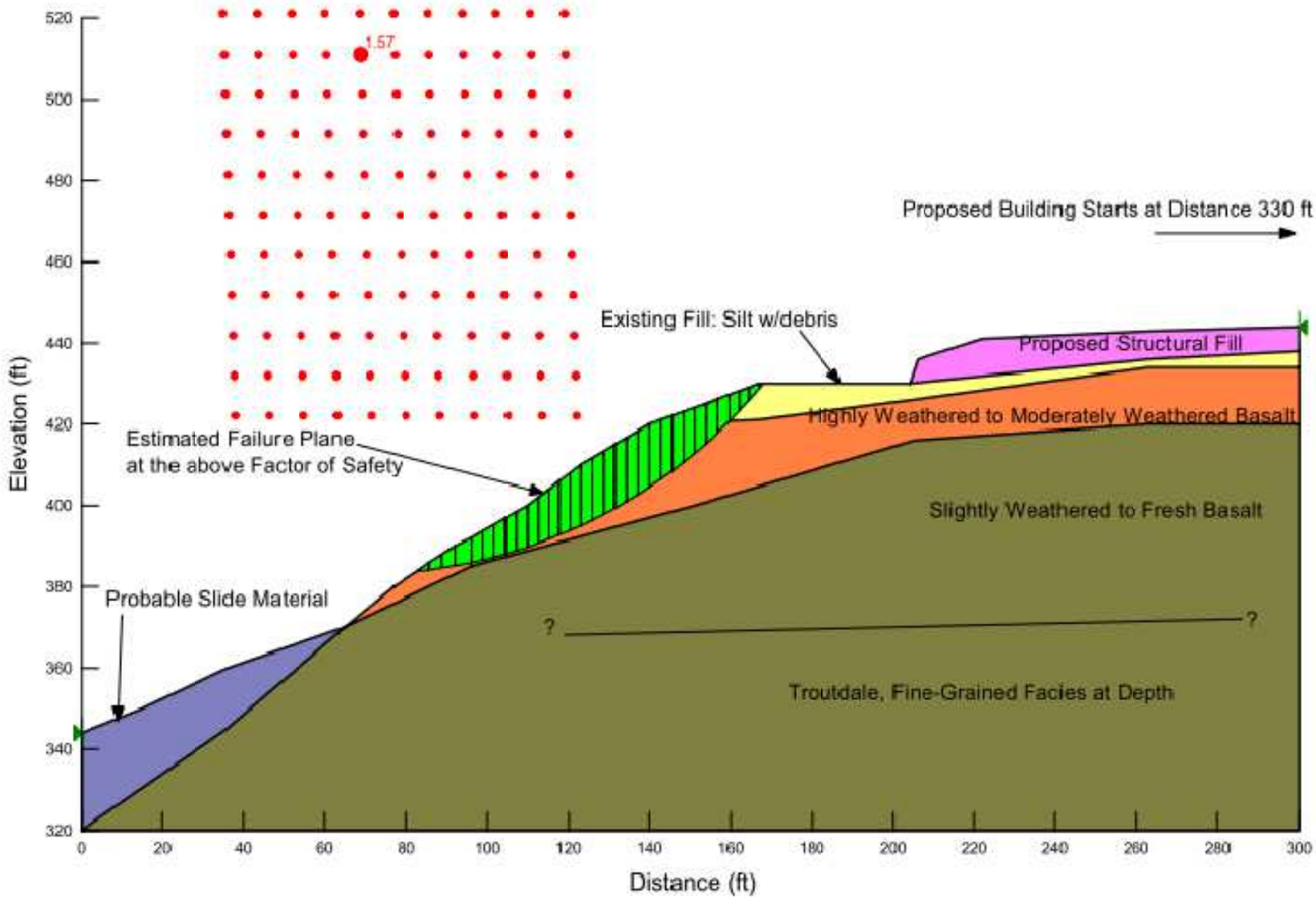
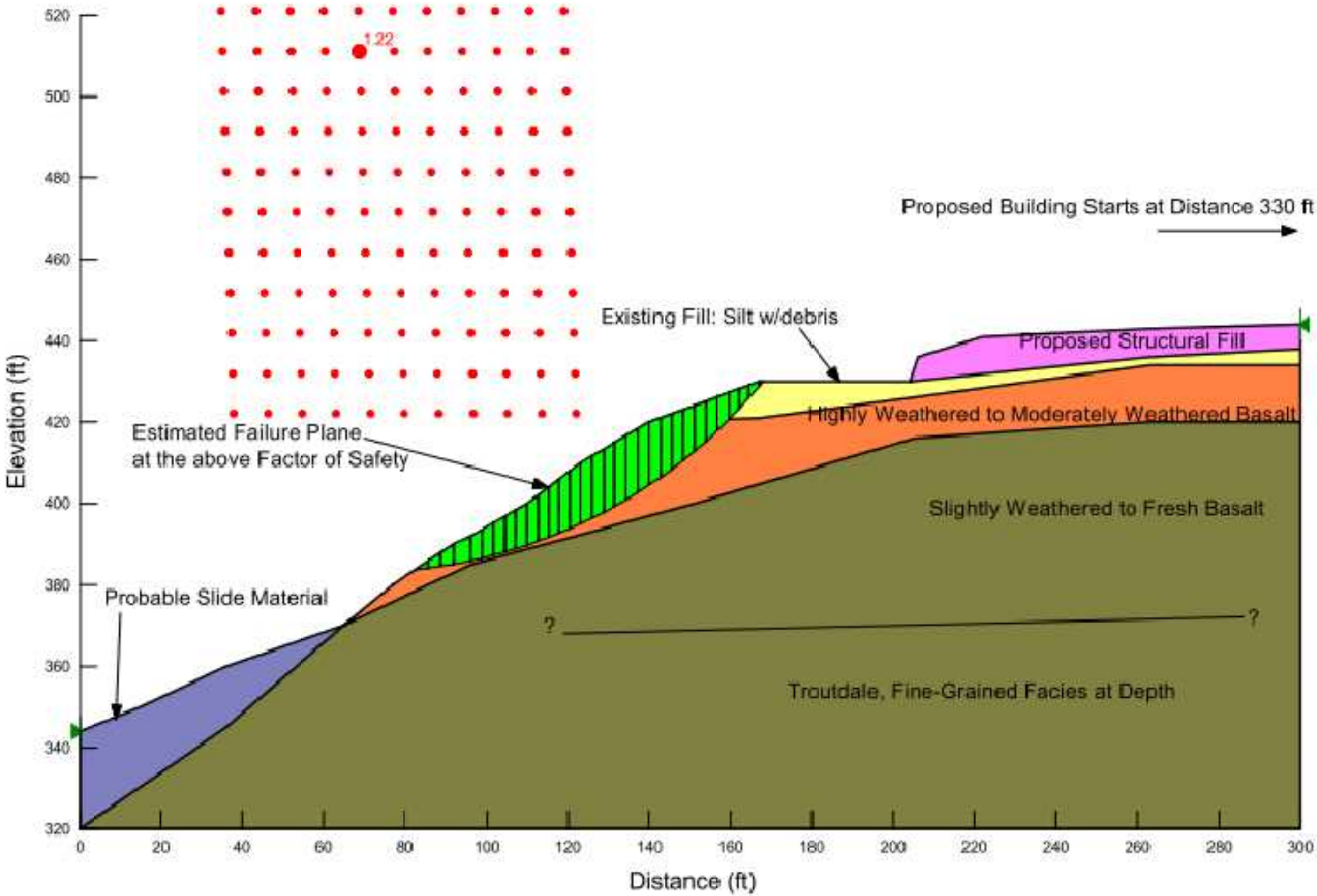
PRELIMINARY GEOLOGIC CROSS SECTION

PROPOSED RETAIL DEVELOPMENT
Molalla Avenue and Beavercreek Road
Oregon City, Oregon

Exhibit
A-3



Project Manager: EJL	Project No. 82125030	Terracon Consulting Engineers & Scientists	PRELIMINARY STATIC SLOPE STABILITY
Drawn by: EJL	Scale: N.T.S.	4103 SE International Way, #300 Portland, OR 97222	PROPOSED RETAIL DEVELOPMENT Molalla Avenue and Beavercreek Road Oregon City, Oregon
Checked by: EJL	File Name: Exhibit A-2	PH. (503) 659-3281 FAX. (503) 659-1287	Exhibit A-4
Approved by: EJL	Date: Oct. 2012		



Project Manager: EJL	Project No. 82125030	Terracon Consulting Engineers & Scientists	PRELIMINARY SEISMIC SLOPE STABILITY
Drawn by: EJL	Scale: N.T.S.	4103 SE International Way, #300 Portland, OR 97222	PROPOSED RETAIL DEVELOPMENT Molalla Avenue and Beavercreek Road Oregon City, Oregon
Checked by: EJL	File Name: Exhibit A-2	PH. (503) 659-3281 FAX. (503) 659-1287	Exhibit A-5
Approved by: EJL	Date: Oct. 2012		

EXPLORATION AND TESTING PROCEDURES

Field Exploration

2001 - 2002 Explorations (J-1200-01)

Exploration Number	Exploration Type	Exploration Depth (feet)	Location	
			Latitude	Longitude
02-B-1	Drilled boring	19.5	45.3355°N	122.5872°W
02-B-2	Drilled boring	13.1	45.3355°N	122.5867°W
02-B-3	Drilled boring	20	45.3360°N	122.5869°W
02-B-4	Drilled boring	21.5	45.3364°N	122.5869°W
02-B-5	Drilled boring	21.5	45.3359°N	122.5875°W
02-B-6	Drilled boring	10	45.3366°N	122.5861°W
02-B-7	Drilled boring	8.5	45.3363°N	122.5860°W
02-B-8	Drilled boring	11	45.3357°N	122.5856°W
02-B-9	Drilled boring	5.5	45.3364°N	122.5863°W
02-B-10	Drilled boring	12.75	45.3361°N	122.5862°W
02-B-11	Drilled boring	13	45.3357°N	122.5861°W
02-B-12	Drilled boring	46	45.3351°N	122.5856°W
02-B-13	Drilled boring	24	45.3352°N	122.5855°W
02-B-14	Drilled boring	50.5	45.3354°N	122.5858°W
02-B-15	Drilled boring	41.5	45.3355°N	122.5858°W
02-B-16	Drilled boring	45.5	45.3357°N	122.5859°W
02-B-17	Drilled boring	24.75	45.3359°N	122.5860°W
02-B-18	Drilled boring	41	45.3361°N	122.5861°W
02-B-19	Drilled boring	26	45.3363°N	122.5861°W
02-B-20	Drilled boring	45	45.3366°N	122.5861°W
02-B-21	Drilled boring	11.5	45.3368°N	122.5867°W
02-B-22	Drilled boring	21.5	45.3366°N	122.5879°W
02-B-23	Drilled boring	18.5	45.3365°N	122.5887°W
02-B-24	Drilled boring	16.5	45.3340°N	122.5854°W
02-MW-1	Drilled boring	20	45.3362°N	122.5875°W
02-MW-2	Drilled boring	26.5	45.3357°N	122.5863°W

Exploration Number	Exploration Type	Exploration Depth (feet)	Location	
			Latitude	Longitude
02-MW-3	Drilled boring	20	45.3359°N	122.5884°W
02-MW-4	Drilled boring	19.5	45.3351°N	122.5892°W
02-MW-5	Drilled boring	20	45.3349°N	122.5891°W
02-TP-1	Test Pit	10	45.3352°N	122.5856°W
02-TP-2	Test Pit	7	45.3351°N	122.5862°W
02-TP-3	Test Pit	11.5	45.3350°N	122.5867°W
02-TP-4	Test Pit	11	45.3349°N	122.5873°W
02-TP-5	Test Pit	7	45.3348°N	122.5878°W
02-TP-6	Test Pit	10	45.3347°N	122.5881°W
02-TP-7	Test Pit	10	45.3347°N	122.5885°W
02-TP-8	Test Pit	11	45.3348°N	122.5889°W
02-TP-9	Test Pit	10.5	45.3350°N	122.5886°W
02-TP-10	Test Pit	11	45.3350°N	122.5882°W
02-TP-11	Test Pit	11	45.3351°N	122.5877°W
02-TP-12	Test Pit	9	45.3352°N	122.5875°W
02-TP-13	Test Pit	6	45.3354°N	122.5875°W
02-TP-14	Test Pit	5.5	45.3354°N	122.5879°W
02-TP-15	Test Pit	10.5	45.3353°N	122.5883°W
02-TP-16	Test Pit	10	45.3353°N	122.5887°W
02-TP-17	Test Pit	10.5	45.3352°N	122.5890°W
02-TP-18	Test Pit	7	45.3356°N	122.5855°W
02-TP-19	Test Pit	7.5	45.3354°N	122.5853°W
02-TP-20	Test Pit	10	45.3354°N	122.5892°W
02-TP-21	Test Pit	10.5	45.3355°N	122.5888°W
02-TP-22	Test Pit	10	45.3355°N	122.5884°W
02-TP-23	Test Pit	7.5	45.3357°N	122.5880°W
02-TP-24	Test Pit	4	45.3358°N	122.5876°W
02-TP-25	Test Pit	10.5	45.3360°N	122.5878°W
02-TP-26	Test Pit	11	45.3359°N	122.5881°W
02-TP-27	Test Pit	10.5	45.3359°N	122.5885°W
02-TP-28	Test Pit	8.5	45.3358°N	122.5890°W

Exploration Number	Exploration Type	Exploration Depth (feet)	Location	
			Latitude	Longitude
02-TP-29	Test Pit	11	45.3355°N	122.5895°W
02-TP-30	Test Pit	11.5	45.3358°N	122.5898°W
02-TP-32	Test Pit	11	45.3361°N	122.5890°W
02-TP-33	Test Pit	11	45.3361°N	122.5886°W
02-TP-31	Test Pit	11.5	45.3359°N	122.5892°W
02-TP-34	Test Pit	12.5	45.3362°N	122.5882°W
02-TP-35	Test Pit	10.5	45.3363°N	122.5879°W
02-TP-36	Test Pit	11	45.3364°N	122.5871°W
02-TP-37	Test Pit	12.5	45.3365°N	122.5867°W
02-TP-38	Test Pit	5.5	45.3364°N	122.5863°W
02-TP-39	Test Pit	13	45.3357°N	122.5860°W
02-TP-40	Test Pit	10	45.3352°N	122.5864°W
02-TP-41	Test Pit	10	45.3351°N	122.5870°W
02-TP-42	Test Pit	6.5	45.3353°N	122.5859°W
02-TP-43	Test Pit	11	45.3341°N	122.5854°W
02-TP-44	Test Pit	11	45.3343°N	122.5858°W
02-TP-45	Test Pit	6	45.3346°N	122.5856°W
02-TP-46	Test Pit	7	45.3347°N	122.5857°W
02-TP-47	Test Pit	11	45.3349°N	122.5855°W
02-TP-48	Test Pit	10	45.3364°N	122.5862°W
02-TP-1A	Test Pit	9	45.3357°N	122.5860°W
02-TP-2A	Test Pit	11	45.3359°N	122.5860°W
02-TP-3A	Test Pit	12	45.3360°N	122.5861°W
02-TP-4A	Test Pit	12	45.3361°N	122.5861°W
02-TP-5A	Test Pit	11	45.3363°N	122.5861°W
02-TP-6A	Test Pit	6.5	45.3364°N	122.5863°W
02-TP-7A	Test Pit	9	45.3359°N	122.5865°W
02-TP-8A	Test Pit	7.5	45.3359°N	122.5866°W
02-TP-9A	Test Pit	9.5	45.3363°N	122.5871°W
02-TP-10A	Test Pit	7	45.3364°N	122.5870°W
02-TP-11A	Test Pit	11	45.3358°N	122.5877°W

Exploration Number	Exploration Type	Exploration Depth (feet)	Location	
			Latitude	Longitude
02-TP-12A	Test Pit	10	45.3361°N	122.5880°W
02-TP-13A	Test Pit	9.5	45.3363°N	122.5879°W
02-TP-14A	Test Pit	4.5	45.3362°N	122.5875°W
02-TP-15A	Test Pit	11.5	45.3360°N	122.5891°W
02-TP-16A	Test Pit	9.5	45.3361°N	122.5885°W
02-TP-17A	Test Pit	10	45.3359°N	122.5883°W
02-TP-18A	Test Pit	10	45.3357°N	122.5883°W
02-TP-19A	Test Pit	8	45.3357°N	122.5887°W
02-TP-20A	Test Pit	10	45.3357°N	122.5895°W

2021 Exploration

Exploration Number	Exploration Type	Exploration Depth (feet)	Location	
			Latitude	Longitude
21-B-1	Drilled Boring	90½	45.3363°N	122.5863°W

Exploration Layout and Elevations: Terracon personnel provided the exploration layout. Coordinates were obtained with a handheld GPS unit (estimated horizontal accuracy of about ±10 feet) and approximate elevations were obtained from Google Earth Pro data. If elevations and a more precise exploration layout are desired, we recommend explorations be surveyed following completion of fieldwork.

Subsurface Exploration Procedures: We advance soil borings with a truck-mounted drill rig using continuous flight augers (hollow stem or solid stem). Four samples were typically obtained in the upper 10 feet of each boring and at intervals of 5 feet thereafter. Soil sampling was performed using thin-wall tube and/or split-barrel sampling procedures. In the thin-walled tube sampling procedure, a thin-walled, seamless steel tube with a sharp cutting edge is pushed hydraulically into the soil to obtain a relatively undisturbed sample. In the split barrel sampling procedure, a standard 2-inch outer diameter split barrel sampling spoon is driven into the ground by a 140-pound automatic hammer falling a distance of 30 inches. The number of blows required to advance the sampling spoon the last 12 inches of a normal 18-inch penetration is recorded as the Standard Penetration Test (SPT) resistance value. The SPT resistance values, also referred to as N-values, are indicated on the boring logs at the test depths. The samples were placed in appropriate containers, taken to our soil laboratory for testing, and classified by a geotechnical engineer. In addition, we observed and recorded groundwater levels during drilling and sampling.

All explorations were supervised and logged by a field geologist who recorded field test data, classified soils, and collected the samples from the explorations. Our exploration team prepared field boring logs as part of standard drilling operations including sampling depths, penetration distances, and other relevant sampling information. Field logs include visual classifications of materials encountered during drilling, and our interpretation of subsurface conditions between samples. Final boring logs, prepared from field logs, represent the geotechnical engineer's interpretation, and include modifications based on observations and laboratory tests.

Upon encountering bedrock or refusal-to-drilling conditions, rock coring (using NQ/NX rock core barrel) was performed within select borings.

All explorations were supervised and logged by a field engineer or field geologist who recorded field test data, classified soils, and collected the samples from the explorations. Our exploration team prepared field boring logs as part of standard drilling operations including sampling depths, penetration distances, and other relevant sampling information. Field logs include visual classifications of materials encountered during drilling, and our interpretation of subsurface conditions between samples. Final boring logs, prepared from field logs, represent the geotechnical engineer's interpretation, and include modifications based on observations and laboratory tests.

Vibrating Wire Piezometer: We installed one vibrating wire piezometer (VWP) in boring 21-B-1 on December 17, 2021. The VWP was installed at a depth of approximately 30¾ feet below the ground surface (bgs), at the top of the intact, very low permeability, Boring lava (basaltic bedrock). This depth was determined by the project geotechnical engineer following completion of drilling. Prior to installation, the lower portion of the boring was filled with a bentonite chip-grout mixture and low-permeability grout was extended from approximately 35 feet bgs to about 1-foot bgs.

During installation, the VWP was taped to a one-inch diameter PVC pipe with the pressure sensor facing upwards. The VWP cable was taped to the PVC pipe on approximate 3-foot intervals as it was lowered into the boring. Once the VWP was at the target depth, a bentonite chip-grout mixture was placed from the bottom of the exploration to a depth of approximately 35 feet bgs. Then a low permeability grout was introduced to seal the upper portion of the exploration and allow the mini data logger to record changes in the vibrating wire frequency, and thus changes in pressure. The VWP wire was connected to a mini data logger housed within a steel, flush-mount wellhead. The mini data logger was set to record vibrating wire readings every 4 hours, starting December 20, 2021 at 5:00PM. Completion of the VWP is summarized in the following table:

Depth (feet bgs)	Description	Detail
0	Steel, flush-mount wellhead	Approximate 8-inch diameter and 18-inches tall
0 to 1	Void (open space)	––
1 to 35	Low permeability grout	50 PSI Grout for Medium to Hard Soils 30 gallon Water / 94 lb. Portland Cement
30¾	VWP piezometer installation	Geokon 4500S-350KPA (51psi)
35 to 90½	Bentonite chip-low permeability grout mixture	50 PSI Grout for Medium to Hard Soils 30 gallon Water / 94 lb. Portland Cement / 25 lb. Bentonite

Property Disturbance: We backfilled borings according to local jurisdiction requirements after completion of each exploration. Our services do not include repair of the site beyond backfilling our boreholes. Excess auger cuttings were dispersed in the general vicinity of each borehole. Since backfill material often settles below the surface after a period, we recommend boreholes be checked periodically and additional backfill added, if necessary.

Laboratory Testing

The project engineer reviewed the field data and assigned laboratory tests to understand the engineering properties of the various soil strata, as necessary, for this project. The following tests were performed for this project.

- ASTM D2216 Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
- ASTM D6913 Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis
- AASHTO T-267 Standard Method of Test for Determination of Organic Content in Soils by Loss on Ignition
- ASTM D1883 Standard Test Method for California Bearing Ratio (CBR) of Laboratory-Compacted Soils
- ASTM D6913 Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis
- ASTM D1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort
- ASTM G51 Standard Test Method for Measuring pH of Soil for Use in Corrosion Testing
- ASTM C 1580 Standard Test Method for Water-Soluble Sulfate in Soil
- ASTM G187 Standard Test Method for Measurement of Soil Resistivity Using the Two-Electrode Soil Box Method
- ASTM D2938 Standard Test Method for Unconfined Compressive Strength of Intact Rock Core Specimens
- ASTM D3080 Standard Test Method for Direct Shear Test Of Soils Under Consolidated Drained Conditions

The laboratory testing program included examination of soil samples by an engineer. Based on the material's texture and plasticity, we described and classified the soil samples in accordance with the Unified Soil Classification System.

Rock classification was conducted using locally accepted practices for engineering purposes; petrographic analysis may reveal other rock types. Rock core samples typically provide an improved specimen for this classification. Boring log rock classification was determined using the Description of Rock Properties.



Western portion of site, facing north



Central portion of site, facing west



Top of headscarp, facing south



Base of scarp in area of observed spring, facing south

EXPLORATION RESULTS

Contents:

2021 Boring Log (21-B-1)
2002-4 Exploration Logs (B-1 through B-24, MW-1 through MW-5, TP-1 through TP-46, TP-1A through TP-20A)
2002 Lab Test Results
- Grain Size Distribution Results (12 pages)
- Atterberg Limits Results
- CBR Results
- Direct Shear Test Results
- Unconfined Compression Test Results
- Soil Chemical Analysis Results
- Organic Content Results

Note: All attachments are one page unless noted above.

BORING LOG NO. 21-B-1

PROJECT: Oregon City Development

CLIENT: The Wolff Company LLC
Scottsdale, AZ

SITE: 1367 Molalla Avenue
Oregon City, OR

LOCATION See Exploration Plan

Latitude: 45.3363° Longitude: -122.5863°

Surface Elev.: 429 (Ft.)

DEPTH	ELEVATION (Ft.)	Description	DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS
0.2	429	**ASPHALT**, moist			
1.0	428	**FILL - LEAN CLAY WITH GRAVEL (CL)**, medium to high plasticity, red, moist			
		FILL - POORLY GRADED GRAVEL WITH CLAY AND SAND (GP-GC), dark gray, moist Basalt boulder from 5 to 7 feet bgs	5		50/1"
7.0	422	**CLAYEY SAND WITH GRAVEL (SC)**, low to medium plasticity, red, white, and black, moist, very loose, residual soil	10		3-5-7 N=12 .25 (HP)
		nonplastic, gray, moist, very dense, probably heavily weathered rock	15		21-38-50/5" 1.75 (HP)
		basalt frgaments present	20		50/5"
			25		50/1"
30.5	398.5	vibrating wire piezometer installed at 30 ft bgs	30		50/5" RQD = 0%
		BASALT, gray, moist, sound, moderate spacing, unweathered, very strong	35		RQD = 88%
			40		RQD = 95%
			45		RQD = 92%
			50		RQD = 91%

STRENGTH TEST			WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS
TEST TYPE	COMPRESSIVE STRENGTH (tsf)	STRAIN (%)			LL-PL-PI

Stratification lines are approximate. In-situ, the transition may be gradual.
Vibrating wire piezometer installed at 30' bgs

Hammer Type: Automatic

Advancement Method:
Mud Rotary/Coring

Abandonment Method:
Boring Grouted with vibrating wire piezometer

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevation estimated from site topographic map

Notes:
Vibrating Piezometer installed at this depth

Serial No. 2146354

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
700 NE 55th Ave
Portland, OR

Boring Started: 12-16-2021 | Boring Completed: 12-17-2021

Drill Rig: Truck-mounted | Driller: Western States

Project No.: 82215043

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 82215043 OREGON CITY DEVEL.GPJ TERRACON_DATATEMPLATE.GDT 1/5/22

BORING LOG NO. 21-B-1

PROJECT: Oregon City Development

CLIENT: The Wolff Company LLC
Scottsdale, AZ

SITE: 1367 Molalla Avenue
Oregon City, OR

LOCATION See Exploration Plan

Latitude: 45.3363° Longitude: -122.5863°

Surface Elev.: 429 (Ft.)

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI
	BASALT, gray, moist, sound, moderate spacing, unweathered, very strong *(continued)*	55	RQD = 78%						
		60	RQD = 68%						
		65	RQD = 70%						
		70	RQD = 67%						
	moderately fractured, very close fracture spacing, slightly weathered, fractured zone 70 to 80 feet bgs	75	RQD = 30%						
		80	RQD = 0%						
	sound, moderate spacing, unweathered, strong rock	85	RQD = 0%						
90.5	338.5	90	RQD = 91%						
	Boring Terminated at 90.5 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.
Vibrating wire piezometer installed at 30' bgs

Hammer Type: Automatic

Advancement Method:
Mud Rotary/Coring

Abandonment Method:
Boring Grouted with vibrating wire piezometer

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevation estimated from site topographic map

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
700 NE 55th Ave
Portland, OR

Boring Started: 12-16-2021 | Boring Completed: 12-17-2021

Drill Rig: Truck-mounted | Driller: Western States

Project No.: 82215043

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 82215043 OREGON CITY DEVEL.GPJ TERRACON_DATATEMPLATE.GDT 1/5/22

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-1 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 443 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (Standard ▲ / Other △; Blows per foot)	N-values	Testing
	Soft, wet, brown, SILT with some clay and fine roots. (Topsoil)						
	Stiff to very stiff, moist, orange-brown, SILT with trace clay and trace to some sand.						
5	Medium dense, wet, orange-brown, silty, fine to medium SAND and stiff to very stiff, wet, orange-brown, SILT with trace clay and sand with occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)		S-1		23		
			S-2		15		
			S-3		57 / 17		
10			S-4		58 / 47		
	Dense, damp, light gray, moderately weathered ANDESITE boulder encountered from 11 to 12.5 feet.						
15	Grades to dense, orange-gray, silty, fine to medium SAND and stiff, wet, orange-brown, SILT with trace clay and sand.		S-5		49 / 37		
	Very dense, damp, light gray, moderately weathered ANDESITE boulder encountered from 17 to 19.5 feet.						
20	Boring completed at 19.5 feet on 10/29/01. No groundwater seepage observed at time of drilling.		S-6		50/4"		
25							

Penetration Resistance axis: 0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 10/29/01	Logged By: JPG

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-2 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 440 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (Standard ▲ / Other △; Blows per foot)	N-values	Testing
	Soft, wet, brown, SILT with trace clay and fine roots. (Topsoil)						
	Very stiff to hard, damp to moist, orange-brown, SILT with trace clay and some sand.						
			S-1		▲ 34	34	
5	Very dense, moist, orange-gray, silty, fine to medium SAND with trace to some clay and occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)		S-2		▲ 52	52	
	Very dense, damp, gray, moderately weathered ANDESITE boulder encountered from 7 to 8.5 feet.		S-3		▲ 50/1"	50/1"	
10			S-4		▲ 50/6"	50/6"	
	Very dense, damp, gray, moderately weathered ANDESITE boulder encountered from 12.5 to 13.5 feet.						
	Boring completed at approximately 13.1 feet on 10/29/01 with refusal on Andesitic boulder. No groundwater seepage observed at time of drilling.		S-5		▲ 50/1"	50/1"	
15							
20							
25							

Penetration Resistance axis: 0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 10/29/01	Logged By: JPG

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-3 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 440 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (Standard ▲ / Other △; Blows per foot)	N-values	Testing
	6" Asphalt pavement.						
	Stiff to medium stiff, orange-brown, SILT with trace to some clay and sand.		S-1		4		
5	Medium dense, wet, orange-brown, silty, fine to medium SAND and stiff to very stiff, wet, orange-brown, clayey SILT with trace sand with occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)		S-2		50	12	
			S-3		48	14	
10			S-4		57	14	
15	Grades to orange-gray.		S-5		55	33	
20	Grades to saturated at 19 feet.		S-6	ATD	50	50/4"	
	Boring completed at 20 feet on 10/29/01. Perched groundwater seepage observed at 19 feet at time of drilling.						
25							

0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 10/29/01	Logged By: JPG

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-4 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 439 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot)	N-values	Testing
	10" Asphalt pavement.						
	Stiff grading to very stiff, moist to wet, orange-brown, SILT with trace to some clay and sand.						
			S-1		▲ 19	19	
5	Medium dense , moist to wet, orange-brown, silty, fine to medium SAND and stiff to very stiff, wet, orange-brown, clayey SILT with trace sand with occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)		S-2		▲ 16	16	
	Grades to wet		S-3		▲ 24, 50	24	
10							
	Grades to dense and orange-gray.		S-4		▲ 40, 49	40	
15			S-5		▲ 50	50	
20	Grades to very dense.		S-6		▲ 52	52	
	Boring completed at 21.5 fet on 10/29/01. No groundwater seepage observed at time of drilling.						
25							

0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- ⊗ No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 10/29/01	Logged By: JPG

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-5 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 445 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (Standard ▲ / Other △; Blows per foot)	N-values	Testing
	4" Asphalt pavement.						
	Loose, moist to wet, brown, SILT with trace to some fine sand. (Topsoil)						
	Medium dense, moist to wet, orange-brown, SILT with trace to some clay and fine sand.		S-1		13		
5	Medium dense, wet, orange-brown, silty SAND and stiff to very stiff, wet, orange-brown, SILT with trace clay and sand with occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)		S-2		55 / 21		
			S-3		49 / 50/6"		
10	Very dense, damp, light gray, moderately weathered ANDESITE boulder encountered from 8.5 to 9.5 feet.		S-4		52 / 16		
15	Grades to dense.		S-5		33		
20			S-6		53 / 33		
	Boring completed at 21.5 feet on 10/29/01. No groundwater seepage observed at time of drilling.						
25							

Penetration Resistance axis: 0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 10/29/01	Logged By: JPG

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-6 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 425 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0 10 20 30 40 50)	N-values	Testing
	6" Very loose, wet, brown, sandy SILT with some organic debris and roots. (Topsoil)						
	Very stiff, moist, orange-brown, SILT with some sand to sandy SILT.						
	Medium dense, moist to wet, orange-brown, silty SAND and stiff to very stiff, wet, orange-brown, SILT with trace clay and sand with occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)		S-1			24	
5			S-2			14	
			S-3			25	
	Grades to orange gray.						
10			S-4			29	
	Boring completed at 10 feet on 10/29/01 with refusal. No groundwater seepage observed at time of drilling.						
15							
20							
25							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 10/29/01	Logged By: JPG

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-7 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 400 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot)	N-values	Testing
	Very loose, moist to wet, orange-brown, sandy SILT.						
	Very loose, moist to wet, orange-brown, sandy SILT						
	Medium dense, moist to wet, orange-brown, silty SAND and stiff to very stiff, wet, orange-brown, SILT with trace clay and sand with occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)	I	S-1			33	
5	Grades to dense. (Possible boulder)	I	S-2			50	
	Grades to medium dense.	I	S-3			37	
	Boring completed at 8.5 feet on 10/29/01 with refusal. No groundwater seepage observed at time of drilling.						
10							
15							
20							
25							

0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc.
Geotechnical & Environmental Consultants

BORING LOG | **Figure A-1**

Date Drilled: 10/29/01 | **Logged By: JPG**

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-8 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 395 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (Standard ▲ / Other △; Blows per foot; 0 10 20 30 40 50)	N-values	Testing
	Very loose, wet, brown, sandy SILT with some organic debris and roots. (Topsoil)						
	Very loose, moist, orange-brown, sandy SILT. (Colluvium)						
	Loose, moist to wet, orange-brown, silty SAND and stiff to very stiff, wet, orange-brown, SILT with trace clay and sand with occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)	I	S-1		▲ 7	7	
5	Grades to medium dense.	I	S-2		▲ 25	25	
	Grades to dense.	I	S-3		▲ 42	42	
10	Grades to very dense and light gray. (Probable boulder)	I	S-4		▲ 50/4"	50/4"	
	Boring completed at approximately 11 feet on 10/31/01 with refusal. No groundwater seepage observed at time of drilling.						
15							
20							
25							

Explanation

- I — 2-inch O.D. split spoon sample
- II — 3-inch I.D Shelby tube sample
- ⊗ — No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 10/31/01	Logged By: JPG

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-9 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 433 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot)	N-values	Testing
0	Loose, moist to wet, mottled orange-brown and brown, sandy SILT with trace to some gravel. Occasional clasts of asphalt and plastic observed. (Fill)		S-1			10	
5	Concrete debris in tip of sampler.		S-2			50/6"	
	Boring terminated at 5.5 feet with refusal on concrete debris. Moved drill rig approximately 8 feet east and redrilled to refusal on concrete at 6.5 feet. No groundwater seepage observed at time of drilling.						
10							
15							
20							
25							

Penetration Resistance scale: 0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 10/31/01	Logged By: JPG

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-10 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 433 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot)	N-values	Testing
	6" Asphalt pavement						
	Medium dense, wet, mottled brown-gray, SILT with trace to some clay and gravel. Slight hydrocarbon odor. (Fill)		S-1			12	
5	Stiff, wet, orange-brown, SILT with some sand.		S-2			15	
	Medium dense , moist to wet, orange-brown, silty, fine to medium SAND and stiff to very stiff, wet, orange-brown, SILT with trace clay and sand with occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)		S-3		54	24	
10	grades to very dense, wet, and orange-gray.		S-4			57	
			S-5			50/4"	
	Boring completed at approximately 12.75 feet on 11/1/01. No groundwater seepage observed at time of exploration.						
15							
20							
25							

Penetration Resistance scale: 0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 11/1/01	Logged By: JPG

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-11 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 433 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot)	N-values	Testing
	6" Asphalt pavement.						
	Medium stiff to stiff, wet, mottled brown, sandy SILT with trace to some gravel. (Fill)		S-1			5	
5	Grades to SILT with some sand. (Fill)		S-2			9	
	Asphalt observed at 7 feet.						
	Loose to medium dense, wet, orange-brown, silty SAND and stiff to very stiff, wet, orange-brown, SILT with trace clay and sand with occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)		S-3			13	
10			S-4			9	
	Very dense, damp, light gray, moderately weathered ANDESITE boulder encountered from 11.5 to 13 feet.		S-5			53	
	Boring completed at 13 feet on 11/1/01. No groundwater seepage observed at time of drilling.						
15							
20							
25							

Penetration Resistance scale: 0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 11/1/01	Logged By: JPG

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-12	PAGE 1 OF 3
Location: Oregon City, Oregon	Approximate Elevation: 433 feet		

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot; 0 10 20 30 40 50)	N-values	Testing
	Blackberries and wood refuse.						
	Stiff, moist, red-brown, clayey SILT with some sand (probable fill).		S-1		▲ 9	9	
5	Stiff, moist, brown, SILT with trace to some clay and some fine organics (probable fill).		S-2		▲ 10	10	
	Medium stiff, moist, red, brown, and gray, sandy CLAY (completely weathered bedrock).		S-3		▲ 7	7	
10	Medium dense, moist, red, brown, and gray, friable, silty SAND with trace clay and gravel (completely weathered bedrock).		S-4		▲ 59 ●	15	GS
15	Medium stiff, moist, red, brown, and gray, friable, sandy SILT with trace clay (completely weathered bedrock).		S-5		▲ 7	7	
20	Very stiff, moist, red, brown, and gray, friable, sandy SILT with trace clay (completely weathered bedrock).		S-6		▲ 28	28	
25							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- ⊗ No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-12
	Date Drilled: 3/14/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-12 | **PAGE 2 OF 3**

Location: Oregon City, Oregon | **Approximate Elevation:** 433 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	Stiff, moist, red, brown, and gray, friable, sandy (completely weathered bedrock).	I	S-7			10	
30	Dense, gray, slightly weathered to fresh, basaltic ANDESITE (bedrock). Switch to coring - see next sheet.	I	S-8			50/6"	
35							
40							
45							
50							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-12
	Date Drilled: 3/14/02	Logged By: EL

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-12	PAGE 3 OF 3
Location: Oregon City, Oregon	Approximate Elevation: 433 feet		

Depth (ft)	Fracture: Profile	Fracture: Infilling	Fracture: Inclination	Rock Description	Time	Core Run	RQD (%)	Recovery (%)	Comments
30				Coring intiated at 31 feet					
35			65°	Gray, slightly to moderately weathered, closely to moderately fractured, weak to moderately strong, basaltic ANDESITE.	1:24 1:32	1	63	100	
40				Gray with red discoloration, moderately weathered, very closely to closely fractured, weak, basaltic ANDESITE. Gray, fresh, widely fractured, strong, basaltic ANDESITE.	1:35 1:47	2	30	100	
45				Gray, fresh, widely fractured, strong, basaltic ANDESITE.		3	100	100	Circulation loss.
50				Coring terminated at 46 feet.					
55									

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	CORING LOG	Figure A-12
	Date Drilled: 3/14/02	Logged By: EL

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-13	PAGE 1 OF 2
Location: Oregon City, Oregon	Approximate Elevation: 425 feet		

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot; 0 10 20 30 40 50)	N-values	Testing
	Blackberry bushes over very soft, wet, brown, SILT with forest duff (topsoil).						
	Medium stiff, wet, red, residual silty CLAY with trace to some sand, silty SAND, and sandy SILT (completely weathered bedrock).		S-1		▲	6	
5	Stiff, moist, red/gray/black, residual silty CLAY (completely weathered bedrock).		S-2		▲	15	
	Stiff, moist, red/gray/black, friable, residual sandy SILT/silty SAND with trace clay (completely weathered bedrock).		S-3		▲ 63	8	GS
10	Stiff, moist, red/gray/black, friable, residual, sandy SILT/silty SAND with trace clay (highly to completely weathered bedrock).		S-4		▲	13	
15	Stiff, moist, red/gray/black, friable, residual sandy SILT with trace to some clay (highly to completely weathered bedrock).		S-5		▲	12	
20	Refusal bedrock at 19 feet. Start of coring - see next sheet.						
25							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- ⊗ No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-13
	Date Drilled: 3/14/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-13 | **PAGE 2 OF 2**

Location: Oregon City, Oregon | **Approximate Elevation:** 425 feet

Depth (ft)	Fracture: Profile	Fracture: Infilling	Fracture: Inclination	Rock Description	Time	Core Run	RQD (%)	Recovery (%)	Comments
				Coring initiated at 19 feet.					
20				Gray, fresh, widely fractured, strong, basaltic ANDESITE.	9:15	1	52	95	Unconfined compressive strength = 8880 psi.
				Red-brown with black specks, highly weathered, very closely fractured, friable, basaltic ANDESITE.	9:28				Infilling soil loss.
25				Coring terminated at 24 feet.					
30									
35									
40									
45									

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	CORING LOG	Figure A-13
	Date Drilled: 3/13/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-14 | **PAGE 1 OF 3**

Location: Oregon City, Oregon | **Approximate Elevation:** 424 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	Very soft, wet, brown, organic SILT (forest duff and organic-rich topsoil).						
	Medium stiff to stiff, moist to wet, red with gray and black, residual silty CLAY/clayey SILT with some fine sand (completely weathered bedrock).		S-1		▲	8	
5	Stiff, moist to wet, red with gray and black, residual silty CLAY/clayey SILT with some fine sand (completely weathered bedrock).		S-2		▲	10	
	Very stiff, moist, gray and red, friable, residual sandy SILT/silty SAND with trace clay (completely weathered bedrock).		S-3		▲	21	
10	Very stiff, moist, gray and red, friable, residual sandy SILT/silty SAND with trace clay (completely weathered bedrock).		S-4		▲	20	
15	Very stiff, moist, gray and red, friable, residual sandy SILT/silty SAND (highly weathered bedrock).		S-5		▲	50/2"	
	Drilling terminated on bedrock. Switch to coring. See next sheet.						
20							
25							

0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- ⊗ No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-14
	Date Drilled: 3/13/02	Logged By: EL

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-14	PAGE 2 OF 3
Location: Oregon City, Oregon	Approximate Elevation: 424 feet		

Depth (ft)	Fracture: Profile	Fracture: Infilling	Fracture: Inclination	Rock Description	Time	Core Run	RQD (%)	Recovery (%)	Comments
15				Coring initiated at 15.5 feet.					
20				Gray, fresh, moderately fractured, strong, basaltic ANDESITE. Red-brown with black specks, moderately to highly weathered, very closely fractured, friable to weak, basaltic ANDESITE.	11:52 12:01	1	18	100	
25				Red-brown and black, moderately to highly weathered, very closely fractured, friable to weak. basaltic ANDESITE. Gray, red and black, moderately weathered, very closely fractured, weak, basaltic ANDESITE.	12:05 12:20	2	8	100	
30				Gray and black, moderately weathered, very closely to closely fractured, weak to moderately strong, basaltic ANDESITE.	12:24 12:37	3	13	100	Circulation loss.
35				Gray, fresh, widely fractured, strong, basaltic ANDESITE.	13:41	4	100	100	
40				Gray, fresh, widely fractured, strong, basaltic ANDESITE.	13:55	5	100	100	

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	CORING LOG	Figure A-14
	Date Drilled: 3/13/02	Logged By: EL

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-14	PAGE 3 OF 3
Location: Oregon City, Oregon	Approximate Elevation: 424 feet		

Depth (ft)	Fracture: Profile	Fracture: Infilling	Fracture: Inclination	Rock Description	Time	Core Run	RQD (%)	Recovery (%)	Comments
				Gray, fresh, widely fractured, strong, basaltic ANDESITE.	14:05	6	75	100	
		Red clay	70°						
45			70°						
			70°	Gray, fresh, widely fractured, strong, basaltic ANDESITE.	14:30	7	100	100	
50									
				Coring terminated at 50.5 feet.					
55									
60									
65									
70									

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	CORING LOG	Figure A-14
	Date Drilled: 3/13/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-15 | **PAGE 1 OF 2**

Location: Oregon City, Oregon | **Approximate Elevation:** 422 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (Standard ▲ / Other △; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	Very soft, wet, brown, organic SILT (topsoil).						
	Medium stiff, moist to wet, red and black, residual, silty CLAY/clayey SILT (completely weathered bedrock).		S-1		▲	7	
5	Medium stiff to stiff, moist, red, gray and black, friable, residual sandy SILT/silty SAND with trace clay (completely weathered bedrock).		S-2		▲	8	
	Stiff, moist, red, gray and black, friable, residual sandy SILT/silty SAND with trace clay (completely weathered bedrock).		S-3		▲	11	
10	Very stiff, moist, red, gray and black, friable, residual sandy SILT/silty SAND with trace clay (completely weathered bedrock).		S-4		▲	23	
15	Stiff, moist, red, gray and black, friable, residual sandy SILT/silty SAND witht race clay (completely weathered bedrock).		S-5		▲	11	
20	Very stiff, moist, red, gray and black, friable, residual sandy SILT/silty SAND with trace clay (completely weathered bedrock).		S-6		▲	24	
25							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- ⊗ No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit (0, 10, 20, 30, 40, 50)

Zipper Zeman Associates, Inc. **Geotechnical & Environmental Consultants**	**BORING LOG**	**Figure A-15**
	Date Drilled: 3/12/02-3/13/02	**Logged By: EL**

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-15 | **PAGE 2 OF 2**

Location: Oregon City, Oregon | **Approximate Elevation:** 422 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	Dense, moist, red with gray and black, silty SAND with trace clay (highly to completely weathered bedrock).		S-7		▲	32	
30	Dense, moist, gray, friable, residual silty SAND with trace clay (moderately to highly weathered bedrock).		S-8		▲	43	
35	Medium dense, moist, gray, friable, residual silty SAND with trace clay (moderately to highly weathered bedrock).		S-9		▲	27	
40	Very dense, moist, gray, friable, residual silty SAND with trace clay (moderately to highly weathered bedrock).		S-10		▲	50/5"	
	Drilling terminated on bedrock at 41.5 feet. No groundwater observed at time of drilling.						
45							
50							

0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- ⊗ No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-15
	Date Drilled: 3/12/02-3/13/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-16 | **PAGE 1 OF 3**

Location: Oregon City, Oregon | **Approximate Elevation:** 430 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	Blackberry bushes, junk, asphalt debris over soft, moist, red, sandy silty CLAY (fill).						
	Medium stiff, moist, red, residual sandy SILTwith some clay (fill).	I	S-1		▲	5	
5	Soft, moist, red, residual sandy silty CLAY/clayey SILT (fill).	I	S-2		▲	3	
	Soft, moist, red, residual sandy silty CLAY (fill).	I	S-3		▲	3	
10	Soft, wet, dark gray-brown, clayey SILT with small pieces of rubber and glass (relic topsoil).						
	Med. dense, moist, tan, residual, silty SAND with trace clay	I	S-4		▲	5	
	Medium stiff, moist to wet, red, residual silty CLAY (completely weathered bedrock).						
15	Hard, moist, red, gray, and black, friable, residual sandy SILT/silty SAND with trace clay (highly weathered bedrock).	I	S-5		▲	50/5"	
	Very dense, damp, gray, fine to coarse SAND (moderately weathered bedrock). Rough/difficult drilling action.						
20	No recovery.	⊗	S-6		▲	15	
25							

0 10 20 30 40 50

Explanation

- I — 2-inch O.D. split spoon sample
- II — 3-inch I.D Shelby tube sample
- ⊗ — No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-16
	Date Drilled: 3/8/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-16 | **PAGE 2 OF 3**

Location: Oregon City, Oregon | **Approximate Elevation:** 430 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	Medium dense, moist, gray, friable, residual silty fine to coarse SAND (moderately weathered bedrock).	I	S-7			25	
	Medium dense, wet, red and gray, friable, residual silty SAND with trace to some clay (highly weathered bedrock).						
30	No recovery. Switch to coring - see next sheet.	I	S-8			50/1"	
35							
40							
45							
50							

Explanation

- I — 2-inch O.D. split spoon sample
- II — 3-inch I.D Shelby tube sample
- ⊗ — No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-16
	Date Drilled: 3/8/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-16 | **PAGE 3 OF 3**

Location: Oregon City, Oregon | **Approximate Elevation:** 430 feet

Depth (ft)	Fracture: Profile	Fracture: Infilling	Fracture: Inclination	Rock Description	Time	Core Run	RQD (%)	Recovery (%)	Comments
				Coring initiated at 29.5 feet.					
30				Gray, fresh, widely fractured, strong, basaltic ANDESITE.	11:00 11:15	1	100	100	
			70°	Gray with red discoloration, moderately weathered, closely fractured, weak, basaltic ANDESITE.	11:36 12:00	2	33	100	
35									
			70°	Gray with red discoloration, slightly weathered, moderately to widely fractured, moderately strong, basaltic ANDESITE.	12:45	3	43	100	
40				Gray, fresh, moderately fractured, strong, basaltic ANDESITE.					
				Gray, fresh, moderately fractured, strong, basaltic ANDESITE.	13:30	4	98	100	
45				Gray, slightly weathered, closely fractured, moderately strong, basaltic ANDESITE.					
				Coring terminated at 45.5 feet.					
50									
55									

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	CORING LOG	Figure A-16
	Date Drilled: 3/8/02	Logged By: EL

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-17	PAGE 1 OF 1
Location: Oregon City, Oregon	Approximate Elevation: 431 feet		

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (Standard ▲, Other △; Blows per foot; 0 10 20 30 40 50)	N-values	Testing
	Junk and asphalt debris over soft, wet, red, silty CLAY with some fine sand (probable fill).						
	Soft, wet, red, silty CLAY/clayey SILT with some fine sand (probable fill).		S-1			2	
5	Soft to medium stiff, wet, red, silty CLAY/clayey SILT with some fine sand (probable fill).		S-2			4	
	Soft to medium stiff, wet, red, silty CLAY with some fine sand (probable fill).		S-3			4	
10	Very soft, wet, brown, silty CLAY (probable relic topsoil).		S-4			6	ATT
	Medium stiff, moist, red, gray-brown, and black, friable, residual silty clayey SAND (completely weathered bedrock).						
15	Medium stiff, moist, red, gray-brown, and black, friable, residual silty clayey SAND (completely weathered bedrock).		S-5			9	
20	Medium stiff, moist, red, gray-brown, and black, friable, residual silty SAND with trace clay (highly weathered bedrock).		S-6			50/5"	
	Very dense, moist, gray with red discoloration, slighlty to moderately weathered, basaltic ANDESITE (bedrock).						
25	Refusal on bedrock at 24.75 feet. No groundwater observed at time of drilling.					50/3"	

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-17
	Date Drilled: 3/11/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-18 | **PAGE** 1 OF 2

Location: Oregon City, Oregon | **Approximate Elevation:** 432 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	Junk debris over soft, wet, red, silty CLAY with some fine sand (probable fill).						
	Soft, wet, red, silty CLAY with some sand and gravel (probable fill).	I	S-1		▲	3	
5	Soft, wet, red, silty CLAY with some sand and gravel (probable fill).	I	S-2		▲	2	
	Soft, wet, brown, silty CLAY with fine woody debris (relic topsoil).	I	S-3		▲	8	
10	Very stiff, moist, red, gray, and black, friable, residual silty SAND with trace to some clay (highly to completely weathered bedrock).	I	S-4		▲	21	
15	Very stiff, moist, red, gray, and black, friable, residual silty SAND with trace clay (highly weathered bedrock).	I	S-5		▲	50/4"	
	Drilling terminated at 16 feet. Start of coring - see next sheet.						
20							
25							

Explanation

- I — 2-inch O.D. split spoon sample
- II — 3-inch I.D Shelby tube sample
- ⊗ — No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-18
	Date Drilled: 3/11/02	Logged By: EL

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-18	PAGE 2 OF 2
Location: Oregon City, Oregon	Approximate Elevation: 432 feet		

Depth (ft)	Fracture: Profile	Fracture: Infilling	Fracture: Inclination	Rock Description	Time	Core Run	RQD (%)	Recovery (%)	Comments
				Coring initiated at 16 feet.					
20				Gray with red discoloration, moderately weathered, closely to moderately fractured, weak to moderately strong, basaltic ANDESITE.	13:45 14:00	1	42	100	
25				Gray, slightly weathered, moderately fractured, strong, basaltic ANDESITE. Gray with red discoloration, moderately weathered, very closely fractured, weak, basaltic ANDESITE.	14:55 15:15	2	43	90	
30				Gray with red discoloration, moderately weathered, very closely fractured, friable to weak, basaltic ANDESITE. Gray, fresh, moderately to widely fractured, strong, basaltic ANDESITE.	15:32	3	28	100	Loss of circulation.
35			45°	Gray, fresh to slightly weathered, moderately fractured, strong, basaltic ANDESITE.	15:32 ~15:45	4	100	100	
40			45°	Gray, fresh, widely fractured, strong, basaltic ANDESITE.	~16:00 16:11	5	100	100	
45				Coring terminated at 41 feet.					

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	CORING LOG	Figure A-18
	Date Drilled: 3/11/02	Logged By: EL

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-19	PAGE 1 OF 2
Location: Oregon City, Oregon	Approximate Elevation: 431 feet		

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot; 0 10 20 30 40 50)	N-values	Testing
	Blackberry bushes over soft, wet, red, silty CLAY with some sand (probable fill).						
	Medium stiff, wet, red, silty CLAY with some sand (probable fill).		S-1			5	ATT
5	Soft, wet, red, silty CLAY with some sand (probable fill).		S-2			3	
	Medium stiff, wet, red, silty CLAY with some sand (probable fill).		S-3			3	
10	Very soft, wet, brown, organic silty CLAY (relic topsoil).						
	Medium stiff, moist to wet, red, residual silty CLAY (completely weathered bedrock).		S-4			8	
15	Dense, moist, gray and red, friable, residual silty SAND (highly to moderately weathered bedrock).		S-5			42	
20	Medium dense, moist, gray and red, friable, residual silty SAND (highly to moderately weathered bedrock).		S-6			20	
25							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

0 10 20 30 40 50

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-19
	Date Drilled: 3/12/02	Logged By: EL

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-19	PAGE 2 OF 2
Location: Oregon City, Oregon	Approximate Elevation: 431 feet		

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0 10 20 30 40)	N-values	Testing
	Very dense, moist, gray, slightly weathered ANDESITE bedrock.	I	S-7		▲ 50/1"		
	Drilling terminated at 26 feet. No groundwater observed at time of drilling.						
30							
35							
40							
45							
50							

Explanation

- I — 2-inch O.D. split spoon sample
- II — 3-inch I.D Shelby tube sample
- ⊗ — No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

0 10 20 30 40 50

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-19
	Date Drilled: 3/12/02	Logged By: EL

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-20	PAGE 1 OF 2
Location: Oregon City, Oregon	Approximate Elevation: 429 feet		

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	N-values	Testing
	Soft, wet, red, sandy silty CLAY (probable fill).					
	Medium stiff, wet, red, sandy silty CLAY (probable fill).		S-1		6	
5	Very loose, wet, red, silty SAND with some clay and gravel (probable fill).		S-2		4	GS
	Very soft, wet, red, sandy silty CLAY (probable fill).		S-3		1	
	Very soft, wet, brown, organic SILT (relic topsoil).					
10	Very soft, wet, brown, organic SILT (relic topsoil).		S-4		8	
	Medium stiff, moist to wet, red, residual silty CLAY with some sand (completely weathered bedrock).					
15	Very stiff, moist, gray, red, and black, friable, residual silty SAND with trace clay (highly weathered bedrock).		S-5		18	
	Drilling terminated at 18 feet. Start of coring - see next sheet.		S-6		50/1"	
20						
25						

Penetration Resistance: ▲ Standard, △ Other; Blows per foot: 0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- ⊗ No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-20
	Date Drilled: 3/12/02	Logged By: EL

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-20	PAGE 2 OF 2
Location: Oregon City, Oregon	Approximate Elevation: 429 feet		

Depth (ft)	Fracture: Profile	Fracture: Infilling	Fracture: Inclination	Rock Description	Time	Core Run	RQD (%)	Recovery (%)	Comments
				Coring initiated at 18 feet.					
20				Gray, fresh, widely fractured, basaltic ANDESITE.	11:45 11:50	1	100	100	
25		Red clay		Gray with red discoloration, moderately to highly weathered, very closely fractured, friable to weak, basaltic ANDESITE. Gray, fresh, moderately fractured, strong, basaltic ANDESITE.	12:05	2	18	60	Loss of circulation.
30		Red clay		Gray with red discoloration, moderately to highly weathered, very closely fractured, friable to weak, basaltic ANDESITE.	13:12	3	18	80	Loss of circulation.
35		Red clay		Gray with red discoloration, moderately to highly weathered, very closely fractured, weak to moderately strong, basaltic ANDESITE.	13:30	4	25	90	Intermittent loss of circulation.
40		Red clay		Gray with red and black discoloration, moderately to highly weathered, closely fractured, weak, basaltic ANDESITE.	13:50	5	20	100	
45		Red clay		Gray with red discoloration, moderately to highly weathered, closely fractured, weak, basaltic ANDESITE. Gray with slight red discoloration, slightly weathered, moderately fractured, moderately strong, basaltic ANDESITE.		6	22	100	Loss of circulation.

Coring terminated at 45 feet.

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	CORING LOG	Figure A-20
	Date Drilled: 3/12/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-21 | **PAGE** 1 OF 1

Location: Oregon City, Oregon | **Approximate Elevation:** 442 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	Sod over soft, wet, brown, silty CLAY with some fine sand.						
	Soft, wet, brown with red-orange and black specks, residual silty CLAY with some sand.	I	S-1		▲	2	
5	Medium stiff, wet, orange, gray, and brown, residual silty CLAY/clayey SILT with some sand.	I	S-2		▲	5	
	Stiff, wet, orange, gray, and brown, silty CLAY/clayey SILTwith some sand.	I	S-3		▲	13	
10	Medium stiff, wet, orange, gray, and brown, residual sandy SILT with clay stringers.	I	S-4		▲	5	
	Drilling terminated at 11.5 feet. No groundwater observed at time of drilling.						
15							
20							
25							

0 10 20 30 40 50

Explanation

- I — 2-inch O.D. split spoon sample
- II — 3-inch I.D Shelby tube sample
- ⊗ — No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-21
	Date Drilled: 3/7/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-22 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 451 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	Sod over soft, wet, brown, silty CLAY with some sand.						
	Medium stiff, wet, red, residual silty CLAY with some sand.		S-1			6	
5	Stiff to very stiff, moist, red, friable, residual silty SAND/sandy SILT with trace to some clay.		S-2			18	
	Stiff, moist to wet, red and gray, friable, residual silty SAND/sandy SILT with trace to some clay.		S-3			9	
10	Stiff, moist to wet, red and gray, friable, residual silty SAND/sandy SILT with trace to some clay.		S-4			9	
15	Stiff, moist to wet, red and gray, friable, residual silty SAND/sandy SILT with trace to some clay.		S-5			11	
20	Stiff, saturated, red and gray, friable, residual silty SAND/sandy SILT with trace clay.		S-6	▼ ATD		13	
	Drilling terminated at 21.5 feet. Groundwater observed at approximately 20 feet at time of drilling.						
25							

Explanation

- I — 2-inch O.D. split spoon sample
- II — 3-inch I.D Shelby tube sample
- ⊗ — No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content (0, 10, 20, 30, 40, 50)

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-22
	Date Drilled: 3/7/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-23 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 456 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	3" asphalt and 6" crushed rock over medium stiff, moist, red, silty CLAY.						
	Medium stiff, moist, red, residual silty CLAY with some sand.		S-1		▲	7	
5	Very stiff, moist, red, residual silty CLAY with some sand.		S-2		▲	17	
	Medium stiff to stiff, moist to wet, red and gray, friable, residual sandy SILT with trace to some clay.		S-3		▲	8	
10	Stiff, moist to wet, red and gray, friable, residual clayey silt with some sand.		S-4		▲	11	
15	Stiff, moist to wet, red and gray, friable, residual sandy SILT with trace clay.		S-5		▲	12	
	Drilling terminated at 16.5 feet. No groundwater observed at time of drilling.						
20							
25							

0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- ⊗ No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-23
	Date Drilled: 3/7/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-24 | **PAGE** 1 OF 1

Location: Oregon City, Oregon | **Approximate Elevation:** 427 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	1" crushed rock over medium stiff, moist, dark brown, SILT with fine woody debris (fill).						
5	Medium stiff, moist, dark brown, clayey SILT with fine woody debris (fill),		S-1		▲	7	
10	Medium stiff, moist, dark brown, clayey SILT with fine woody debris (fill),		S-2		▲	5	
15	Soft, wet, dark brown, clayey SILT with fine woody debris (probable fill, possible relic topsoil),		S-3		▲	3	
	Drilling terminated at 16.5 feet. No groundwater observed at time of drilling.						
20							
25							

0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- ⊗ No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-24
	Date Drilled: 3/14/02	Logged By: EL

PROJECT: Proposed Retail Development - Phase II ESA | **JOB NO.** J-1200-02 | **BORING** MW-1 | **PAGE** 1 OF 1

Location: Oregon City, Oregon | **Approximate Elevation:** 443 feet +/-

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (Standard ▲ / Other △; Blows per foot)	N-values	Testing
	Grass and debris over medium dense, damp, brown-gray, sandy silty GRAVEL. (FILL)		S-1			25	
			S-2			9	
5	Loose, damp to wet, orange-brown, SILT with trace fine sand and occasional volcanic cinders.		S-3			8	
			S-4	11/2/01 15:32		14	
10			S-5			17	
	Medium dense grading to dense, damp to moist, orange-brown, SILT with fine sand. (Severely weathered, highly fractured, gray basaltic andesite.)			ATD			
15			S-6			17	
20	Monitoring well completed at 20.0 feet on 10/30/01. Wells included above-ground monuments and protective bollards. Groundwater encountered at 14 feet bgs at time of drilling, later measured at 8 feet bgs at time of development.					50/1"	
25							

Penetration Resistance axis: 0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- 2" Sch. 40 PVC
- Bentonite
- Concrete
- 10-slot screened casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 10/30/01	Logged By: MJB

PROJECT: Proposed Retail Development - Phase II ESA | **JOB NO.** J-1200-02 | **BORING** MW-2 | **PAGE** 1 OF 2

Location: Oregon City, Oregon | **Approximate Elevation:** 438 feet +/-

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (Standard ▲ / Other △; Blows per foot; 0 10 20 30 40 50)	N-values	Testing
	Asphalt surfacing.						
	Dense, damp to moist, gray to dark gray, sandy silty GRAVEL with occasional asphalt. (FILL)		S-1			44	
5			S-2			8	
			S-3			11	
10	Medium stiff to stiff, damp to moist, orange-brown grading to red-brown, SILT with trace fine sand and clay.		S-4			6	
			S-5			42	
15							
20	Dense to very dense, damp to moist, orange to red-brown, SILT with fine sand. (Severely weathered, highly fractured, gray basaltic andesite.)		S-6			54	
25							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- 2" Sch. 40 PVC
- Bentonite
- Concrete
- 10-slot screened casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-2
	Date Drilled: 10/30/01	Logged By: MJB

PROJECT: Proposed Retail Development - Phase II ESA **JOB NO.** J-1200-02 **BORING MW-2** **PAGE 2 OF 2**

Location: Oregon City, Oregon **Approximate Elevation:** 438 feet +/-

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot)	N-values	Testing
	Very dense, damp to moist, orange to red-brown, SILT with fine sand. (Severely weathered, highly fractured, gray basaltic andesite.)	I	S-7			61	
	Boring completed at 26.5 feet on 10/30/01, Monitoring well installed from 25 feet bgs. Wells included above-ground monuments and protective bollards. No groundwater encountered at time of drilling or at time of development, 16:31 on 11/2/01.						
30							
35							
40							
45							
50							

Penetration Resistance scale: 0 10 20 30 40 50

Explanation

- I — 2-inch O.D. split spoon sample
- II — 3-inch I.D Shelby tube sample
- ⊗ — No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- 2" Sch. 40 PVC
- Bentonite
- Concrete
- 10-slot screened casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-2
	Date Drilled: 10/30/01	Logged By: MJB

PROJECT: Proposed Retail Development - Phase II ESA | **JOB NO.** J-1200-02 | **BORING** MW-3 | **PAGE** 1 OF 1

Location: Oregon City, Oregon | **Approximate Elevation:** 450 feet +/-

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (Standard ▲, Other △; Blows per foot: 0 10 20 30 40 50)	N-values	Testing
5	2-inches asphalt over loose to medium dense, damp to wet, orange-brown, SILT with trace fine sand and occasional volcanic cinders.		S-1			7	
			S-2			16	
			S-3			10	
			S-4			10	
10	Loose grading to dense, damp to moist, orange-brown, SILT with fine sand. (Severely weathered, highly fractured, gray basaltic andesite.)		S-5			9	
15			S-6	ATD 11/2/01 15:43		9	
20			S-7			36	
25	Monitoring well completed at 20.0 feet on 10/30/01. Wells included above-ground monuments and protective bollards. Groundwater encountered at 16 feet bgs at time of drilling, later measured at 17.5 feet bgs at time of development.						

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- 2" Sch. 40 PVC
- Bentonite
- Concrete
- 10-slot screened casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-3
	Date Drilled: 10/31/01	Logged By: MJB

PROJECT: Proposed Retail Development - Phase II ESA | **JOB NO.** J-1200-02 | **BORING** MW-4 | **PAGE** 1 OF 1

Location: Oregon City, Oregon | **Approximate Elevation:** 445 feet +/-

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (Standard ▲ / Other △; Blows per foot)	N-values	Testing
5	Grass over loose, damp to wet, orange-brown, SILT with trace fine sand, occasional gravel and pieces of visqueen. (FILL)		S-1			8	
			S-2			8	
			S-3			7	
10			S-4	11/2/01 13:50		4	
15	Dense, damp to moist, orange-brown, SILT with fine sand. (Severely weathered, highly fractured, gray basaltic andesite.)		S-5	ATD		36	
20	Very dense, wet, gray, moderately to severely weathered, highly fractured,basaltic andesite.		S-6			50/5"	
25	Monitoring well completed at 19.5 feet on 10/30/01 due to drilling refusal. Wells included above-ground monuments and protective bollards. Groundwater encountered at 15 feet bgs at time of drilling, later measured at 11.2 feet bgs at time of development.						

Penetration Resistance axis: 0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- 2" Sch. 40 PVC
- Bentonite
- Concrete
- 10-slot screened casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-4
	Date Drilled: 10/31/01	Logged By: MJB

PROJECT: Proposed Retail Development - Phase II ESA **JOB NO.** J-1200-02 **BORING MW-5** **PAGE 1 OF 1**

Location: Oregon City, Oregon **Approximate Elevation:** 445 feet +/-

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot)	N-values	Testing
	Grass over loose, damp to moist, brown, sandy gravelly SILT. (FILL)		S-1			16	
5	Medium dense, damp to wet, orange-brown, SILT with trace fine sand and occasional angular pieces of gray, severely weathered, highly fractured basaltic andesite.		S-2			13	
			S-3			20	
10			S-4	11/2/01 12:49 ATD		14	
15	Medium dense, damp to moist, orange-brown, SILT with fine sand. (Severely weathered, highly fractured, gray basaltic andesite.)		S-5			17	
20	Very dense, wet, gray, moderately to severely weathered, highly fractured,basaltic andesite.		S-6			50/6"	
25	Monitoring well completed at 20.0 feet on 10/30/01 due to drilling refusal. Wells included above-ground monuments and protective bollards. Groundwater encountered at 15 feet bgs at time of drilling, later measured at 11.2 feet bgs at time of development.						

Penetration Resistance axis: 0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- 2" Sch. 40 PVC
- Bentonite
- Concrete
- 10-slot screened casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-5
	Date Drilled: 10/31/01	Logged By: MJB

Test Pit TP-1
Approximate ground surface elevation: 425 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Duff over soft, damp, brown, SILT with trace fine sand. (Topsoil) Sparse fine roots to 1.2 feet and sparse medium roots to 2 feet.	S-1@0.5' MC=24%
1.0-3.0	Soft grading to stiff, damp, orange-brown, SILT with trace clay and trace to some 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, rounded, basaltic andesite cobbles.	S-2@2' MC=16%
3.0-10.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp to moist, reddish orange-brown sandy silt with trace clay.	
	Test pit completed at 10.0 feet on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-2
Approximate ground surface elevation: 435 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.8	Duff over soft, damp to moist, dark brown, SILT with trace fine sand and occasional fine gravel. (Topsoil) Sparse fine roots to one foot and sparse medium to large roots to 2 ½ feet. Pocket penetrometer at 0.5 feet = 1.75 tons per square foot (tsf.)	
0.8-3.0	Soft grading to stiff, damp, orange-brown, SILT with trace clay, fine sand, and trace to some 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, rounded, basaltic andesite boulders. Pocket penetrometer at 1.5 feet > 4.5 tsf.	S-1@1.5'
3.0-7.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish orange-brown silt with trace clay to silty SAND. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-2@3.5' MC=31%
	Digging refusal at 7.0 feet on a boulder on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-3
Approximate ground surface elevation: 440 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Duff over soft, moist to wet, dark brown, SILT with trace fine sand and occasional gray, moderately weathered, round, basaltic andesite boulders. (Topsoil) Sparse fine to medium roots to 1.2 feet.	S-1@0.5' S-2@1.0' MC=41%
1.0-2.5	Soft grading to stiff, damp to moist, orange-brown, SILT with trace clay and trace to some 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Pocket penetrometer at 2.0 feet = 2.75 tsf.	S-3@2.0' MC=25%
2.5-11.5	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish orange-brown sandy silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-4@10.5' MC=44%
	Test pit terminated at 11.5 feet on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-4
Approximate ground surface elevation: 440 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.3	Duff over soft, damp to moist, dark brown, SILT with trace fine sand (Topsoil.) Moderate to dense fine roots to 1.2 feet and sparse medium roots to 1.2 feet.	S-1@1.0' MC=36%
1.3-3.0	Medium stiff, damp to moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Pocket penetrometer at 2.5 feet = 1.5 tsf.	S-2@2.5' MC=24%
3.0-11.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown silt with trace clay.	S-3@6.0' MC=53%
	Test pit terminated at 11.0 feet on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-5
Approximate ground surface elevation: 441 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.7	Duff over soft, moist to wet, dark brown, SILT with trace fine sand (Topsoil) Moderate to dense fine roots to 1.0 feet and sparse medium roots to 1.2 feet.	S-1@0.5’
0.7-3.5	Medium stiff, damp to moist, orange-brown, sandy SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Pocket penetrometer at 3 feet > 4.5 tsf.	
3.5-7.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown sandy silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite boulders.	S-2@7.0’
	Test pit terminated at 7.0 feet on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-6
Approximate ground surface elevation: 442 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.7	Duff over soft, moist, dark brown, SILT with trace fine sand. (Topsoil) Moderate to dense fine roots to 0.8 feet and sparse medium roots to 1.2 feet.	
0.7-3.5	Medium stiff, damp to moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Pocket penetrometer at 3 feet = 2.0 to 2.5 tsf.	S-1@1.0’ S-2 @3.0’
3.5-10.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay.	S-3@5.5’
	Test pit terminated at 10.0 feet on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-7
Approximate ground surface elevation: 443 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Short to medium length grass and blackberry vines over soft, moist to wet, dark brown, SILT with trace fine sand and occasional pockets of 3/8" minus crushed rock (Topsoil/FILL) Moderate to dense fine roots to medium roots to 1.2 feet.	S-1@0.5' MC=30%
1.0-3.5	Medium stiff, damp to moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Pocket penetrometer at 2.0 feet = 3.75 tsf.	S-2@2.0' MC=21%
3.5-10.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown silt with trace clay. Occasional dark gray, subangular, slightly weathered, basalt with visible vesicles.	S-3@10.0' MC=56%
	Test pit terminated at 10.0 feet on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-8
Approximate ground surface elevation: 443 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.2	Grass over soft, moist to wet, dark brown, sandy, gravelly SILT (Topsoil/FILL) Dense fine roots to 1.0 feet.	S-1@1.0'
1.2-4.0	Medium stiff, damp to moist, orange-brown, SILT with trace clay and trace to some 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, round, basaltic andesite boulders. Pocket penetrometer at 3.0 feet > 4.5 tsf.	
4.0-11.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	S-2@10.5'
	Test pit terminated at 11.0 feet on 11/1/01. Slight groundwater seepage observed at 11.0 feet. No caving observed.	

Test Pit TP-9
Approximate ground surface elevation: 444 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.7	Short grass and blackberry vines over soft, moist to wet, brown, gravelly SILT with trace fine sand. (Topsoil/FILL) Moderate to dense fine to medium roots to 1.0 feet.	S-1@0.5’
0.7-6.0	Medium stiff, damp to moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
6.0-10.5	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay.	
	Test pit terminated at 10.5 feet on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-10
Approximate ground surface elevation: 444 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Blackberry vines over soft, moist to wet, brown, SILT with trace fine sand. (Topsoil) Moderate to dense fine to medium roots to 1.2 feet.	S-1@1.0’ MC=28%
1.0-3.0	Soft grading to stiff, damp to moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
3.0-11.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay.	S-2@5.0’ MC=20%
	Test pit terminated at 11.0 feet on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-11
Approximate ground surface elevation: 444 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Blackberry vines over soft, moist to wet, dark brown, SILT with occasional gravel. (Topsoil) Moderate to dense fine to medium roots to 1.8 feet.	S-1@0.5 MC=32%
1.0-3.0	Medium stiff, damp to moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2@2.0' MC=29% S-3@5.0' MC=44%
3.0-11.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders. Test pit terminated at 11.0 feet on 11/1/01. No groundwater seepage observed. No caving observed.	S-4@9.0' MC=59%

Test Pit TP-12
Approximate ground surface elevation: 444 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.5	Short grass and blackberry vines over soft, moist to wet, brown, gravelly SILT with trace fine sand. (Topsoil/FILL) Moderate fine to medium roots to 0.9 feet.	S-1@1.0'
1.5-3.5	Soft grading to stiff, damp to moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Pocket penetrometer at 2.0 feet = 1.75 tsf. Pocket penetrometer at 3.0 feet > 4.5 tsf.	
3.5-9.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders. Test pit terminated at 9.0 feet on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-13
Approximate ground surface elevation: 445 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.5	Short grass and blackberry vines over soft, wet, brown, SILT with trace to some sand. (Topsoil) Moderate fine to medium roots to 1.5 feet.	S-1@0.3' MC=24%
0.5-3.0	Medium stiff grading to stiff, moist to wet, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2@2.0'
3.0-6.0	Medium dense grading to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	
	Test pit terminated at 6.0 feet on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-14
Approximate ground surface elevation: 447 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.5	Short grass and blackberry vines over soft, wet, brown, SILT with trace to some sand. (Topsoil) Moderate fine roots to 1.0 feet.	S-1@0.3'
0.5-4.0	Medium stiff to stiff, moist to wet, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2@3.0'
4.0-5.5	Medium dense grading to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	
	Test pit terminated at 5.5 feet on 11/2/01 due to equipment failure. No groundwater seepage observed. No caving observed.	

Test Pit TP-15
Approximate ground surface elevation: 447 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.5	Grass over soft, damp to moist, brown, SILT with SILT and occasional gravel. (Topsoil) Moderate fine roots to 2.0 feet.	S-1@1.0' MC=27%
1.5-7.0	Medium stiff to stiff, damp to moist, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
7.0-10.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown sandy silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	S-2@9.0' MC=59%
	Test pit terminated at 10.5 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-16
Approximate ground surface elevation: 446 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Grass and blackberry vines over soft, damp, brown, SILT with trace fine sand. (Topsoil) Moderate to dense fine roots to 1.0 feet.	S-1@0.5'
1.0-4.0	Medium stiff to stiff, damp to moist, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
4.0-7.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown sandy silt with trace clay.	S-2@6.0'
7.0-10.0	Medium dense to very dense, dark gray, moderately weathered, subangular to rounded, poorly sorted, vesicular basalt clasts in a matrix of medium stiff to stiff, damp, red silt with trace clay.	
	Test pit terminated at 10.0 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-17
Approximate ground surface elevation: 447 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.7	Grass and blackberry vines over soft, damp, brown, SILT with trace fine sand. (Topsoil) Moderate to dense fine roots to 1.0 feet.	S-1@0.5' MC=26% S-2@1.0' MC=26%
1.7-3.0	Medium stiff, damp to moist, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-3@2.5' MC=21%
3.0-7.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay.	S-4@5.5' MC=26%
7.0-10.5	Medium dense to very dense, dark gray, moderately weathered, subangular to rounded, poorly sorted, vesicular basalt clasts in a matrix of medium stiff to stiff, damp, red silt with trace clay.	S-5@9.5' MC=55%

Test pit terminated at 10.5 feet on 11/3/01.
No groundwater seepage observed.
No caving observed.

Test Pit TP-18
Approximate ground surface elevation: 405 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Soft, wet, dark brown, SILT with some gravel, organic debris and roots. (Topsoil)	
1.0-7.0	Very dense, moderately weathered, sub-rounded basaltic andesite boulders in matrix of medium dense, moist, orange-gray, silty SAND to sandy SILT.	

Test pit completed at 7.0 on feet on 11/2/01 with refusal on boulder.
No groundwater seepage observed.
No caving observed.

Test Pit TP-19
Approximate ground surface elevation: 402 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.8	Soft, wet, dark brown, SILT with some clay and sand, organic debris and roots. (Topsoil)	
0.8-2.5	Loose to medium dense, moist, orange-gray, silty SAND to sandy SILT with occasional cobbles and boulders of severely weathered basalt.	S-1@2’
2.5-7.5	Very dense basaltic andesite boulders from 2 to 8 feet in diameter in a medium stiff, sandy SILT matrix.	
	Test pit completed at 7.5 feet on 11/2/01 with refusal on boulder. No groundwater seepage observed. No caving observed.	

Test Pit TP-20
Approximate ground surface elevation: 448 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.8	Grass over soft, damp, brown, SILT with trace fine sand. (Topsoil) Moderate fine roots to 0.8 feet, sparse medium roots to 1.2 feet.	
0.8-2.5	Medium stiff, damp to moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-1@1.5’ MC=28%
2.5-10.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional, gray, moderately weathered, round basaltic andesite cobbles and boulders.	S-2@4.0’ MC=56%
	Test pit terminated at 10.0 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-21
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.3	Grass and blackberry vines over soft, damp, brown, SILT with trace fine sand. (Topsoil) Moderate fine to medium roots to 1.5 feet.	S-1@0.5’
1.3-9.5	Medium stiff to stiff, damp to moist, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2@2.0’
9.5-10.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	
	Test pit terminated at 10.5 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-22
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Grass and blackberry vines over soft, damp, brown, SILT with trace fine sand. (Topsoil) Moderate fine and medium roots to 1.0 feet.	
1.0-6.5	Medium stiff to stiff, damp to moist, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	
6.5-10.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	
	Test pit terminated at 10.0 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-23
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.7	Wood debris and blackberry vines over soft, damp, brown, SILT with trace fine sand. (Topsoil) Moderate fine and medium roots to 1.0 feet.	S-1@0.5' MC=25%
0.7-6.5	Medium stiff to stiff, damp to moist, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Pocket penetrometer at 2.0 feet = 1.75 tsf. Pocket penetrometer at 3.5 feet = 3.0 to >4.5 tsf.	S-2@1.5' MC=26%
6.5-7.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay.	
	Test pit terminated at 7.5 feet due to space constraints on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-24
Approximate ground surface elevation: 448 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.8	Metal debris over soft, damp, brown, blocky, SILT with trace fine sand. (Fill) Trace fine roots to 0.7 feet.	S-1@0.5' S-2@1.0'
0.8-1.5	Soft to medium stiff, moist, brown, SILT with trace clay. (FILL)	
1.5-3.5	Soft to medium stiff to stiff, moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-3@2.5'
3.5-4.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay.	
	Test pit terminated at 4.0 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-25
Approximate ground surface elevation: 448 Feet

Depth (feet)	Material Description	Sample No.
0.0-4.5	Wrecking yard debris over soft to medium stiff, damp, brown, SILT with occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite and wrecking yard debris. (Fill) Trace fine to medium roots to 1.0 feet.	S-1@0.5' S-2@2.0'
4.5-7.5	Medium stiff to stiff, moist, orange-brown, sandy SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
7.5-10.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-3@10.5'
	Test pit terminated at 10.5 feet on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-26
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.4	1-inch of asphalt over 3-inches of 5/8" minus crushed rock base.	S-1@0.5' MC=26%
0.4–1.1	Soft to medium stiff, damp to moist, brown, SILT with trace fine sand and occasional gravel (Topsoil prior to paving.) Trace fine to medium roots to 0.6 feet. Pocket penetrometer at 1.0 feet > 1.5 tsf.	S-2@1.0' MC=27%
1.1-4.5	Medium stiff to stiff, damp to moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders. Pocket penetrometer at 2.5 feet = A.5 tsf.	S-3@2.5' MC=37%
4.5-11.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay to silty SAND.	S-4@10.5' MC=46%
	Test pit terminated at 11.0 feet on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-27
Approximate ground surface elevation: 451 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.6	Grass over loose, damp to wet, brown silty GRAVEL and wrecking yard debris. (FILL). Trace fine to medium roots to 1.6 feet.	S-1@0.5’
0.6–1.3	Soft to medium stiff, damp, brown, SILT with trace fine sand and occasional gravel (Relic topsoil)	
1.3-3.0	Medium stiff to stiff, moist, orange-brown, sandy SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2@1.5’
3.0-10.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	
	Test pit terminated at 10.5 feet on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-28
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.8	Blackberry vines over loose, damp to wet, brown silty GRAVEL and wrecking yard debris. (FILL) Trace fine to medium roots to 1.5 feet.	S-1@0.5' MC=16%
0.8–1.5	Soft to medium stiff, damp to moist, dark brown, SILT with trace fine sand and occasional gravel. (Relic topsoil)	S-2@1.0' MC=32%
1.3-3.2	Medium stiff to stiff, moist, orange-brown grading to reddish-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-3@2.5' MC=31%
3.2-8.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite and boulders.	S-4@6.0' MC=57%
	Test pit terminated at 8.5 feet on a boulder on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-29
Approximate ground surface elevation: 449 Feet

Depth (feet)	Material Description	Sample No.
0.0-4.0	Grass over soft to medium stiff, damp to moist, brown, SILT with gravel and occasional asphalt debris. (Fill) Dense fine roots to 0.5 feet.	S-1@1.5'
4.0-7.5	Medium stiff to stiff, moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2@5.0'
7.5-11.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	
	Test pit terminated at 11.0 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-30
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.8	Grass and gravel over soft to medium stiff, damp to moist, brown, SILT with gravel and occasional asphalt debris. (FILL) Moderate fine roots to 0.3 feet. Occasional gray, moderately weathered, round, basaltic andesite boulders.	S-1@1.0’
1.8-6.0	Medium stiff to stiff, moist, orange-brown grading to red-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
6.0-11.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	
	Test pit terminated at 11.5 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-31
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-5.0	Grass and gravel over soft to medium stiff, damp to moist, brown, SILT with gravel and occasional asphalt debris. (FILL) Moderate fine roots to 1.1 feet.	
5.0-9.5	Medium stiff to stiff, moist, orange-brown grading to red-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-1@6.0’ MC=25%
9.5-11.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-2@11.0’ MC=53%
	Test pit terminated at 11.0 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-32
Approximate ground surface elevation: 451 Feet

Depth (feet)	Material Description	Sample No.
0.0–1.0	Blackberry vines over loose, damp to moist, dark brown, SILT with gravel and occasional metal debris. (Topsoil/FILL) Moderate fine to medium roots to 1.2'.	S-1@0.5' MC=11%
1.0-1.7	Soft to medium stiff, damp, light brown, SILT with trace sand and occasional gravel and metal debris. (FILL)	S-2@1.3' MC=25%
1.7-3.0	Medium stiff, damp, light brown, SILT with occasional asphalt and metal debris. (FILL)	S-3@2.5' MC=20%
3.0-4.7	Medium stiff, damp, reddish-brown, SILT with occasional fine to medium roots.	
4.7-9.0	Medium stiff to stiff, moist, orange-brown grading to reddish-brown, sandy SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-4@7.5' MC=27%
9.0-11.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-5@9.5'

Test pit terminated at 11.0 feet on 11/2/01.
No groundwater seepage observed.
No caving observed.
Fill was from Molalla Avenue cut, approximately 50 years ago, according to Rocky Younger, property owner.

Test Pit TP-33
Approximate ground surface elevation: 451 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Short grass, blackberry vines, and metal debris over soft, damp, dark brown, SILT with trace fine sand and occasional pockets of gravel. (Topsoil/FILL) Moderate fine to medium roots to 1.0 feet.	S-1@0.8’
1.0-5.5	Medium stiff, damp, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
5.5-11.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	
	Test pit terminated at 11.5 feet on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-34
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-2.0	Short grass and metal debris over medium stiff to stiff, damp to moist, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-1@1.5’ MC=41%
2.0-12.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	S-2@9.5’ MC=66% S-3@12.0’ MC=62%
	Test pit terminated at 12.5 feet on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-35
Approximate ground surface elevation: 449 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Metal debris over loose, damp, dark brown, SILT with trace fine sand and occasional pockets of gravel and wrecking yard debris. (Topsoil/FILL) Moderate fine and medium roots to 1.0 feet.	S-1@0.5’
1.0-3.5	Medium stiff to stiff, damp to moist, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
3.5-10.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	
	Test pit terminated at 10.5 feet on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-36
Approximate ground surface elevation: 440 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Blackberry vines and metal debris over soft to medium stiff, damp to moist, brown, SILT with trace fine sand and wrecking yard debris (Topsoil/FILL) Moderate fine and medium roots to 1.0 feet. Pocket penetrometer at 1.0 feet = 1.5 tsf.	S-1@1.0’ MC=29%
1.0-5.0	Medium stiff to stiff, damp to moist, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Pocket penetrometer at 2.0 feet = 1.5 tsf. Pocket penetrometer at 2.5 feet = 2.5 tsf.	S-2@2.0’ MC=29%
5.0-11.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-3@10.5’ MC=50%
	Test pit terminated at 11.0 feet on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-37
Approximate ground surface elevation: 431 Feet

Depth (feet)	Material Description	Sample No.
0.0-5.0	Blackberry vines over soft to medium stiff, damp to moist, brown, SILT with significant large pieces of concrete and asphalt debris. (FILL) Moderate fine and medium roots to 1.4 feet.	S-1@1.0' MC=19%
5.0-8.0	Medium stiff to stiff, damp to moist, orange-brown grading to reddish-orange, sandy SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2@7.0' MC=35%
8.0-12.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-3@10.0' MC=50%
	Test pit terminated at 12.5 feet on a boulder on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-38
Approximate ground surface elevation: 431 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Blackberry vines and short grass over medium dense, moist to wet, brown, silty sandy GRAVEL with significant asphalt debris (FILL) Moderate fine and medium roots to 0.8 feet.	S-1@0.5'
1.0-5.5	Soft to medium stiff, damp, orange-brown SILT with significant large pieces of asphalt and concrete debris. (FILL)	S-2@2.0'
	Digging refusal at 5.5 feet due on concrete debris on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-39
Approximate ground surface elevation: 430 Feet

Depth (feet)	Material Description	Sample No.
0.0-3.5	Duff and asphalt debris over soft to medium stiff, damp to moist, orange-brown, SILT with some sand and occasional asphalt debris and 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. (FILL)	S-1@1.0' MC=46%
3.5-7.5	Soft to medium stiff, moist, brown, SILT with organics, and occasional wood and metal debris. (FILL)	S-2@4.0' MC=26% S-3@7.0' MC=28%
7.5-10.5	Medium stiff to stiff, damp to moist, orange-brown, sandy SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
10.5-13.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, rounded, basaltic andesite cobbles and boulders.	S-4@11.5' MC=42%
	Test pit terminated at 13.0 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-40
Approximate ground surface elevation: 440 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.9	Duff over soft, damp, brown, SILT with trace fine sand. (Topsoil) Sparse fine roots to 1.0 feet and sparse medium roots to 1.9 feet.	S-1@1.0' MC=23%
1.9-3.0	Medium stiff, damp, orange-brown, sandy SILT with trace clay and trace to some 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, rounded, basaltic andesite boulders. Pocket penetrometer at 2.0 feet >4.5 tsf.	S-2@2.5' MC=21%
3.0-10.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp to moist, reddish orange-brown silt with trace clay. Occasional gray, moderately weathered, rounded, basaltic andesite cobbles and boulders.	S-3@5.5' MC=21%
	Test pit completed at 10.0 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-41
Approximate ground surface elevation: 441 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.5	Duff over soft, damp to moist, brown, SILT with trace fine sand and occasional gravel. (Topsoil) Moderate fine to medium roots to 1.2 feet and sparse large roots to 1.5 feet.	S-1@0.5-2.0' S-1A@0.5-2.5'
1.5-2.5	Soft grading to stiff, damp, orange-brown, SILT with trace clay and trace to some 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, rounded, basaltic andesite boulders.	S-2@2.5' MC=26%
2.5-6.5	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp to moist, reddish orange-brown silt with trace clay. Occasional gray, moderately weathered, rounded, basaltic andesite cobbles and boulders.	S-3@5.5'
	Digging refusal at 10.0 feet on a boulder on 11/3/01. No groundwater seepage observed. No caving observed. Samples S-1 and S-1A were shelby tube samples.	

Test Pit TP-42
Approximate ground surface elevation: 432 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Soft to medium stiff, wet, brown grading to orange-brown, SILT with some sand, organic debris and roots to 3". (Topsoil)	
1.0-4.0	Soft grading to stiff, damp, orange-brown, SILT with trace clay and trace to some 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, rounded, basaltic andesite boulders.	
4.0-6.5	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp to moist, reddish orange-brown silt with trace clay. Occasional gray, moderately weathered, rounded, basaltic andesite cobbles and boulders to 3 feet in diameter.	
	Test pit completed at 6.5 feet on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-43
Approximate ground surface elevation: 426 Feet

Depth (feet)	Material Description	Sample No.
0.0-3.5	Medium stiff, moist to wet, orange-brown, sandy SILT with some gravel, clay, and debris consisting of concrete, asphalt, crushed rock, and wire. (Fill)	S-1@1'
3.5-7.8	Soft to medium stiff, wet, dark gray-brown, SILT with some clay, sand and gravel. Occasional clasts of concrete, asphalt, brick and trace organic material. (Fill)	S-2@5'
7.8-8.0	Pine needles and thin branches to 1-inch in diameter. (Fill)	
8.0-11.0	Large andesitic boulder encountered at east end of test pit. Boulder appeared to be in a matrix of stiff to medium stiff, gray-brown SILT. (Fill)	
	Test pit completed at 11.0 feet on 3/4/02. Very slight seepage observed at 9 feet at time of exploration. No caving observed.	

Test Pit TP-44
Approximate ground surface elevation: 421.5 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.3	Grass sod.	
0.3-6.0	Soft to medium stiff, wet, orange-brown, sandy SILT with some clay and gravels. Occasional clasts of asphalt and concrete to 2 feet in diameter. 2-½ foot diameter andestitic boulder encountered at 1.5 feet. (Fill)	S-1@2'
6.0-8.0	Soft grading to stiff, wet, orange-brown, SILT with some clay and trace to some gray, sub-rounded clasts of severely weathered basaltic ardisite.	
8.0-11.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular to sub-rounded, poorly sorted basaltic andesite clasts in a matrix of medium stiff to stiff, moist, orange-brown, sandy SILT with trace clay.	
	Test pit completed at 11.0 feet on 3/4/02. No groundwater observed at time of exploration. No caving observed.	

Test Pit TP-45
Approximate ground surface elevation: 433.5 Feet

Depth (feet)	Material Description	Sample No.
0.0-2.5	Soft grading to stiff, moist, orange-brown, SILT with trace to some clay, sand, and 3 inch minus fragments of severely weathered basaltic andesite.	S-1@1'
2.5-6.0	Very dense, damp, gray, moderately weathered andesitic boulders to 3 feet in diameter in a matrix of medium stiff to stiff, moist to wet, orange-brown, SILT with trace clay to silty SAND with trace clay. Boulders sub-angular to rounded.	
	Test pit completed at 6.0 feet with refusal on 6-foot diameter andesitic boulder. No groundwater observed at time of exploration. No caving observed.	

Test Pit TP-46
Approximate ground surface elevation: 438 Feet

Depth (feet)	Material Description	Sample No.
0.0-6.0	Concrete and asphalt debris with matrix of sandy GRAVEL with some silt (dirty crushed rock). Approximately 40% asphalt and 20% concrete based on visual estimation. (Fill)	
6.0-7.0	Soft to medium stiff, moist, orange-brown, SILT with some sand and clay.	
	Test pit completed at 7 feet on 3/4/02. No groundwater seepage observed at time of exploration. No caving observed.	

Test Pit TP-47
Approximate ground surface elevation: 435 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.2	Grass sod.	
0.2-3.0	Asphalt debris in matrix of sandy gravel with some silt (crushed rock). Approximately 40-50% asphalt based on visual estimation. (Fill)	S-1@1'
3.0-6.0	Medium stiff, moist, orange-brown, sandy SILT with some gravel and trace clay. (Fill)	
6.0-8.5	Soft grading to stiff, moist, orange-brown, SILT with trace to some clay, sand, and 3 inch minus fragments of severely weathered basaltic andesite.	S-2@4'
8.5-11.0	Very dense, damp, gray, moderately weathered andesitic boulders to 3 feet in diameter in a matrix of medium stiff to stiff, moist to wet, orange-brown, SILT with trace clay to silty SAND with trace clay. Boulders sub-angular to rounded.	
	Test pit completed at 11.0 feet on 3/4/02. No groundwater seepage observed at time of exploration. No caving observed.	

Test Pit TP-48
Approximate ground surface elevation: 433 Feet

Depth (feet)	Material Description	Sample No.
0.0-5.5	Stiff to medium stiff, moist to wet, orange-brown, SILT with some sand and trace clay and occasional clasts of asphalt and concrete. (Fill)	
5.5-10.0	Randomly oriented rebar reinforced concrete debris from 6 to 8 inches thick and up to 4 feet across. Approximately 5% of debris consisted of rebar, asphalt, and wire. (Fill)	
	Test pit completed at 10.0 feet on 3/4/02 due to refusal on large concrete debris. No groundwater seepage observed at time of exploration. No caving observed.	

Test Pit TP-1A
Approximate ground surface elevation: 430 Feet

Depth (feet)	Material Description	Sample No.
0.0-6.0	Duff and asphalt debris over very soft to medium stiff, moist, reddish-brown, SILT with some sand and occasional asphalt debris and 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. (FILL)	S-1 @ 0.5' S-2 @ 2'
6.0-9.0	Soft to medium stiff, moist, gray SILT with organic and metal debris and occasional cobbles of of severely to highly weathered, highly fractured, basaltic andesite. (FILL)	S-3 @ 8'
9.0-12.0	Medium stiff, moist, orange-red-brown SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-4 @ 9.5'
	Test pit terminated at 12.0 feet on 03/01/2002. Slight groundwater seepage observed at 9.0 feet, perched on native soils. No caving observed.	

Test Pit TP-2A
Approximate ground surface elevation: 430 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.8	Duff over 7-inches of asphalt over 3-inches of 3/8-inch minus crushed rock base.	S-1 @ 1'
0.8-8.0	Soft to medium stiff, damp, reddish-brown SILT with trace clay with occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. (FILL)	S-2 @ 8'
8.0-9.0	Soft, damp to moist, light gray to dark gray, SILT with trace clay and wood, metal, glass, and rubber debris. (FILL)	
9.0-11.0	Medium stiff, moist, orange-red-brown SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
	Test pit terminated at 11.0 feet on 03/01/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-3A

Approximate ground surface elevation: 430 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.3	Metal debris over soft, damp to moist, gray SILT with trace clay and occasional fine rootlets. Slight to moderate odor of oil impact. (FILL)	
0.3-7.5	Soft to medium stiff, damp, reddish-brown SILT with trace clay with occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. (FILL)	S-1 @ 0.5' S-2 @ 2'
7.5-8.0	Soft, damp to moist, orange-brown silt with trace clay and fine rootlets. (Relict topsoil horizon)	
8.0-12.0	Medium stiff, moist, orange-red-brown SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	

Test pit terminated at 12.0 feet on 03/01/2002.
No groundwater seepage observed.
No caving observed.

Test Pit TP-4A

Approximate ground surface elevation: 430 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.5	Metal debris over 5/8-inch minus crushed rock base. Very strong odor of oil impact. Visible free product (appears to be crankcase oil) in crushed rock. (FILL)	S-1 @ 1'
1.5-8.0	Soft to medium stiff, damp, reddish-brown SILT with trace clay with occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. (FILL)	S-2 @ 3' S-3 @ 7'
8.0-10.0	Medium stiff, moist, orange-red-brown SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	

Test pit terminated at 12.0 feet on 03/01/2002.
No groundwater seepage observed.
No caving observed.

Test Pit TP-5A

Approximate ground surface elevation: 430 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Metal debris and grass over very soft, damp, gray SILT with trace clay and gravel. (FILL)	S-1 @ 1'
1.0-8.5	Soft to medium stiff, damp, reddish-brown SILT with trace clay with occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. (FILL)	S-2 @ 8'
8.5-9.0	Loose, damp, brown-gray SILT with trace clay, occasional gravel and fine rootlets. (Relict topsoil horizon.)	
9.0-11.0	Medium stiff, damp, orange-red-brown SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	
	Test pit terminated at 11.0 feet on 03/01/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-6A

Approximate ground surface elevation: 431 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Blackberry vines and short grass over soft, damp, dark gray SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. (FILL)	
1.0-6.0	Soft to medium stiff, damp, red-brown SILT with occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite and large pieces of asphalt and concrete debris. (FILL)	S-1@2.0'
6.0-6.5	Medium dense, damp, gray sandy SILT with some gravel. (FILL)	
	Digging refusal at 6.5 feet due on concrete debris on 03/01/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-7A

Approximate ground surface elevation: 430 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.4	8-inches of asphalt over 8-inches of 3/8-inch minus crushed rock base. Very strong odors of gasoline and weathered gasoline. Gasoline dissolving asphalt.	
1.4-2.5	Soft, moist, red-brown SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite and gravel. (FILL)	S-1 @ 1.5'
2.5-5.0	Soft to medium stiff, moist, red-brown SILT with trace clay and occasional 3-inch minus, gray angular fragments of severely to highly weathered, highly fractured basaltic andesite.	S-2 @ 3.5'
5.0-9.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	S-3 @ 6' S-4 @ 6.5'

Test pit terminated at 9.0 feet on 03/01/2002.
No groundwater seepage observed.
No caving observed.

Test Pit TP-8A

Approximate ground surface elevation: 430 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Soft, damp to moist, dark brown SILT with trace clay and occasional gravel.	
1.0-3.5	Soft to medium stiff, damp, red-brown SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite and gravel.	S-1 @ 3'
3.5-7.5	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay	S-2 @ 6.5'

Test pit terminated at 7.5 feet on 03/01/2002.
Moderate groundwater seepage observed at 6.5 feet.
Slight caving observed below 6.5 feet.

Test Pit TP-9A
Approximate ground surface elevation: 440 Feet

Depth (feet)	Material Description	Sample No.
0.0-3.5	Medium dense, damp, dark gray silty sandy GRAVEL with occasional cobbles. (FILL)	S-1 @ 1.5'
3.5-5.5	Soft to medium stiff, damp to moist, orange-red-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2 @ 3.5'
5.5-9.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	S-3 @ 9.5'
	Test pit terminated at 9.5 feet on 03/01/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-10A
Approximate ground surface elevation: 440 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.5	Loose to medium dense, damp, gray-brown SILT with trace clay and trace fine sand and occasional fine highly weathered, highly fractured basaltic andesite gravel.	S-1 @ 1'
1.5-4.5	Soft to medium stiff, damp, orange-red-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2 @ 2'
4.5-6.5	Medium stiff to stiff, damp, red-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
6.5-7.0	Medium dense to very dense, gray, highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	S-3 @ 7'
	Test pit terminated at 7.0 feet on 03/01/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-11A

Approximate ground surface elevation: 448 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.8	Sparse grass and metal debris over 5/8-inch minus crushed rock base. (FILL)	
0.8-2.0	Soft to medium stiff, damp, gray, SILT with trace clay and occasional metal, rubber, and glass debris. Slight odor of weathered gasoline and slight staining observed. (FILL)	S-1 @ 1.5'
2.0-4.5	Soft to medium stiff, damp, red-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-2 @ 3'
4.5-11.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay.	S-3 @ 5.5' S-4 @ 11'
	Test pit terminated at 11.0 feet on 03/02/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-12A

Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Grass and blackberry vines over soft, damp, dark brown, SILT with trace fine sand, trace clay and occasional gray, highly weathered, round, basaltic andesite gravel.	
1.0-4.0	Medium stiff to stiff, damp to moist, reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
4.0-10.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, wet grading to damp, yellow silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-1 @ 4'
	Test pit terminated at 10.0 feet on 03/02/2002 Very slight groundwater seepage observed at 4 feet. No caving observed.	

Test Pit TP-13A

Approximate ground surface elevation: 449 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Metal debris over loose, damp, dark brown, SILT with trace fine sand and occasional pockets of gravel and debris. (Topsoil/FILL)	
1.0-4.0	Medium stiff to stiff, damp to moist, reddish-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-1@1'
4.0-9.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	S-2 @ 4.5' S-3 @ 9'
	Test pit terminated at 9.5 feet on 03/02/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-14A

Approximate ground surface elevation: 449 Feet

Depth (feet)	Material Description	Sample No.
0.0-2.0	Loose, damp, gray, SILT with trace clay and occasional pockets of 5/8-inch minus gravel and debris. Slight odor of oil impact to upper foot of soils, slight staining in upper foot of soils. (FILL)	S-1@1'
2.0-4.5	Soft to medium stiff, damp to moist, reddish-orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2 @ 2.5'
	Test pit terminated at 4.5 feet on 03/02/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-15A

Approximate ground surface elevation: 451 Feet

Depth (feet)	Material Description	Sample No.
0.0-4.5	5/8-inch minus crushed rock base over soft to medium stiff, damp, gray brown, SILT with trace sand and occasional gravel and asphalt debris. (FILL)	S-1 @ 2'
4.5-7.5	Soft to medium stiff, damp, reddish-brown, sandy SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2 @ 5'
7.5-9.5	Medium dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-3 @ 8.5'
9.5-11.5	Dense to very dense, gray, highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-4 @ 11.5'
	Test pit terminated at 11.5 feet on 03/02/2002 No groundwater seepage observed. No caving observed. Cesspool cistern discovered at 1.5 to 5 feet. Test pit relocated to north of cistern, adjacent.	

Test Pit TP-16A

Approximate ground surface elevation: 451 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.5	Soft, damp, dark brown, SILT with trace fine sand and occasional pockets of gravel. (Topsoil/FILL)	
0.5-2.5	Soft, damp, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-1 @ 2'
2.5-9.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-2 @ 5' S-3 @ 8.5'
	Test pit terminated at 9.5 feet on 03/02/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-17A
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-4.0	4-inches of asphalt over soft, damp, orange-brown grading to reddish-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-1 @ 1' S-2 @ 3'
4.0-10.0	Medium dense grading to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay to silty SAND.	S-3 @5.5' S-4 @ 9'

Test pit terminated at 10.0 feet on 03/02/2002.
No groundwater seepage observed.
No caving observed.

Test Pit TP-18A
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-6.0	Broken asphalt over soft grading to medium stiff, damp, orange-brown grading to reddish-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-1 @ 3'
6.0-10.0	Medium dense grading to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay to silty SAND.	S-2 @ 6' S-3 @ 10'

Test pit terminated at 10.0 feet on 03/02/2002.
No groundwater seepage observed.
No caving observed.

Test Pit TP-19A

Approximate ground surface elevation: 451 Feet

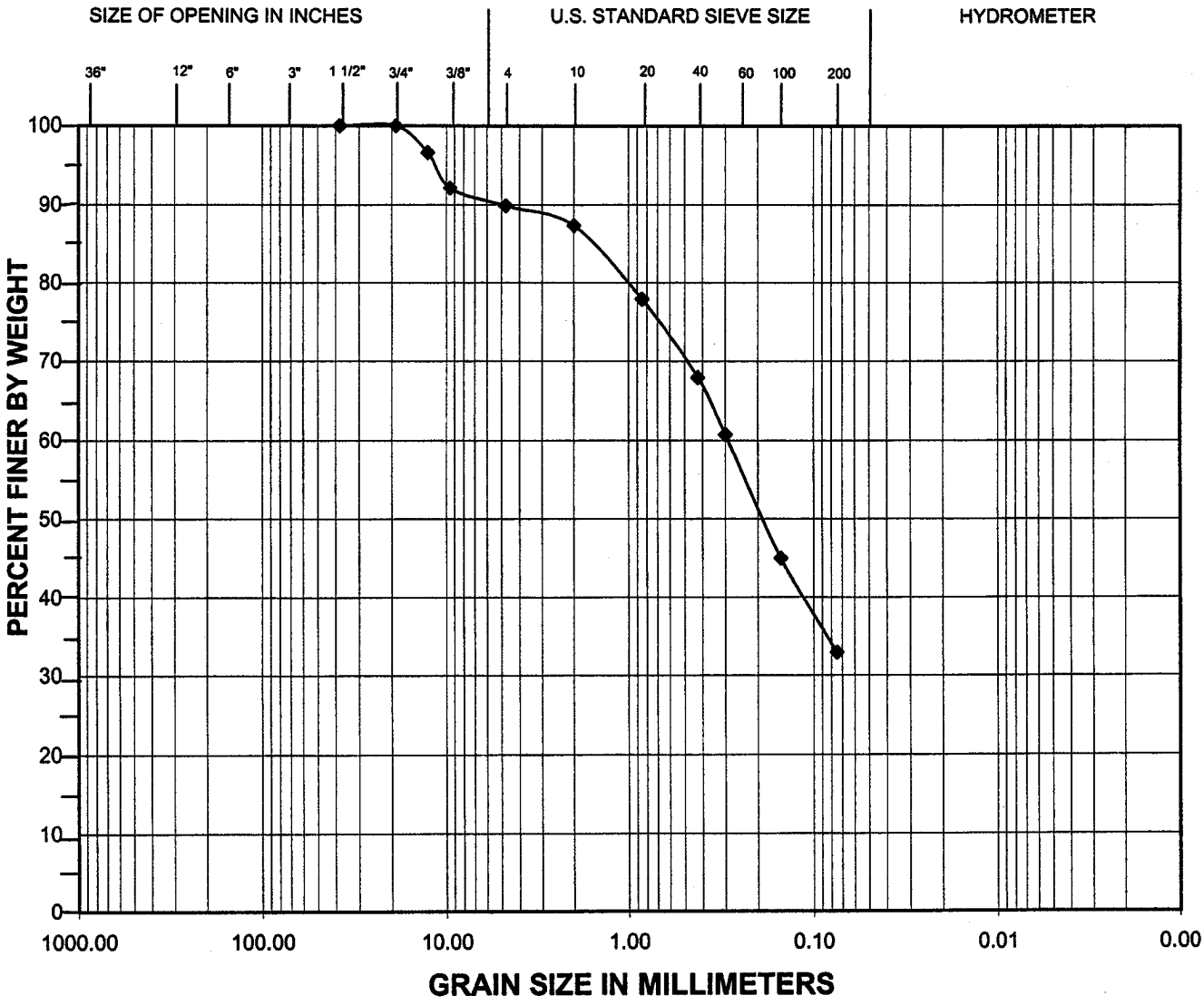
Depth (feet)	Material Description	Sample No.
0.0-1.5	2-inches of 5/8-inch minus crushed rock over soft, damp to moist, dark brown-gray, SILT with trace clay, occasional gravel and occasional metal debris. (FILL)	S-1 @ 1'
1.5-5.0	Medium stiff to stiff, moist, orange-brown, sandy SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2 @ 3'
5.0-8.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-3 @ 7'
	Test pit terminated at 8.0 feet on 03/02/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-20A

Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-3.5	Gravel over soft to medium stiff, damp, reddish-brown, SILT with gravel and trace clay and occasional asphalt debris. Occasional gray, moderately weathered, round, basaltic andesite boulders. (FILL).	S-1 @ 2'
3.5-4.0	Soft to medium stiff, damp, brown, SILT with trace clay and fine rootlets. (Relict topsoil horizon.)	
4.0-9.0	Medium stiff, damp, orange-brown grading to reddish-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2 @ 4' S-3 @ 7'
9.0-10.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp to wet, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-4 @ 9.5'
	Test pit terminated at 10.0 feet on 03/02/2002. Moderate groundwater seepage observed at 9.5 feet. No caving observed.	

GRAIN SIZE DISTRIBUTION ASTM D422



		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

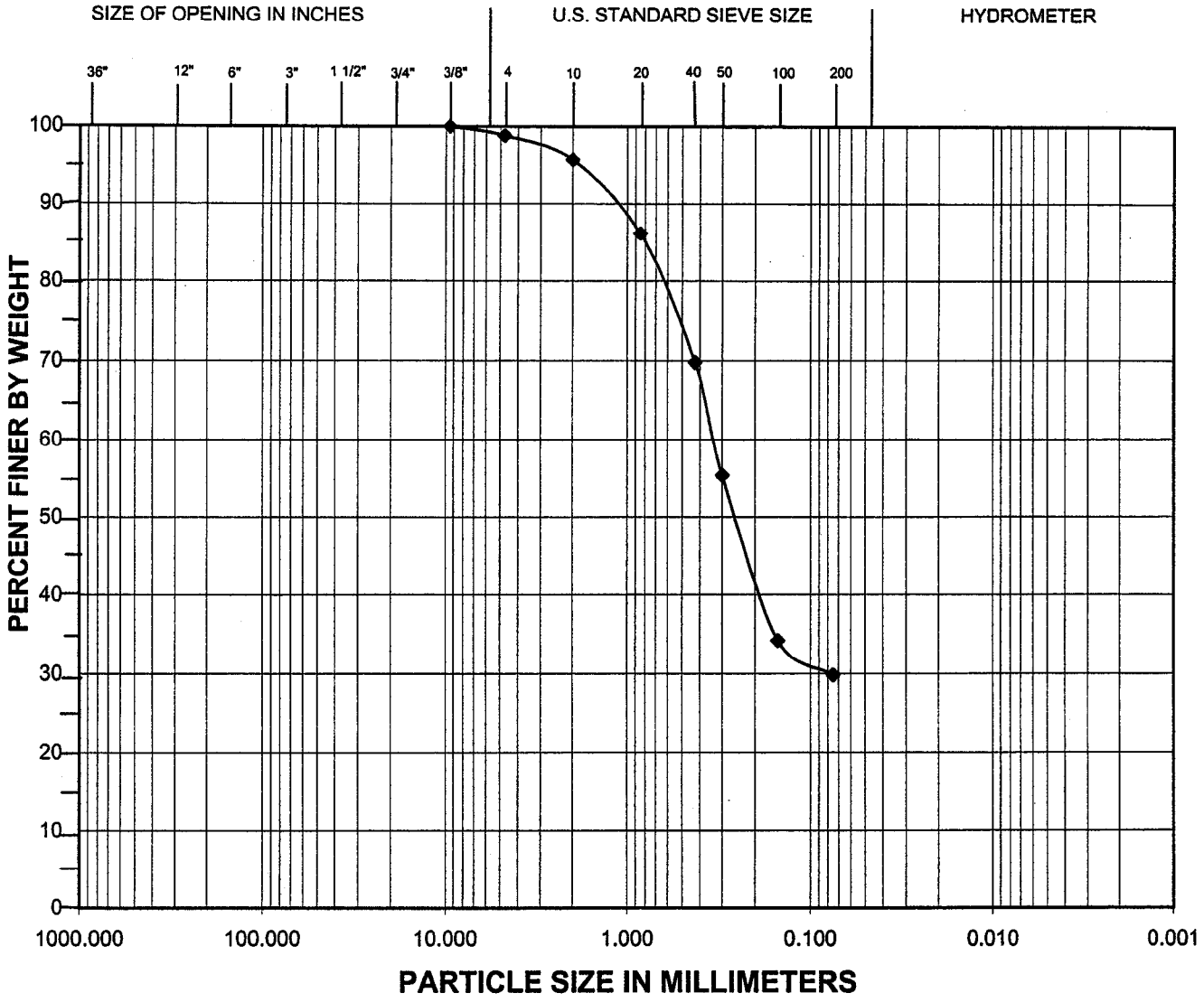
Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
B-4	S-4	10'	49	33	silty SAND w/ some gravel

ZIPPER ZEMAN ASSOCIATES, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTING	PROJECT NO: J-1200 DATE OF TESTING: 11/7/01	PROJECT NAME: Oregon City Retail

GRAIN SIZE ANALYSIS

Test Results Summary

ASTM D1140, D422



		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Comments:

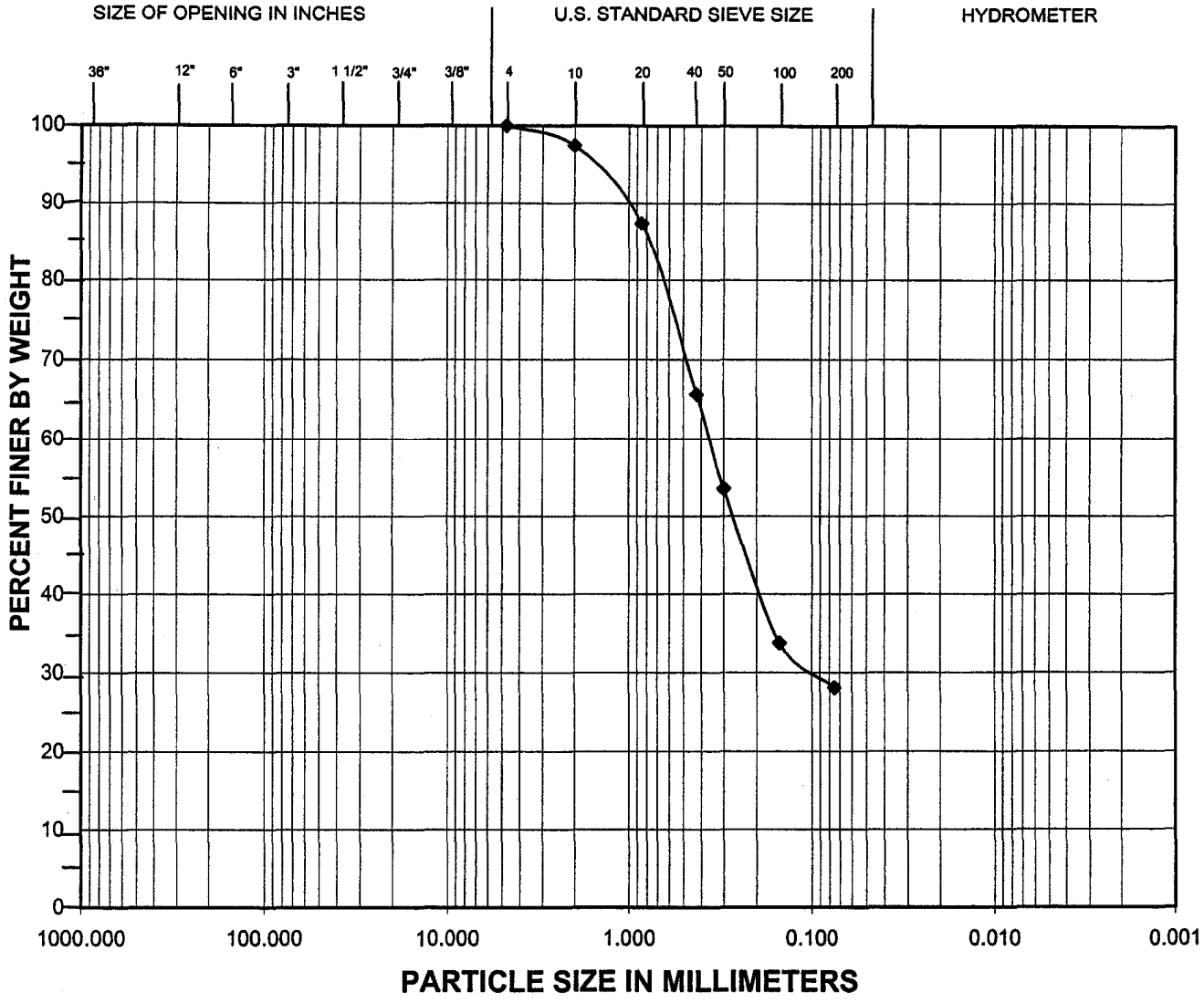
Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
B-12	S-4	10.0	59	29.8	silty SAND with trace gravel

Zipper Zeman Associates, Inc. Geotechnical and Environmental Consulting	PROJECT NO: J-1200 DATE OF TESTING: 5/17/02	PROJECT NAME: Oregon City Retail

GRAIN SIZE ANALYSIS

Test Results Summary

ASTM D1140, D422



		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Comments:

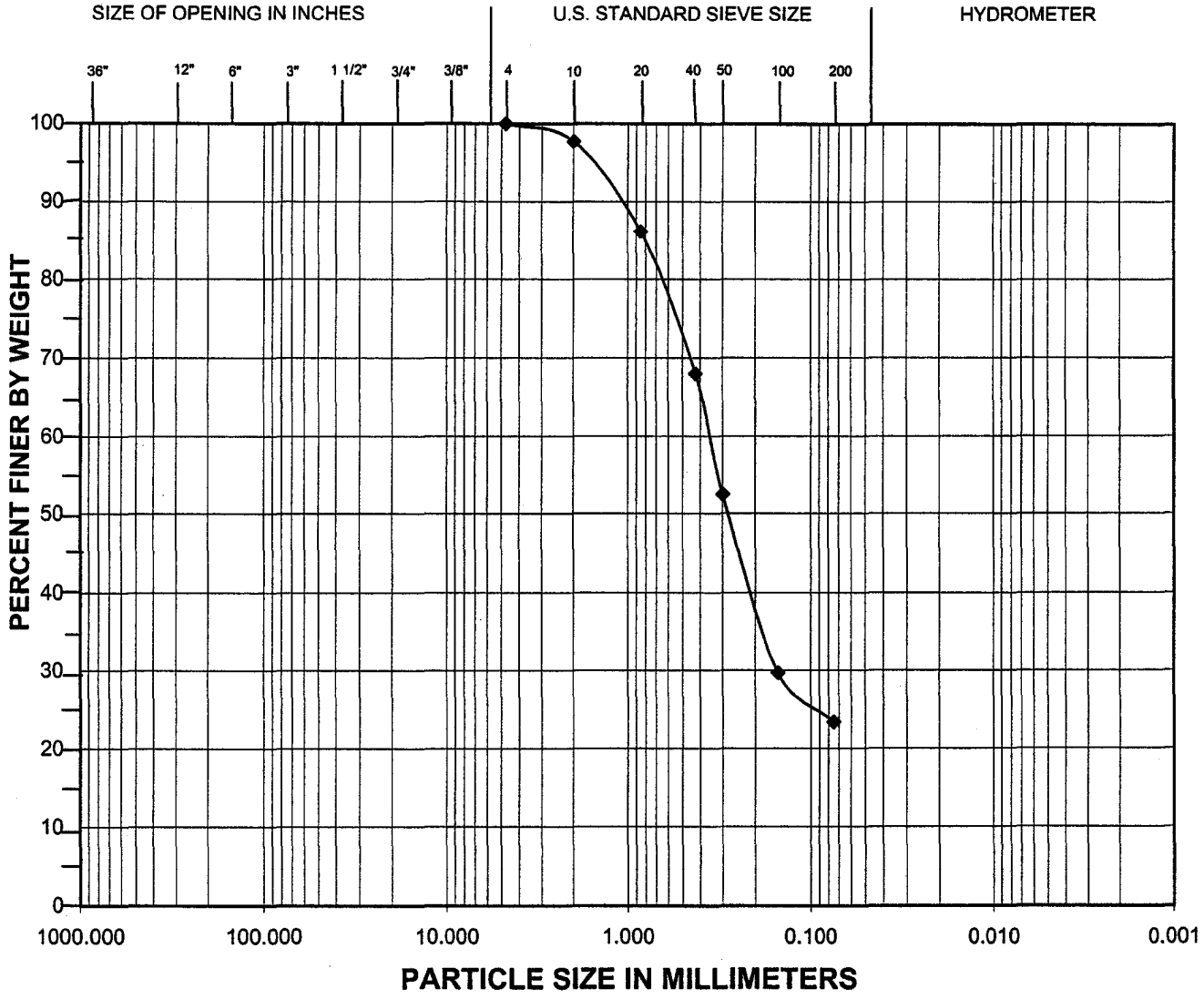
Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
B-13	S-3	7.5	63	28.1	silty SAND

Zipper Zeman Associates, Inc. Geotechnical and Environmental Consulting	PROJECT NO: J-1200 DATE OF TESTING: 5/15/02	PROJECT NAME: Oregon City Retail

GRAIN SIZE ANALYSIS

Test Results Summary

ASTM D1140, D422



		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Comments:

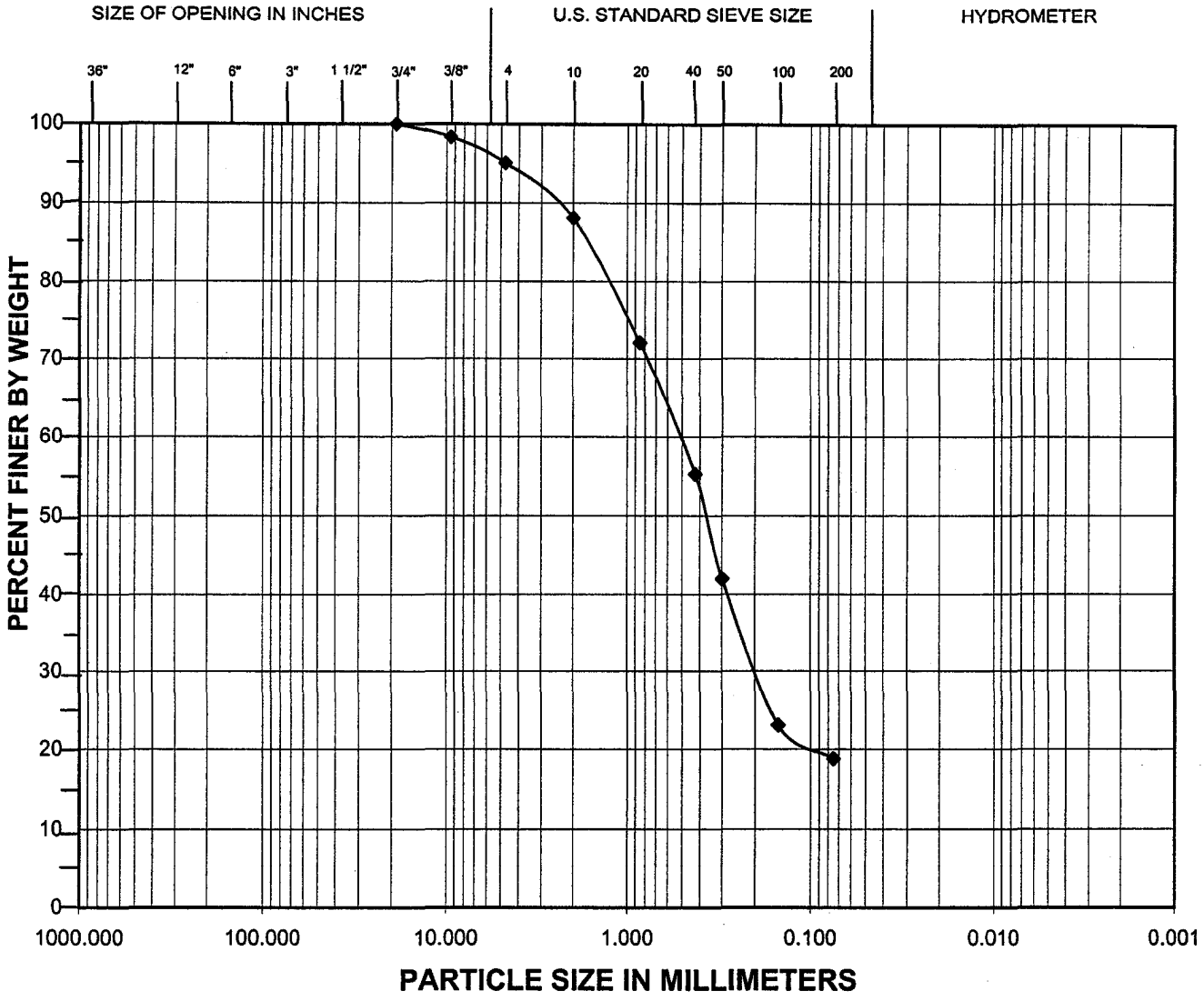
Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
B-15	S-2	5.0	54	23.3	silty SAND

Zipper Zeman Associates, Inc. Geotechnical and Environmental Consulting	PROJECT NO: J-1200 DATE OF TESTING: 5/15/02	PROJECT NAME: Oregon City Retail

GRAIN SIZE ANALYSIS

Test Results Summary

ASTM D1140, D422



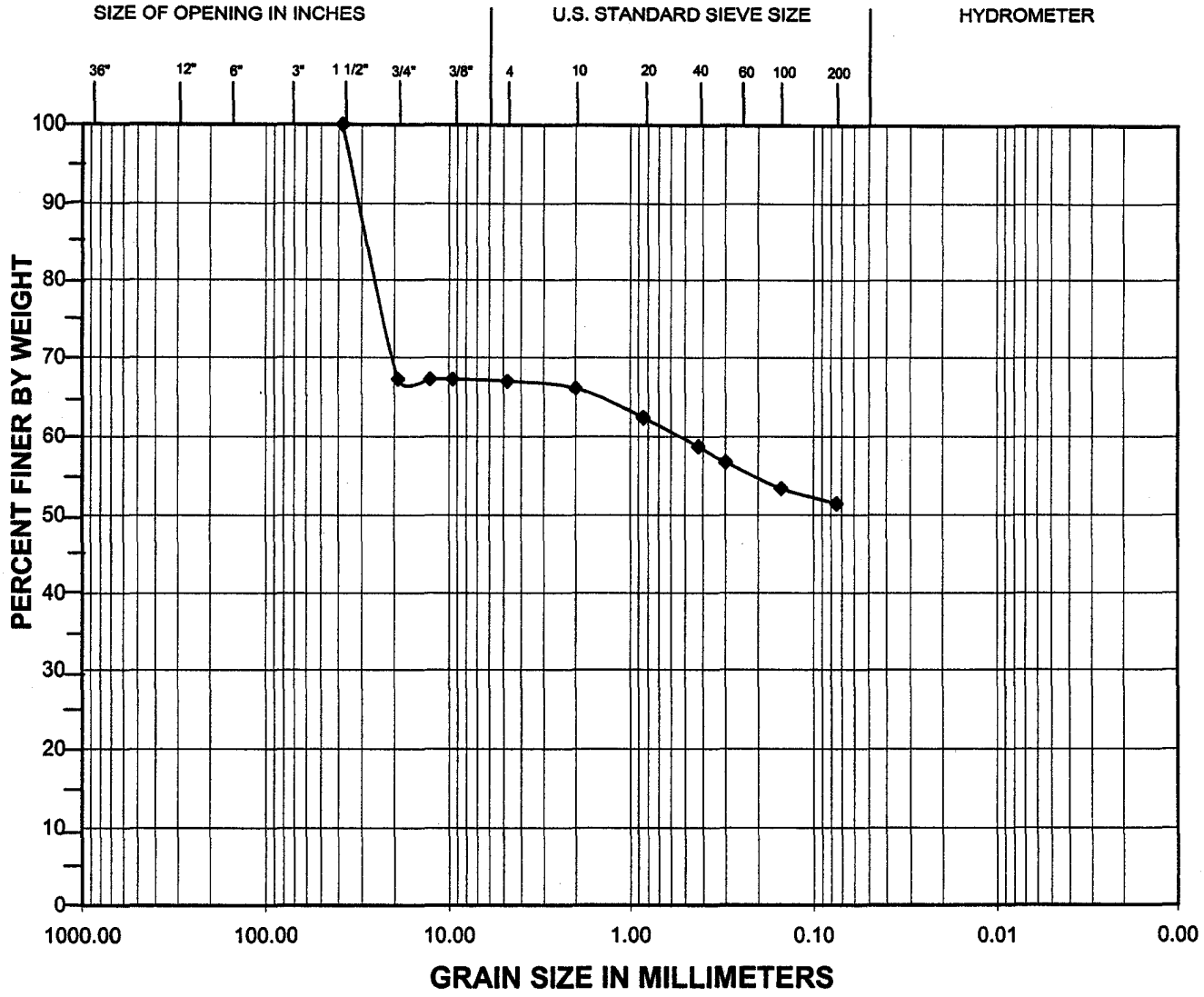
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Comments:

Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
B-20	S-2	5.0	38	18.8	silty SAND with trace to some gravel

Zipper Zeman Associates, Inc. Geotechnical and Environmental Consulting	PROJECT NO: J-1200 DATE OF TESTING: 5/17/02	PROJECT NAME: Oregon City Retail

GRAIN SIZE DISTRIBUTION ASTM D422

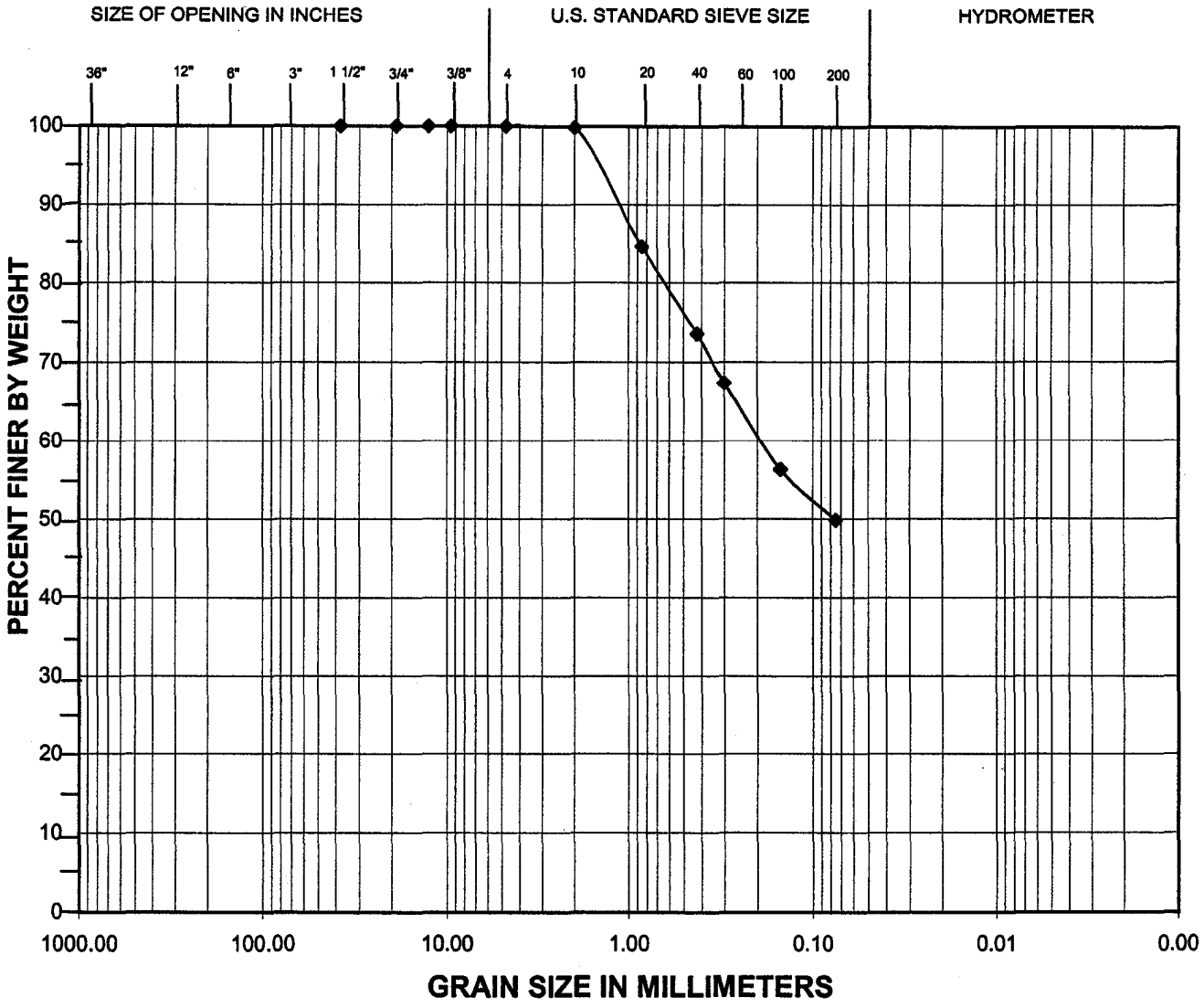


		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
TP-1	S-2	2'	16	51	sandy, gravelly,SILT

ZIPPER ZEMAN ASSOCIATES, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTING	PROJECT NO: J-1200 DATE OF TESTING: 11/7/01	PROJECT NAME: Organ City Retail

GRAIN SIZE DISTRIBUTION ASTM D422

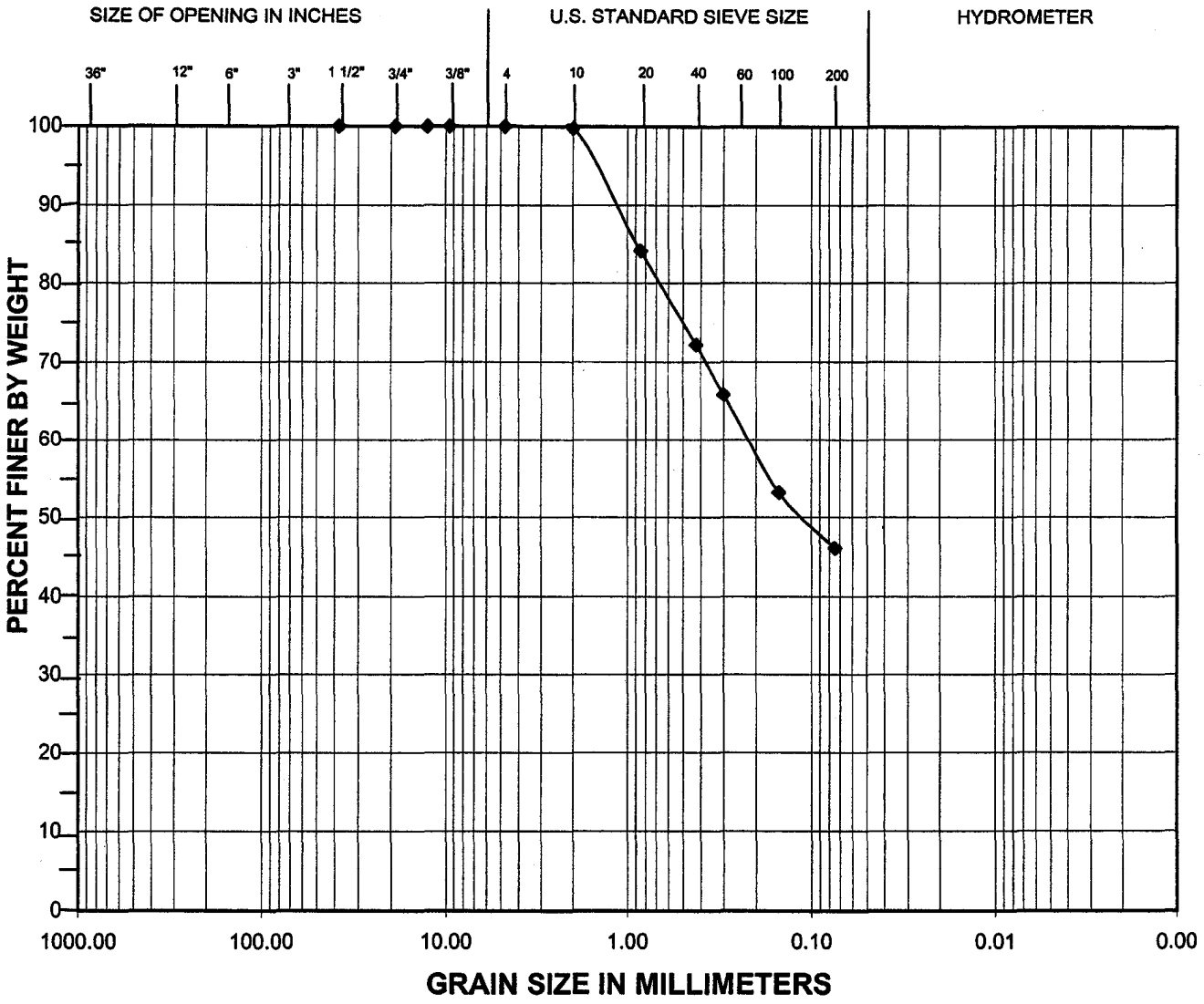


		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
TP-2	S-2	3.5'	31	49.8	silty SAND

ZIPPER ZEMAN ASSOCIATES, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTING	PROJECT NO: J-1200 DATE OF TESTING: 11/8/01	PROJECT NAME: Oregon City Retail

GRAIN SIZE DISTRIBUTION ASTM D422

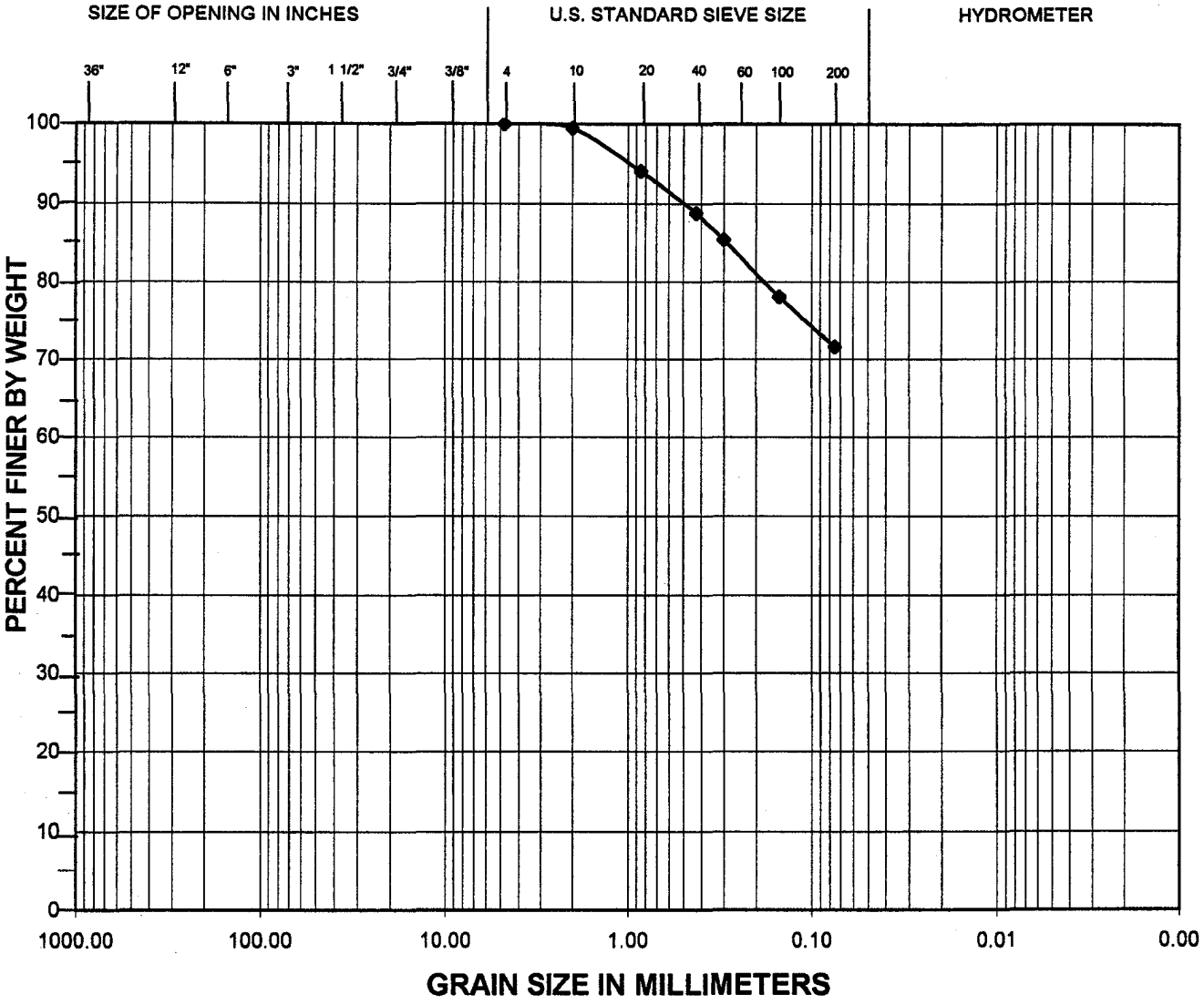


		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
TP-26	S-4	10.5'	60	46.1	silty SAND

ZIPPER ZEMAN ASSOCIATES, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTING	PROJECT NO: J-1200 DATE OF TESTING: 11/8/01	PROJECT NAME: Oregon City Retail

GRAIN SIZE DISTRIBUTION ASTM D422

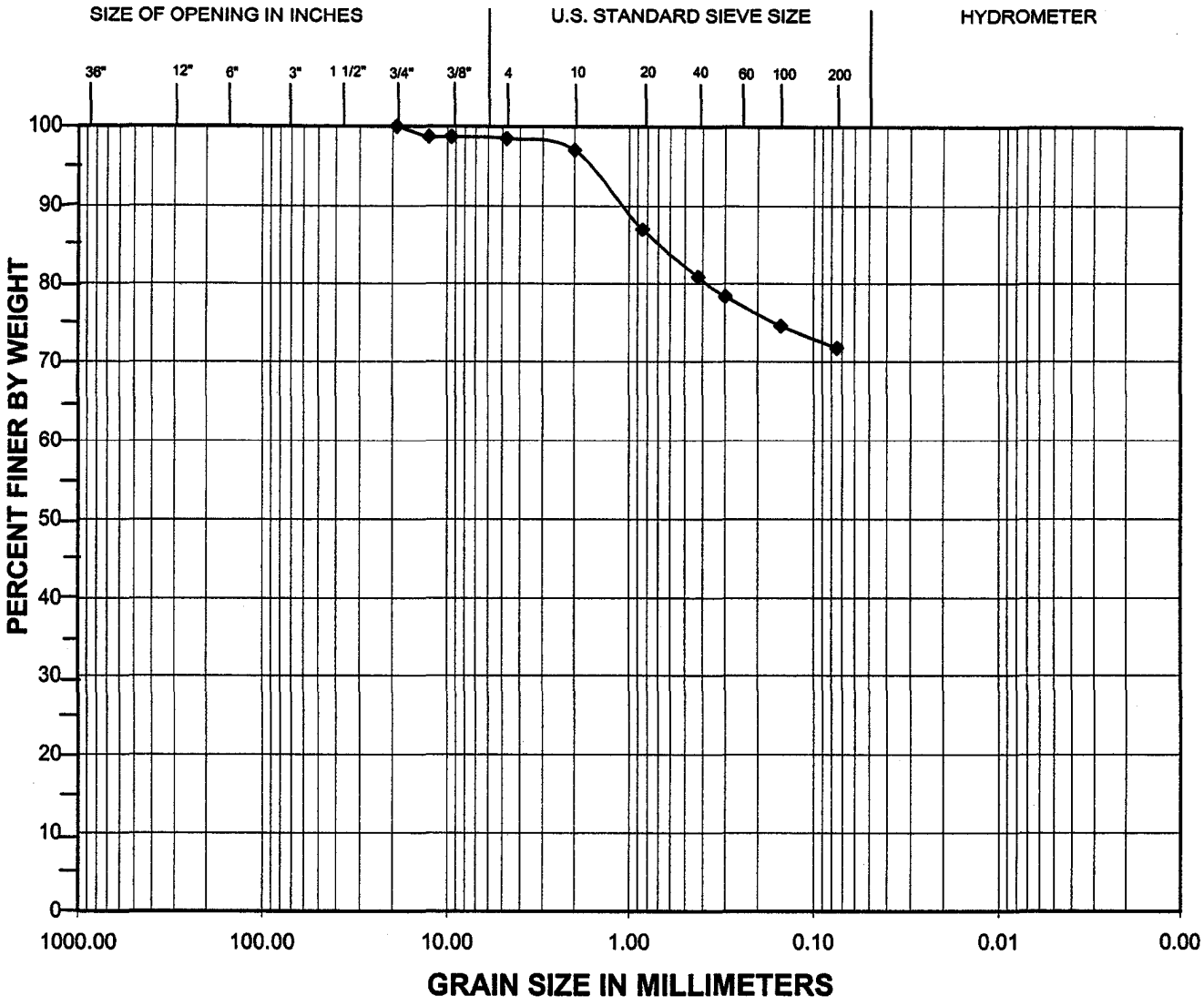


		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
TP-32	S-4	7.5'	27	72	sandy SILT

ZIPPER ZEMAN ASSOCIATES, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTING	PROJECT NO: J-1200 DATE OF TESTING: 11/07/2001	PROJECT NAME: Oregon City Retail

GRAIN SIZE DISTRIBUTION ASTM D422

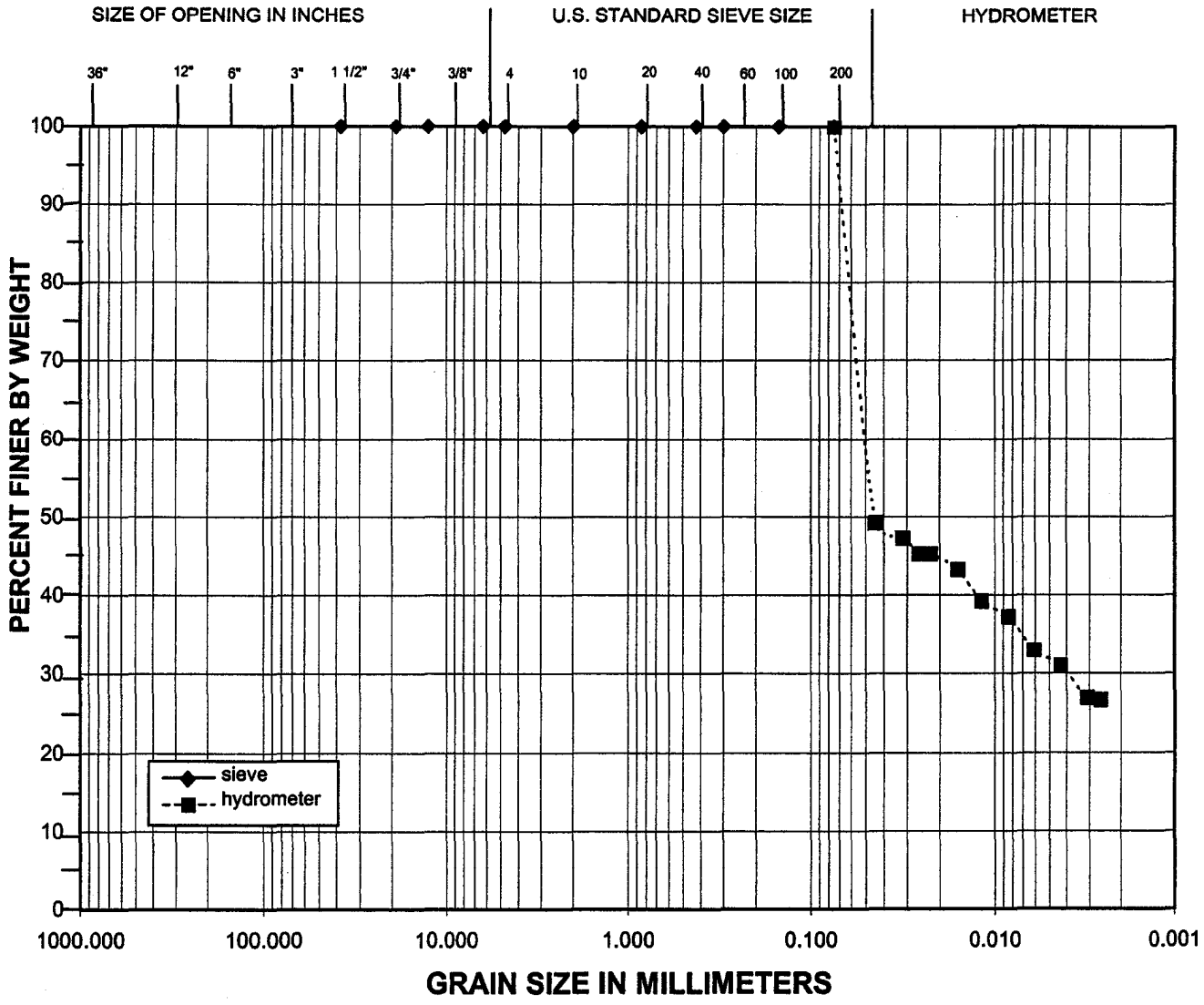


		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
TP-40	S-2	2.5'	21	72	sandy, SILT w/ trace gravel

ZIPPER ZEMAN ASSOCIATES, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTING	PROJECT NO: J-1200 DATE OF TESTING: 11/7/01	PROJECT NAME: Oregon City Retail

GRAIN SIZE DISTRIBUTION ASTM D 422

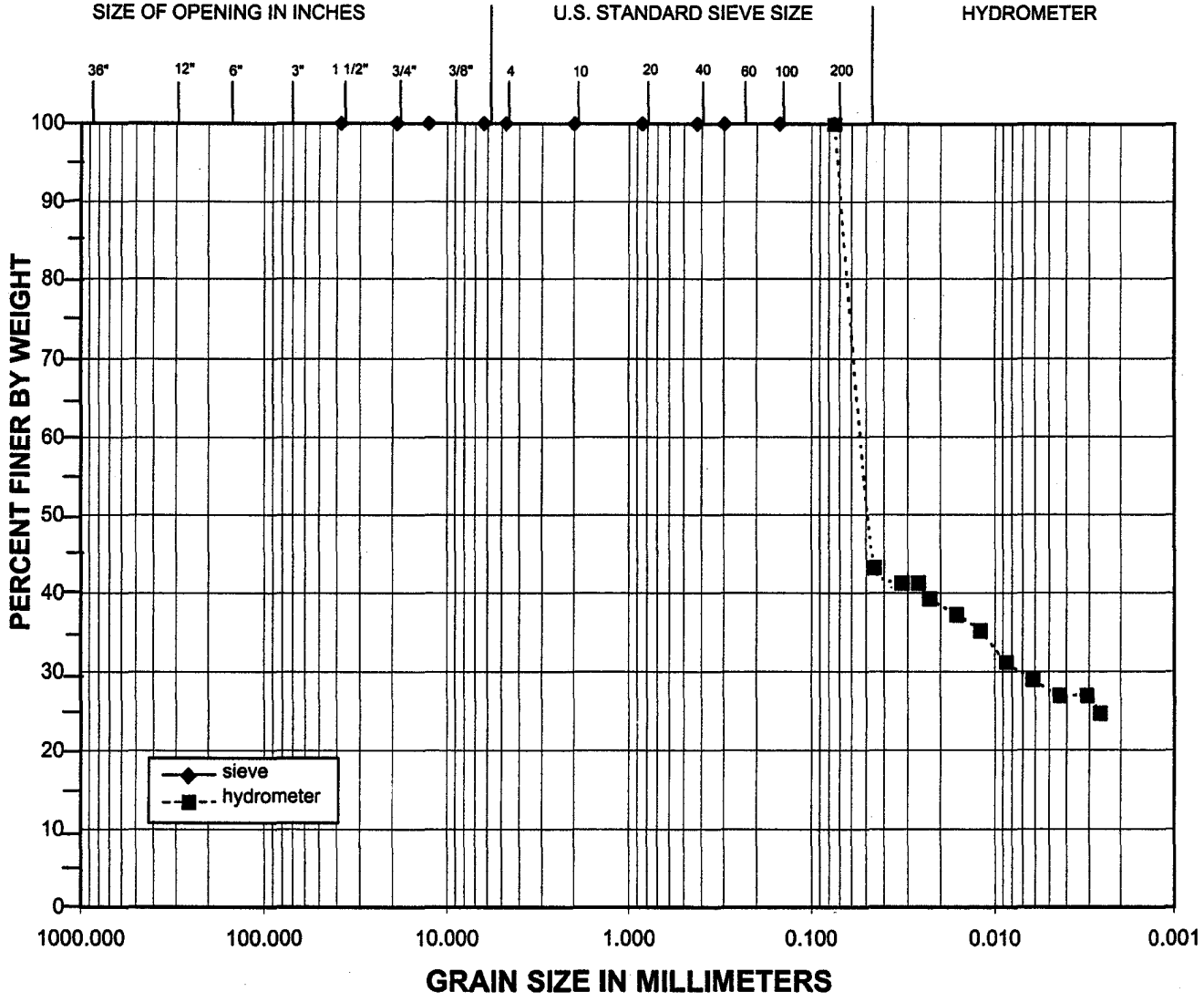


		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
B-1	S-2	5'	48	100	clayey, SILT

ZIPPER ZEMAN ASSOCIATES, INC GEOTECHNICAL AND ENVIRONMENTAL CONSULTING	PROJECT NO: J-1200 DATE OF TESTING: 11/9/01	PROJECT NAME: Oregon City Retail

GRAIN SIZE DISTRIBUTION ASTM D 422



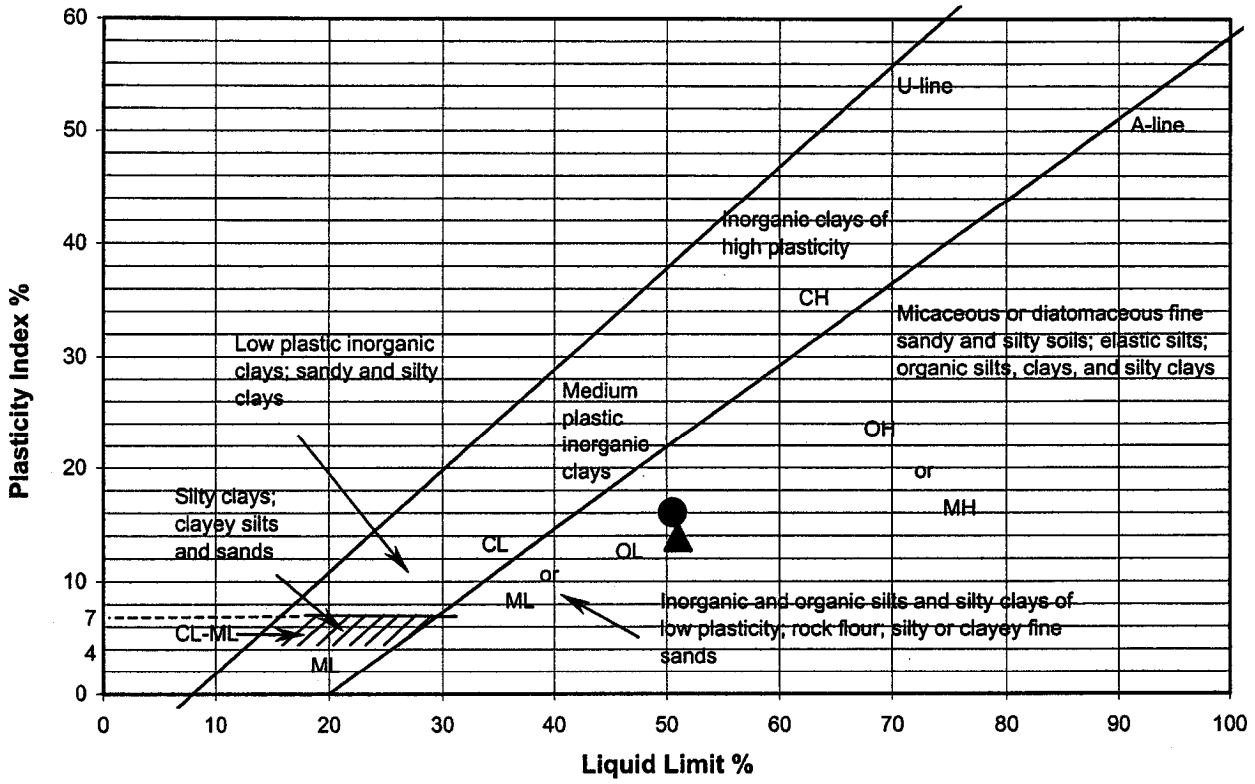
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
TP-39	S-1	1'	46	100	SILT With some clay

ZIPPER ZEMAN ASSOCIATES, INC GEOTECHNICAL AND ENVIRONMENTAL CONSULTING	PROJECT NO: J-1200 DATE OF TESTING: 11/9/01	PROJECT NAME: Oregon City Retail

PLASTICITY CHART

ASTM D 4318



Symbol	Boring	Sample	USCS Description	Received M.C. (%)	Liquid Limit	Plastic Limit	Plasticity Index	Comments
●	B-17	S-4	ML	35	51	34	16	
▲	B-19	S-1	ML	15	51	37	14	
■								
◆								

Remarks:

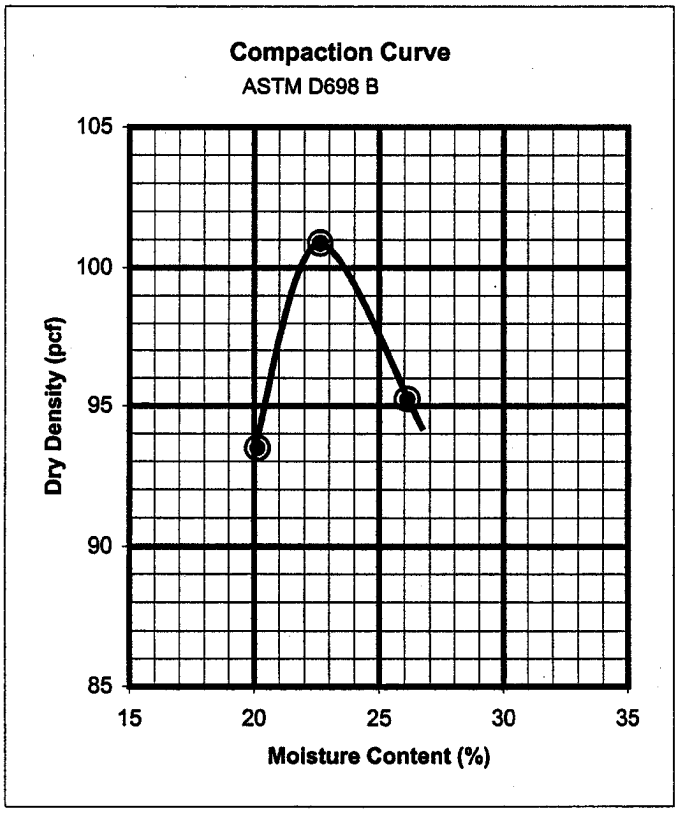
Zipper Zeman Associates, Inc. Geotechnical and Environmental Consulting	PROJECT NO: J-1200 DATE OF TESTING: 5/17/02	PROJECT NAME: Oregon City Retail

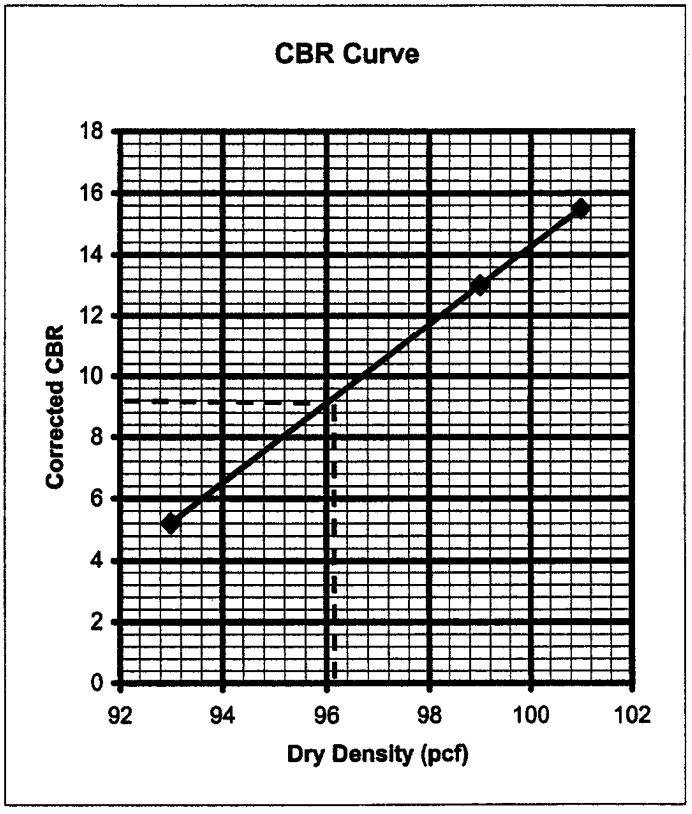
CALIFORNIA BEARING RATIO ASTM D 1883

Exploration: TP-16
Sample No.: Grab
Depth: 1.5 feet

Soil Description: SILT
Tested By: PZ/JY

	18 Blows/Lift		10 Blows/Lift		25 Blows/Lift	
Condition of Sample:	soaked		soaked		soaked	
Dry Density Before Soaking:	99	pcf	93	pcf	101	pcf
Dry Density After Soaking:	96	pcf	90	pcf	99	pcf
Moisture Content:						
Before Compaction:	20.5	%	20.5	%	20.5	%
After Compaction:	20.5	%	20.5	%	20.6	%
Top 1-in Layer After Soaking:	27.7	%	29.7	%	25.1	%
Average After Soaking:	27.5	%				
Swell:	-0.3	%	0.5	%	0.2	%
Surcharge Amount:	90.2	psf	90.2	psf	90.2	psf





Max. Dry Density = 101 pcf
Optimum Moisture = 22.5 %

CBR at 95% of Max. Dry Density = 9

ZIPPER ZEMAN ASSOCIATES, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTING	PROJECT NO: J-1200 DATE OF TESTING: 11/6/01	PROJECT NAME: Oregon City Retail

DIRECT SHEAR TEST RESULTS
ASTM D-3080

SAMPLE LOCATION	DEPTH (ft)	CLASSIFICATION	FRICTION ANGLE (degrees)	APPARENT COHESION (psf)	DRY DENSITY (pcf)	MOISTURE CONTENT (%)
B-15	2.5-3.0	(CL) reddish-brown, lean clay (remolded)	18	990	90.5	32
B-15	7.5-15.0	Reddish-brown, silty sand (remolded)	33	380	66.3	43.5

UNCONFINED COMPRESSION TEST RESULTS
ASTM D-2938

SAMPLE LOCATION	DEPTH (ft)	MOISTURE CONTENT (%)	COMPRESSIVE STRENGTH (psi)
B-2, RUN-1	19.0-19.8	3	8,800

SOIL CHEMICAL ANALYSIS RESULTS

SAMPLE LOCATION	DEPTH (ft)	pH	RESISTIVITY (ohm-cm)	SULFATES (ppm)
B-7, S-3	7	5.9	14,000	<10
TP-9, S-2	2½	5.8	11,000	10
TP-25, S-2	5½	6.1	10,000	37

ORGANIC CONTENT BY LOSS ON IGNITION AASHTO T-267

TEST PIT AND SAMPLE NUMBER	DEPTH (ft)	ORGANIC CONTENT (%)
TP-7, S-1	6	12
TP-7, S-2	24	8
TP-13, S-1	4	10
TP-40, S-1	12	9

SUPPORTING INFORMATION

Contents:

General Notes
Unified Soil Classification System
Rock Properties

Note: All attachments are one page unless noted above.

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS
Oregon City Development ■ Oregon City, OR
Terracon Project No. 82215043

Terracon GeoReport

SAMPLING	WATER LEVEL	FIELD TESTS
Rock Core Grab Sample Standard Penetration Test	Water Initially Encountered Water Level After a Specified Period of Time Water Level After a Specified Period of Time Cave In Encountered Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.	N Standard Penetration Test Resistance (Blows/Ft.) (HP) Hand Penetrometer (T) Torvane (DCP) Dynamic Cone Penetrometer UC Unconfined Compressive Strength (PID) Photo-Ionization Detector (OVA) Organic Vapor Analyzer

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification as noted on the soil boring logs is based Unified Soil Classification System. Where sufficient laboratory data exist to classify the soils consistent with ASTM D2487 "Classification of Soils for Engineering Purposes" this procedure is used. ASTM D2488 "Description and Identification of Soils (Visual-Manual Procedure)" is also used to classify the soils, particularly where insufficient laboratory data exist to classify the soils in accordance with ASTM D2487. In addition to USCS classification, coarse grained soils are classified on the basis of their in-place relative density, and fine-grained soils are classified on the basis of their consistency. See "Strength Terms" table below for details. The ASTM standards noted above are for reference to methodology in general. In some cases, variations to methods are applied as a result of local practice or professional judgment.

LOCATION AND ELEVATION NOTES

Exploration point locations as shown on the Exploration Plan and as noted on the soil boring logs in the form of Latitude and Longitude are approximate. See Exploration and Testing Procedures in the report for the methods used to locate the exploration points for this project. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance		CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance		
Descriptive Term (Density)	**Standard Penetration or N-Value Blows/Ft.**	**Descriptive Term (Consistency)**	**Unconfined Compressive Strength Qu, (tsf)**	**Standard Penetration or N-Value Blows/Ft.**
Very Loose	0 - 3	Very Soft	less than 0.25	0 - 1
Loose	4 - 9	Soft	0.25 to 0.50	2 - 4
Medium Dense	10 - 29	Medium Stiff	0.50 to 1.00	4 - 8
Dense	30 - 50	Stiff	1.00 to 2.00	8 - 15
Very Dense	> 50	Very Stiff	2.00 to 4.00	15 - 30
		Hard	> 4.00	> 30

RELEVANCE OF SOIL BORING LOG

The soil boring logs contained within this document are intended for application to the project as described in this document. Use of these soil boring logs for any other purpose may not be appropriate.

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse-Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	Cu ≥ 4 and 1 ≤ Cc ≤ 3 [E]		GW	Well-graded gravel [F]
			Cu < 4 and/or [Cc<1 or Cc>3.0] [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F, G, H]
			Fines classify as CL or CH		GC	Clayey gravel [F, G, H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	Cu ≥ 6 and 1 ≤ Cc ≤ 3 [E]		SW	Well-graded sand [I]
			Cu < 6 and/or [Cc<1 or Cc>3.0] [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G, H, I]
			Fines classify as CL or CH		SC	Clayey sand [G, H, I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A"		CL	Lean clay [K, L, M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K, L, M]
		Organic:	Liquid limit - oven dried / Liquid limit - not dried	< 0.75	OL	Organic clay [K, L, M, N] / Organic silt [K, L, M, O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line		CH	Fat clay [K, L, M]
			PI plots below "A" line		MH	Elastic Silt [K, L, M]
		Organic:	Liquid limit - oven dried / Liquid limit - not dried	< 0.75	OH	Organic clay [K, L, M, P] / Organic silt [K, L, M, Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve.

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay.

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.

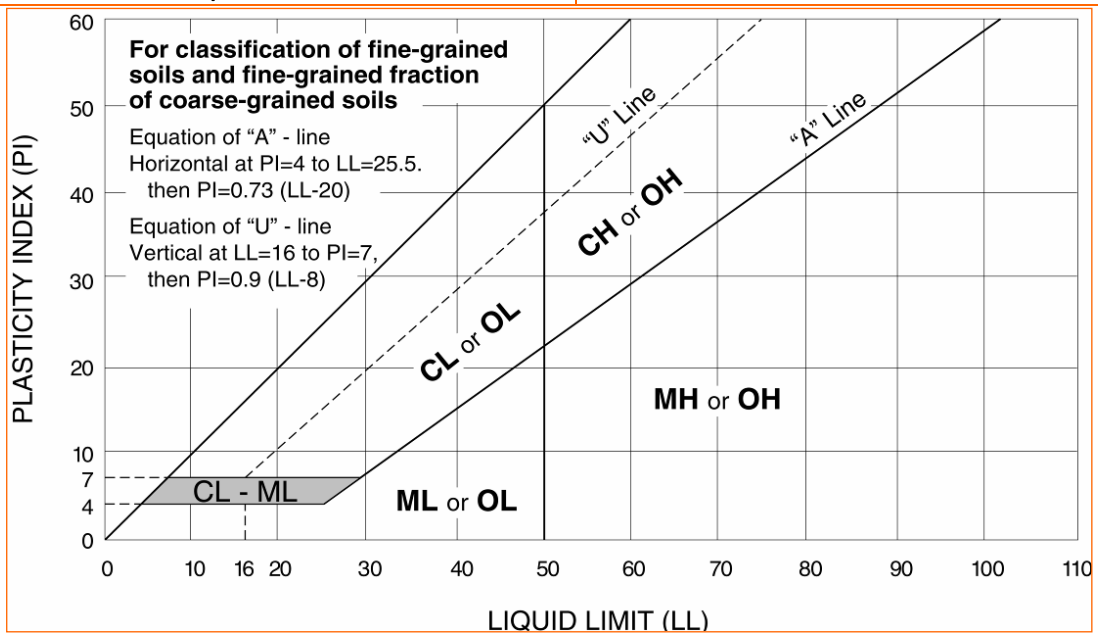
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.



WEATHERING	
Term	**Description**
Unweathered	No visible sign of rock material weathering, perhaps slight discoloration on major discontinuity surfaces.
Slightly weathered	Discoloration indicates weathering of rock material and discontinuity surfaces. All the rock material may be discolored by weathering and may be somewhat weaker externally than in its fresh condition.
Moderately weathered	Less than half of the rock material is decomposed and/or disintegrated to a soil. Fresh or discolored rock is present either as a continuous framework or as corestones.
Highly weathered	More than half of the rock material is decomposed and/or disintegrated to a soil. Fresh or discolored rock is present either as a discontinuous framework or as corestones.
Completely weathered	All rock material is decomposed and/or disintegrated to soil. The original mass structure is still largely intact.
Residual soil	All rock material is converted to soil. The mass structure and material fabric are destroyed. There is a large change in volume, but the soil has not been significantly transported.

STRENGTH OR HARDNESS		
Description	**Field Identification**	**Uniaxial Compressive Strength, psi (MPa)**
Extremely weak	Indented by thumbnail	40-150 (0.3-1)
Very weak	Crumbles under firm blows with point of geological hammer, can be peeled by a pocket knife	150-700 (1-5)
Weak rock	Can be peeled by a pocket knife with difficulty, shallow indentations made by firm blow with point of geological hammer	700-4,000 (5-30)
Medium strong	Cannot be scraped or peeled with a pocket knife, specimen can be fractured with single firm blow of geological hammer	4,000-7,000 (30-50)
Strong rock	Specimen requires more than one blow of geological hammer to fracture it	7,000-15,000 (50-100)
Very strong	Specimen requires many blows of geological hammer to fracture it	15,000-36,000 (100-250)
Extremely strong	Specimen can only be chipped with geological hammer	>36,000 (>250)

DISCONTINUITY DESCRIPTION			
Fracture Spacing (Joints, Faults, Other Fractures)		**Bedding Spacing (May Include Foliation or Banding)**	
Description	**Spacing**	**Description**	**Spacing**
Extremely close	< ¾ in (<19 mm)	**Laminated**	< ½ in (<12 mm)
Very close	¾ in – 2-1/2 in (19 - 60 mm)	**Very thin**	½ in – 2 in (12 – 50 mm)
Close	2-1/2 in – 8 in (60 – 200 mm)	**Thin**	2 in – 1 ft. (50 – 300 mm)
Moderate	8 in – 2 ft. (200 – 600 mm)	**Medium**	1 ft. – 3 ft. (300 – 900 mm)
Wide	2 ft. – 6 ft. (600 mm – 2.0 m)	**Thick**	3 ft. – 10 ft. (900 mm – 3 m)
Very Wide	6 ft. – 20 ft. (2.0 – 6 m)	**Massive**	> 10 ft. (3 m)

Discontinuity Orientation (Angle): Measure the angle of discontinuity relative to a plane perpendicular to the longitudinal axis of the core. (For most cases, the core axis is vertical; therefore, the plane perpendicular to the core axis is horizontal.) For example, a horizontal bedding plane would have a 0-degree angle.

ROCK QUALITY DESIGNATION (RQD) [1]	
Description	**RQD Value (%)**
Very Poor	0 - 25
Poor	25 – 50
Fair	50 – 75
Good	75 – 90
Excellent	90 - 100

1. The combined length of all sound and intact core segments equal to or greater than 4 inches in length, expressed as a percentage of the total core run length.

Reference: U.S. Department of Transportation, Federal Highway Administration, Publication No FHWA-NHI-10-034, December 2009 Technical Manual for Design and Construction of Road Tunnels – Civil Elements

City of Oregon City

GEOGRAPHIC INFORMATION SYSTEM

Geologic Hazards Map

Updated January 4, 2024

- Landslide Locations (details shown in table)
- Faults
- City Limits
- Urban Growth Boundary

Geologic Hazards Overlay Zone

Landslides

- Landslide Scarp Flanks
- Landslide Deposits
- 200 ft Buffer around Landslide Features

Slopes

- Slopes 25 Percent and Greater
- 50 ft Buffer around 25 Percent Slopes

Landslide point locations and table information obtained from Statewide Landslide Information Database for Oregon (SLIDO) v4.4.

Landslide data (scarp flanks and deposits) obtained from Oregon Department of Geology and Mineral Industries (DOGAMI) Interpretive Map Series 29, 30 and 48.

Slope Data derived from Oregon City 2019 Lidar data.

Site

ID	SLIDE NAME	LENGTH (ft)	WIDTH (ft)	DEPTH (ft)	VOLUME (ft3)	SLOPE	MOVEMENT CLASS	CONTRIBUTING FACTOR	MONTH	YEAR	DATE RANGE
LS_555		0	0	0	0	0	Landslide				
LS_831		0	0	0	0	0	Rockfall				
LS_928		0	0	0	0	0	Rockfall				
LS_1004		0	0	0	0	0	Rockfall				
LS_1038		0	0	0	0	0	Rockfall				
LS_1039		0	0	0	0	0	Rockfall				
LS_1040		0	0	0	0	0	Rockfall				
LS_1041		0	0	0	0	0	Rockfall				
LS_1042		0	0	0	0	0	Landslide				
LS_1043		0	0	0	0	0	Landslide				
LS_1044		0	0	0	0	0	Rockfall				
LS_1045		0	0	0	0	0	Rockfall				
LS_1101		0	0	0	0	0	Landslide				
LS_1102		0	0	0	0	0	Fill Failure				
LS_1103		0	0	0	0	0	Rockfall				
LS_1104		0	0	0	0	0	Fill Failure				
LS_1105		0	0	0	0	0	Rockfall				
LS_1106		0	0	0	0	0	Fill Failure				
LS_1107		0	0	0	0	0	Rockfall				
LS_1108		0	0	0	0	0	Rockfall				
LS_1109		0	0	0	0	0	Fill Failure				
LS_1110		0	0	0	0	0	Fill Failure				
LS_1111		0	0	0	0	0	Rockfall				
LS_1112		0	0	0	0	0	Fill Failure				
LS_1113		0	0	0	0	0	Fill Failure				
LS_1114		0	0	0	0	0	Rockfall				
LS_1115		0	0	0	0	0	Rockfall				
LS_1116		0	0	0	0	0	Landslide				
LS_1117		0	0	0	0	0	Fill Failure				
LS_1954	Street of Dreams	0	0	0	0	0				2007	
LS_2472		0	0	19.127001	2732100	17	Complex-Earth Slide-Rotational+Earth Flow		12	2005	
LS_2473	Newell Creek Apartments Landslide	0	0	75.180496	47053900	20	Complex		12	2005	
LS_2540		0	0	0	0	0					12/2005-01/2006
LS_2569		0	0	0	0	0					12/2005-01/2006
LS_2572		0	0	0	0	0					12/2005-01/2006
LS_2574		0	0	0	0	0					12/2005-01/2006
LS_2576		0	0	0	0	0					12/2005-01/2006
LS_2578		0	0	0	0	0					12/2005-01/2006
LS_2612		0	0	0	0	10				1964	1995
LS_2640		0	0	0	0	15				1993	
LS_3401		0	0	0	0	0			02	1996	
LS_3405		0	0	0	0	0			02	1996	
LS_3408		0	0	0	0	0			02	1996	
LS_4111	99E milepost 17	10	45	6	2700	65	Flow	Road Related - Cutslope	02	1996	
LS_4113	Pacific Highway E milepost 15	175	400	0	0	20	Slide-Rotational/Flow		02	1996	
LS_4116	Clackamas River Drive at South Fork Clackamas Riv*	20	80	3	4806	45	Flow	Road Related - Cutslope	02	1996	
LS_4117	13720 Clackamas River Drive	100	65	5	32508	40	Flow	Road Related - Cutslope	02	1996	
LS_4118	Clackamas River Drive	15	10	3	459	50	Flow	Road Related - Cutslope	02	1996	
LS_4136	Loder Road just west of Thimble Creek	30	60	5	8991	35	Flow	Road Related	02	1996	
LS_4137	15770 Thayer Road	50	200	5	50004	40	Flow	Road Related	02	1996	
LS_4138	Bob Rinkes residence, 15723 South Thayer Road, 65*	200	400	3	240003	30	Flow		02	1996	
LS_4139	Bob Rinkes residence, 15723 South Thayer Road, 65*	300	300	2	180009	30	Flow		02	1996	
LS_4140	Bob Rinkes residence, 15723 South Thayer Road, 65*	20	600	6	72009	45	Flow		02	1996	
LS_4141	Bob Rinkes residence, 15723 South Thayer Road, 65*	30	30	6	5400	40	Flow		02	1996	
LS_4142	Bob Rinkes residence, 15723 South Thayer Road, 65*	40	80	4	12798	25	Flow	Road Related - Cutslope	02	1996	
LS_4143	Maple Lane, .75 miles down form Fergusson Road, a*	30	35	3	3159	45	Flow	Road Related - Cutslope	02	1996	
LS_4144	Maple Lane, .75 miles down form Fergusson Road, b*	250	100	0	0	15	Slide-Rotational/Flow		02	1996	
LS_4145	16097 Maple Lane	30	45	5	6750	30	Flow	Road Related	02	1996	
LS_4147	I-205 southbound at mile 8.6	10	10	0	1188	90	Fall	Road Related - Cutslope	02	1996	
LS_4148	End of First Avenue Court	70	50	6	21006	50	Flow		02	1996	
LS_4149	Washington Street and Abernathy Creek Road / Par*	30	45	6	8100	45	Slide-Rotational/Flow		02	1996	
LS_4150	Washington Street and Abernathy Creek Road close *	30	35	6	6291	35	Flow		02	1996	
LS_4151	Above Clackamas DOT, McLoughlin Avenue and Jockey*	200	60	0	240003	30	Slide-Rotational/Flow		02	1996	

ID	SLIDE NAME	LENGTH (ft)	WIDTH (ft)	DEPTH (ft)	VOLUME (ft3)	SLOPE	MOVEMENT CLASS	CONTRIBUTING FACTOR	MONTH	YEAR	DATE RANGE
LS_4152	Above Clackamas DOT and Abernathy Creek	180	40	0	108000	30	Flow	Road Related	02	1996	
LS_4153	14156 Redland Road, above Abernathy Creek	50	20	5	4995	40	Flow		02	1996	
LS_4154	Highway 213 and Redland Road	150	45	0	101250	30	Slide-Rotational/Flow		02	1996	
LS_4155	Holly Lane	500	500	5	0	25	Flow		02	1996	
LS_4156	Singer Hill Road in Oregon City	25	20	3	1512	90	Fall	Road Related - Cutslope	11	1997	
LS_4157	Newell Creek at Highway 213	125	100	8	100008	55	Flow		02	1996	
LS_4158	End of Morton Road below B.B. Leasing to east, Or*	200	150	0	0	25	Flow	Human/Water	02	1996	
LS_4159	End of Morton Road below B.B. Leasing to west, Or*	20	70	5	6993	25	Flow	Human/Water	02	1996	
LS_4160	Morton Road, Oregon City	70	30	6	12609	40	Flow	Human/Water	02	1996	
LS_4161	Timber Ridge Apartments on Morton Road, Oregon Ci*	75	30	0	27000	40	Slide-Rotational/Flow	Human/Water	02	1996	
LS_4162	Dewey Street and Warner Street, Oregon City	200	400	3	240003	35	Slide-Rotational/Flow	Human/Water	02	1996	
LS_4163	Corner of Eluvia Street and Dewey Street, Newell *	150	150	0	0	30	Slide-Rotational/Flow	Human/Water	02	1996	
LS_4164	Roosevelt Street and Eluvia Street, Oregon City	35	20	9	6291	30	Flow	Road Related	02	1996	
LS_4165	Roosevelt Street and Eluvia Street, Oregon City	80	25	4	7992	15	Flow	Human/Water	02	1996	
LS_4166	End of Logan Street, Oregon City	15	50	4	2997	25	Flow	Road Related	02	1996	
LS_4167	North of Chicharee Drive, Newell Creek Canyon, Or*	120	30	6	21600	35	Flow		02	1996	
LS_4168	North of Chicharee Drive, Newell Creek Canyon, Or*	120	60	0	72009	25	Flow		02	1996	
LS_4169	North of Chicharee Drive, Newell Creek Canyon, Or*	35	15	4	2106	30	Flow		02	1996	
LS_4170	South of Morton Road, Newell Creek Canyon, Oregon*	60	60	9	32400	45	Flow		02	1996	
LS_4171	Highway 213 around milepost 2.2 southbound, Newel*	200	35	1	6993	30	Flow	Road Related - Cutslope	02	1996	
LS_4172	Highway 213 around milepost 2.2, Newell Creek Can*	100	300	0	0	40	Flow	Road Related	02	1996	
LS_4173	Highway 213 at powerline crossing northbound, New*	30	150	3	13500	20	Flow	Human/Water	02	1996	
LS_4174	End of Newell Crest Drive, Oregon City	30	20	3	1809	15	Flow	Road Related	02	1996	
LS_4175	Mt. View Cemetary, Oregon City	50	150	8	59994	40	Flow		02	1996	
LS_4176	Mt. View Cemetary, Oregon City	70	120	3	25191	40	Flow		02	1996	
LS_4177	Mt. View Cemetary, Oregon City	30	15	0	11259	65	Flow	Human/Water	02	1996	
LS_4178	East of Hilltop Avenue, Oregon City	100	300	0	0	35	Flow		02	1996	
LS_4179	Upper Newell Creek, Oregon City	100	50	0	100008	50	Flow		02	1996	
LS_4561	SE Sandwood Rd just S. of Holcomb Rd	200	300	3	180900	20	Slide-Rotational/Flow	Human/Water	01	1997	
LS_4578	Intersection of Forsythe and Thurman	300	900	1	40500	40	Slide-Rotational/Flow		02	1996	
LS_4579	Clackamas River Dr	30	15	3	1350	60	Slide-Rotational/Flow	Road Related - Cutslope	01	1997	
LS_4581	S of Martin Rd, Newell Crk	60	120	9	0	60	Flow		02	1996	
LS_4582	End of Alden St at Sha Spadie residence	270	225	2	0	30	Slide-Rotational/Flow		02	1996	
LS_5395		550	0	0	0	0	Slide-Translational	Pre-existing slide			
LS_6791	41028-1	0	0	0	0	0					1996-1997
LS_6792	41028-2	0	0	0	0	0					1996-1997
LS_6793		0	0	0	0	0					1996-1997
LS_7175	Clackamas River Dr	35	51	3	5346	40	Slide-Rotational/Flow	Road Related - Cutslope			1996-1997
LS_7203		0	0	0	0	0					1996-1997
LS_7204		0	0	0	0	0					1996-1997
LS_7205		0	0	0	0	0					1996-1997
LS_7206		0	0	0	0	0					1996-1997
LS_7207		0	0	0	0	0					1996-1997
LS_7208		0	0	0	0	0					1996-1997
LS_7209		0	0	0	0	0					1996-1997
LS_7272		0	0	0	0	0					1996-1997
LS_7317		0	0	0	0	0					1996-1997
LS_7411		0	0	0	0	0					1996-1997
LS_7412		0	0	0	0	0					1996-1997
LS_7413		0	0	0	0	0					1996-1997
LS_7414		0	0	0	0	0					1996-1997
LS_7415		0	0	0	0	0					1996-1997
LS_7416		0	0	0	0	0					1996-1997
LS_7417		0	0	0	0	0					1996-1997
LS_12141		0	0	0	0	10				1995	1964
LS_12110		0	0	0	0	0			02	2017	
LS_12112		0	0	0	0	0			02	2017	
LS_12123		0	0	0	0	0			04	2017	
BurnWJunpub2021_34		0	0	0	0	0			12	2015	
BurnWJunpub2021_53		0	0	0	0	0		exisitng slide	12	2015	
MickKAunpub2015_5		0	0	0	0	0			12	2014	
MickKAunpub2015_8		0	0	0	0	0	Rockfall		12	2014	

The City of Oregon City makes no representations, express or implied, as to the accuracy, completeness and timeliness of the information displayed.

This map is not suitable for legal, engineering, or surveying purposes. Notification of any errors is appreciated.

N W E S

0.5 0.25 0 0.5 1 1.5 Miles

0 5001,000 2,000 3,000 4,000 5,000 6,000 7,000 8,000 9,000 10,000 Feet

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OREGON CITY

Plot date: January 4, 2024
Map name: Geologic Hazards - 20240104 Version.aprx|Geologic Hazards Map - Updated 20240104 - 36x48P
Plot name: Geologic Hazards Map - Updated 20240104 - 36x48P - 20240104.pdf

APPENDIX H
Traffic Impact Analysis

Traffic Impact Analysis

OREGON CITY MIXED-USE

Prepared for:
Langan

October 2025

Prepared by:



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1.25192.00

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Introduction

This traffic impact analysis (TIA) identifies potential transportation-related impacts associated with the proposed Mixed-Use Development in Oregon City, Oregon. As necessary, mitigation measures are identified that would reduce or offset significant transportation related impacts that the project may have on the surrounding transportation system.

Project Description

The proposed project site is located at 1367 Molalla Avenue in Oregon City, as shown in the vicinity map included in Figure 1. The site is comprised of 4 parcels (3 parcels with land use development and 1 for right-of-way) in which the proposed mixed-use development is anticipated to include the following:

- Parcel A: 13,500 sf retail
- Parcel B: up to 210 multi-family apartment units
- Parcel C: No land use - right-of-way
- Parcel D: 4,915 sf fast food restaurant with drive-through

The existing site is vacant. With the development of the site, a new roadway connection would be completed between the existing signalized intersections along Molalla Avenue at the west side of the site and Beavercreek Road south of the site. The preliminary site plan is illustrated in Figure 2. The proposed project is anticipated to be fully constructed and operational by 2030.

Study Scope and Study Area

The following off-site intersections surrounding the project site were identified for analysis following coordination with City of Oregon City and Oregon Department of Transportation (ODOT) staff:

1. Molalla Ave/Pearl St
2. Molalla Ave/Holmes Ln
3. Molalla Ave/Warner Milne Rd
4. Molalla Ave/Safeway access/Future site access
5. Molalla Ave/Beavercreek Rd
6. Molalla Ave/Clairmont Way
7. Molalla Ave/ OR-213
8. Commercial Access/Beavercreek Rd/Future site access
9. OR-213/Beavercreek Rd

The analysis includes a review of existing conditions in the vicinity of the project site, including the transportation network, planned improvements, existing and future without-project AM and PM[1] peak hour traffic volumes, traffic operations, and traffic safety. Future with-project conditions are evaluated by adding site-generated traffic to future without-project volumes. Future without and with-project conditions are compared to identify the impacts the proposed project has on the surrounding transportation system.

[1] Note that review of additional time periods is included in the TIA below, but as discussed in greater detail below, the operational analysis is limited to the AM and PM peak hours.



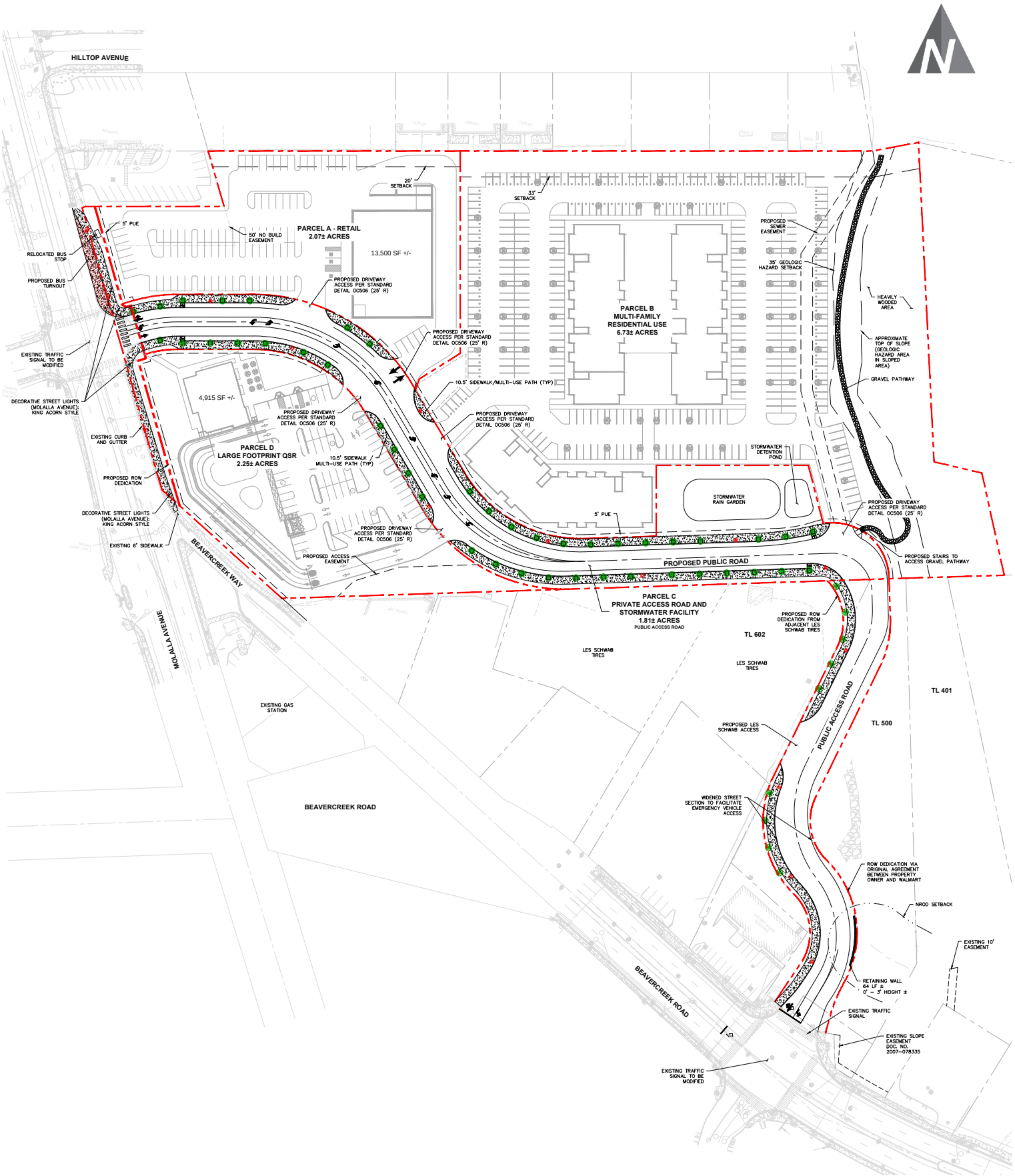
Site Vicinity and Study Intersections

FIGURE 1

OR City Mixed-Use

transpogroup

Oct 06, 2025 – 11:47am lilyh M:\25\1.25192.00 – OR City Retail\Graphics\DWG\25192_Distribution_Graphics.dwg Layout: Site Vicinity and Study Ints



Preliminary Site Plan

OR City Mixed-Use

FIGURE
2

transpogroup

Oct 03, 2025 – 12:40pm lilyh M:\25\1.25192.00 – OR City Retail\Graphics\DWG\25192_Distribution_Graphics.dwg Layout: Site Plan

Existing & Future Without-Project Conditions

This section describes both existing and future (2030) without-project conditions within the identified study area. Study area characteristics are provided for the transportation system, planned improvements, existing and future forecast without-project traffic volumes, traffic operations, and traffic safety.

Roadway Network

The following sections describe the existing street network within the vicinity of the proposed project and anticipated planned improvements.

Existing

The primary roadways within the study area and their characteristics near the study intersections are described below.

Molalla Avenue is a five-lane roadway functionally classified by the City of Oregon City as a minor arterial and has a speed limit of 30 mph. Molalla Avenue is a 2 to 3 lane roadway north of Warner Milne Road and south of Beavercreek Road, and five lane roadway Warner Milne Road and Beavercreek Road. Sidewalks are provided on both sides of Molalla Avenue through the entirety of the study area. Bike lanes are available on both sides north of Gales Lane, and south of the Safeway access driveway.

Beavercreek Road is a 5-lane roadway functionally classified as a minor arterial west of Molalla Avenue and a major arterial east of Molalla Avenue. Beavercreek Road has a speed limit of 35 mph in the vicinity of the project site. Beavercreek Road is a 3 to 5 lane roadway west of Molalla Avenue and a 5 to 6 lane road east of Molalla Avenue with additional urn lanes present surrounding its intersection with OR-213. Sidewalks and bicycle lanes are provided on both sides of the roadway between Molalla Avenue and OR-213.

OR-213 (Cascade Highway South) is a State Highway Route classified as a principal arterial. OR-213 is a four-lane roadway with a wide median north and south of its intersection with S Beavercreek Road, which transitions to a 6-lane roadway south of Beavercreek Road, and a 7-lane roadway north of Beavercreek Road. The speed limit along OR-213 in the study area is 55 mph. Sidewalks and bike lanes are available on the east side of OR-213 south of Beavercreek Road and wide painted shoulders are present where sidewalks are not within the study area.

Pearl Street is classified by the City of Oregon City as a major collector with 2 travel lanes. The speed limit is 25 mph. West of the intersection with Molalla Avenue, a sidewalk is present on the north side of Pearl Street. East of the intersection, sidewalks are present for approximately 230 feet.

Holmes Lane is classified as a collector west of Molalla Avenue, and continues into Hilda Street, which is a local road, east of Molalla Avenue. Holmes Lane is a 2 to 3 lane roadway with a speed limit of 25 mph. Sidewalks, bike lanes, and/or paved shoulders are present on both sides of Holmes Lane.

Warner Milne Road is classified as a minor arterial with a speed limit of 30 mph. Warner Milne Roadis a two-lane roadway with additional turn lanes provided surrounding its intersection with Molalla Avenue. Sidewalks and bicycle lanes are present along both sides of the roadway within the study area.

Clairmont Way is functionally classified by the City of Oregon City as a collector with a speed limit of 25 mph. Clairmont Way is a two-lane roadway with additional turn lanes

provided surrounding its intersection with Molalla Avenue. Sidewalks and bicycle lanes are present along both sides of the roadway within the study area.

Planned Improvements

A review of local plans was conducted to identify any changes in the study area that should be accounted for in the analysis. The local plans reviewed included the following: *City of Oregon City's Comprehensive Plan Project List (November 2022)*, *Oregon City's Transportation System Plan* (TSP), Yamhill County's *2015-2035 Transportation System Plan* (TSP)*, and Oregon Department of Transportation's (ODOT) 2024-2027 Statewide Transportation Improvement Program (STIP).* Planned improvements within the study area predominantly included maintenance and resurfacing projects; not impacting intersection capacity. This included the following projects:

- Warner Milne Road resurfacing near Molalla Avenue which was recently completed.
- Holmes Lane will be undergoing resurfacing in 2026.
- Molalla Avene will be undergoing resurfacing in 2027.
- Beavercreek Road will be undergoing microsurfacing in 2026, with more resurfacing planned for 2032.
- Water transmission pipes under Molalla Avenue will be upgraded in 2026.

In addition to the above projects, Beavercreek Road has also been undergoing safety improvements since 2023, including signal modifications and improved signage at the intersection with OR-213 which have since been completed. The Beavercreek Road/OR-213 intersection has an Alternative Mobility Target as the City's TSP identified it would not meet the state's required Oregon Highway Plan Mobility Standards by 2035. An additional project that has been identified as part of the Alternative Mobility Targets in the TSP includes project D95, the Beavercreek Road/OR-213 westbound right turn lane with northbound merge lane on OR 213. The City is collecting a pro-rata share to fund the D95 project; however, this project was not assumed in the future operational conditions.

Non-Motorized Facilities

Dedicated pedestrian and bicycle facilities are provided on roadways surrounding the project site as noted above. Sidewalks are available on both sides of Molalla Avenue, Beavercreek Road, and Holmes Lane. A sidewalk is available on the east side of OR-213 south of the intersection with Beavercreek Lane and on the north side of Pearl Street west of Molalla Avenue.

Transit Service

Transit service in the vicinity of the project site is provided by TriMet's Route 32. The closest transit stops to the site are located at the two site access intersections along Molalla Avenue and Beavercreek Road, directly adjacent to the project site. Additional transit stops served by TriMet's Route 33 are located approximately 0.25 miles west of the project site at the intersection of Beavercreek Road/Danielson Drive. Route 32 provides service 7-days per week between Milwaukie and Clackamas Community College in Oregon City with service between approximately 6:15 a.m. and 7:00 p.m. on weekdays with headways of approximately 30 minutes during peak periods. Route 33 provides service between the Oregon City Transit Center, Milwaukie and Clackamas Town Center 7-days per week between approximately 5:20 a.m. and 12:00 a.m. with peak period headways of approximately 15 minutes.

Traffic Volumes

The existing and future (2030) without-project traffic volumes forecasts are summarized in the sections below.

Existing

Existing weekday AM (7 to 9 a.m.) and PM (4 to 6 p.m.) peak period traffic counts were collected at each study intersection in September 2025.[2] The detailed traffic counts are included in Appendix A. Volumes are rounded to the nearest 5 vehicles to account for the daily fluctuations in traffic volumes. Figure 4 illustrates the existing weekday AM and PM peak hour traffic volumes at the study intersections.

In addition to the weekday peak hours, the traffic volumes throughout the week were also reviewed to confirm the time periods for analysis. Traffic volumes were collected along Molalla Avenue, north of Beavercreek Road in the project vicinity for one week in September 2025. The detailed volumes throughout the week are included in Appendix A and the volumes are illustrated in Figure 3.

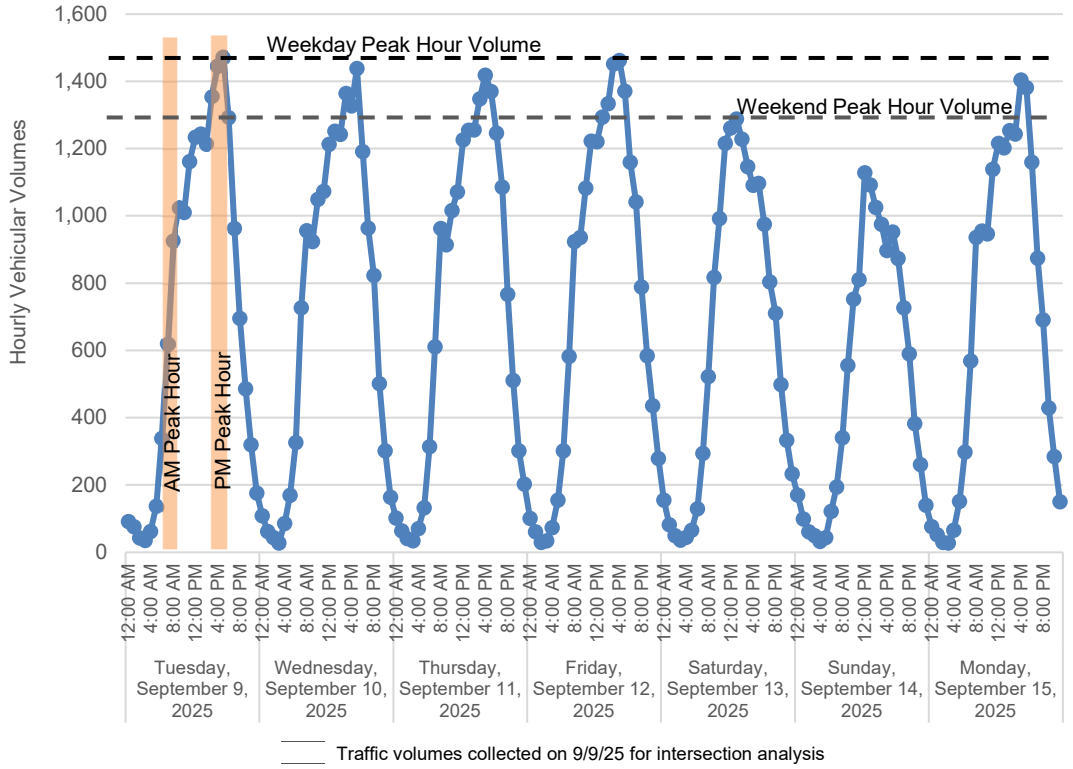
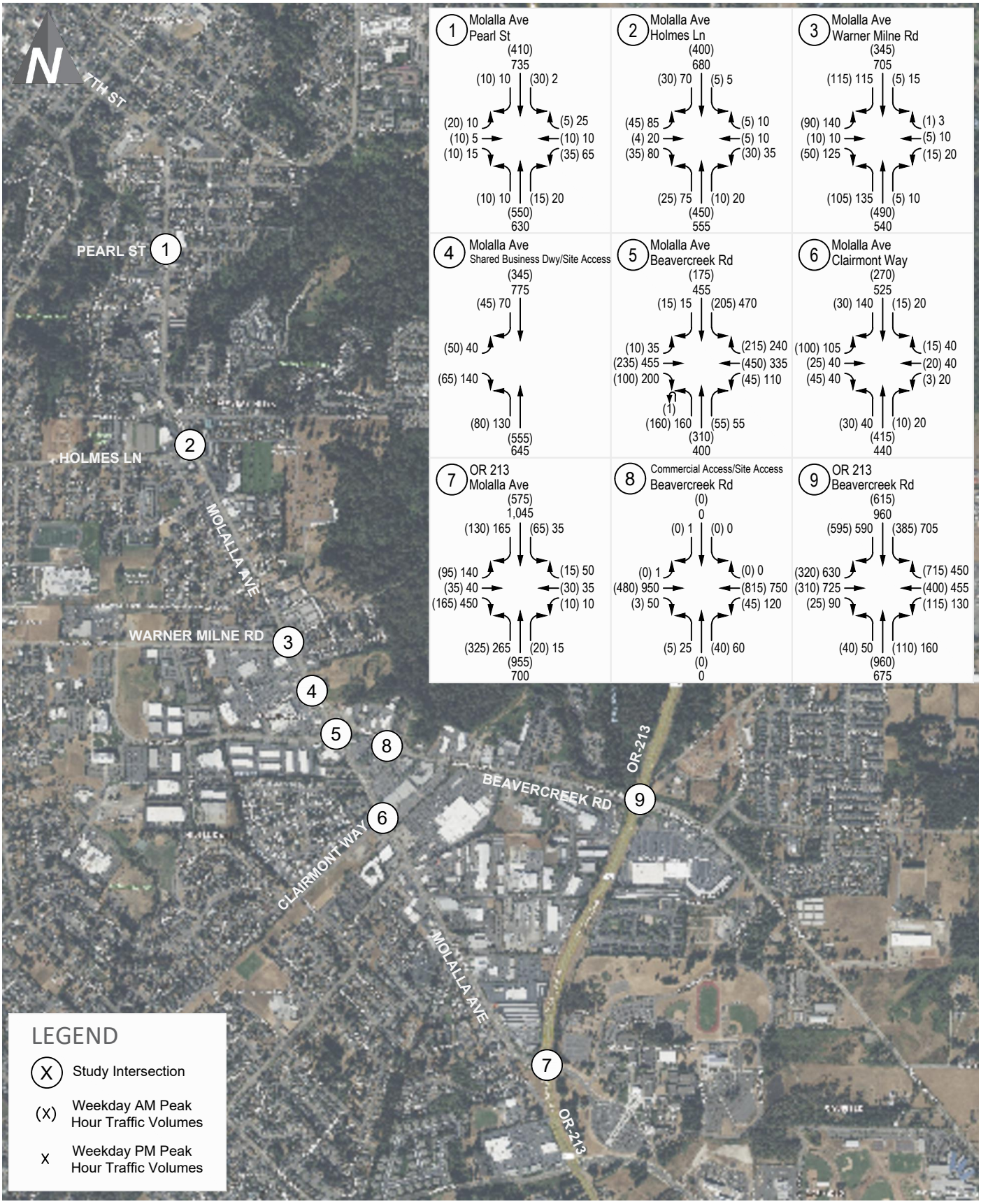


Figure 3. Existing Weekly volumes along Molalla Avenue, north of Beavercreek Road

As shown in the figure, the weekday AM and PM peak hours being studied as part of the project capture the peak traffic volumes that are occurring within the study area throughout the week. The weekend peak hourly volumes are approximately 12 percent less than the weekday peak volumes which occur during the studied PM peak hour.

[2] It was confirmed with City and ODOT staff that given the counts were conducted in September when school was in session, no seasonal adjustment to the volumes was needed.



Existing Weekday Peak Hour Traffic Volumes

FIGURE 4

OR City Mixed-Use

transpogroup

Sep 30, 2025 – 3:10pm lilyh M:\25\1.25192.00 – OR City Retail\Graphics\DWG\25192_Distribution_Graphics.dwg Layout: Existing Vols

Future Without-Project Traffic Volumes

Future (2030) without-project traffic volumes are comprised of background traffic growth and traffic from "in-process developments" in the vicinity of the project site. An annual growth rate of 2.0 percent was applied, as provided by the City. Ten in-process developments in the vicinity of the proposed project site are listed below and were included in the analysis as identified by City staff.

1. 770 Pleasant Townhomes
2. Abernethy Place
3. Canemah Road Subdivision
4. Central Point Subdivision
5. Clackamas Heights Redevelopment
6. Downtown North End Development
7. Park Place Crossing Phase 1
8. Serres Farms Master Plan
9. Thimble Creek South
10. White Lane Subdivision

The forecast future (2030) without-project weekday AM and PM peak hour traffic volumes are shown on Figure 5.

Traffic Operations

The following section summarizes the traffic operations for existing and future without-project conditions for the study intersections.

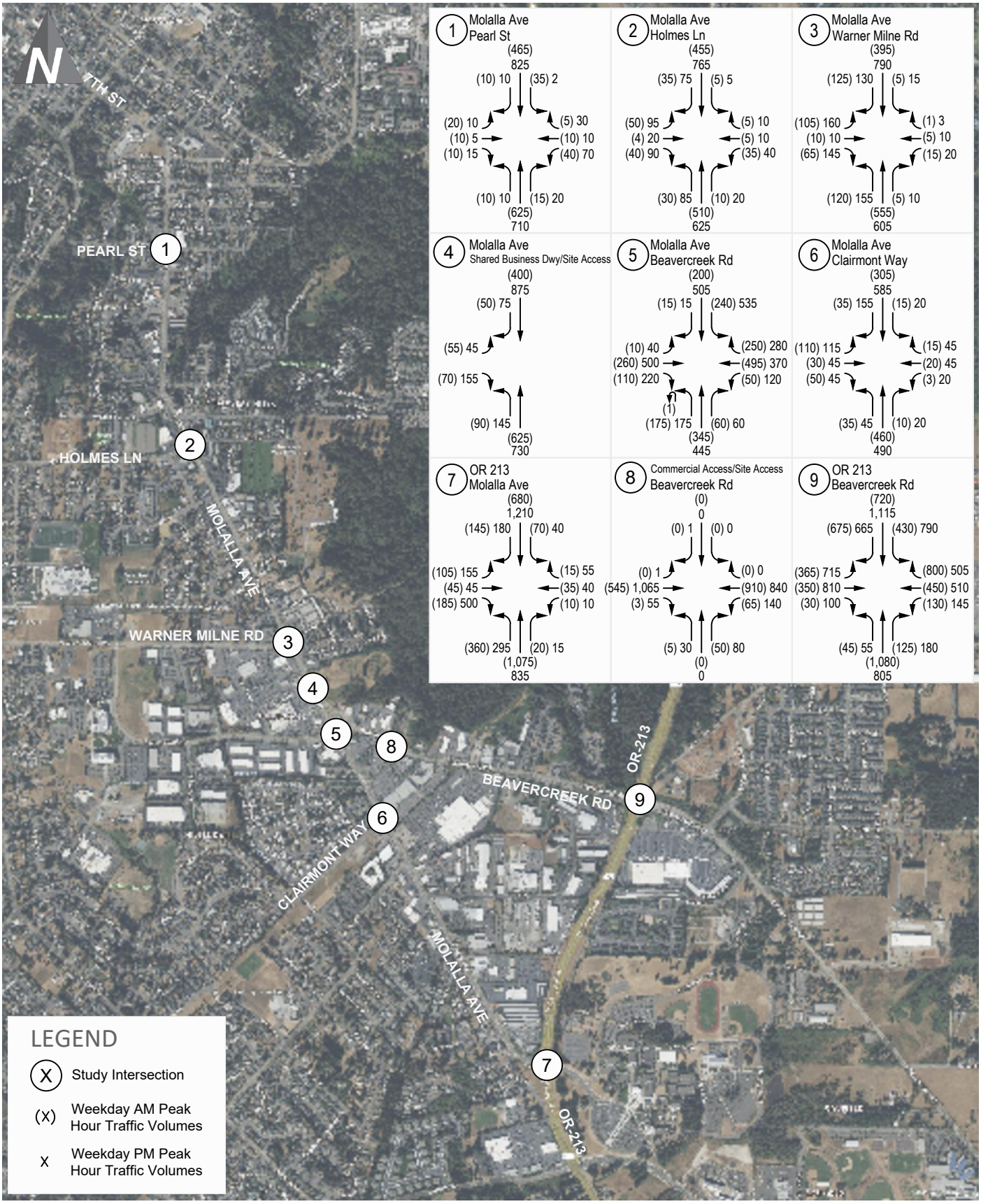
An operational analysis was conducted for the study area intersections for the weekday AM and PM peak hours. Existing and future without-project volume-to-capacity (v/c) ratios and delay were calculated at study intersections based on the methodologies contained in the *Highway Capacity Manual* 7th Edition (HCM 7). The software program *Synchro* 12 was used to evaluate intersection operations.

ODOT's targets were applied to the signalized intersections along Cascade Highway South (OR 213), while the City of Oregon City's standards were applied to the remaining study intersections along Molalla Avenue and Beavercreek Road.

The City of Oregon City's operational targets are defined in the *City of Oregon City Guidelines for Transportation Impact Analyses* (2021), Section 7.9.1 for *Intersection Level of Service Standards.* The City identified a v/c ratio of 0.99 or less for the overall intersection at signalized intersections with the exception of the intersection of OR 213/Beavercreek Road, which is noted to have a maximum v/c ratio of 1.00. ODOT operational targets are defined in the 1999 *Oregon Highway Plan* (June 2017). Within the study area, Cascade Highway South (OR 213) is functionally classified as a principal arterial route inside the Portland Metro Area's Metropolitan Planning Organization (MPO) requiring a v/c ratio of 0.99 or less for the overall intersections. The Oregon Transportation Commission amended the *Oregon Highway Plan* in November 2018 to approve an alternative mobility target at the intersection of OR 213/Beavercreek Road to align with the City of Oregon City's recommendation of a 1.0 v/c target. Note that OHP identifies that *"ODOT recognizes that there are many variables and levels of uncertainty in calculating volume-to-capacity ratios…ODOT considers calculated values for v/c ratios that are within 0.03 of the adopted target in the OHP to be considered in compliance with the target."*

Signal timing at the study intersections was provided by Clackamas County and ODOT staff. Analysis parameters such as lane channelization, traffic control type, and signal timing were maintained for future (2030) without-project conditions consistent with existing conditions.

Results for the existing and future without-project operations analyses are summarized in Table 1. Detailed operations worksheets for the existing and future without-project analysis are included in Appendix B. The overall intersection v/c for signalized intersections was calculated per ODOT's *Analysis Procedures Manual* (Version 2, July 2025) Section 13.4.4 using Synchro.



1 Molalla Ave / Pearl St
(465) 825
(10) 10 (35) 2
(20) 10 (5) 30
(10) 5 (10) 10
(10) 15 (40) 70
(10) 10 (15) 20
(625) 710

2 Molalla Ave / Holmes Ln
(455) 765
(35) 75 (5) 5
(50) 95 (5) 10
(4) 20 (5) 10
(40) 90 (35) 40
(30) 85 (10) 20
(510) 625

3 Molalla Ave / Warner Milne Rd
(395) 790
(125) 130 (5) 15
(105) 160 (1) 3
(10) 10 (5) 10
(65) 145 (15) 20
(120) 155 (5) 10
(555) 605

4 Molalla Ave / Shared Business Dwy/Site Access
(400) 875
(50) 75
(55) 45
(70) 155
(90) 145
(625) 730

5 Molalla Ave / Beavercreek Rd
(200) 505
(15) 15 (240) 535
(10) 40 (250) 280
(260) 500 (495) 370
(110) 220 (50) 120
(1)
(175) 175 (60) 60
(345) 445

6 Molalla Ave / Clairmont Way
(305) 585
(35) 155 (15) 20
(110) 115 (15) 45
(30) 45 (20) 45
(50) 45 (3) 20
(35) 45 (10) 20
(460) 490

7 OR 213 / Molalla Ave
(680) 1,210
(145) 180 (70) 40
(105) 155 (15) 55
(45) 45 (35) 40
(185) 500 (10) 10
(360) 295 (20) 15
(1,075) 835

8 Commercial Access/Site Access / Beavercreek Rd
(0) 0
(0) 1 (0) 0
(0) 1 (0) 0
(545) 1,065 (910) 840
(3) 55 (65) 140
(5) 30 (50) 80
(0) 0

9 OR 213 / Beavercreek Rd
(720) 1,115
(675) 665 (430) 790
(365) 715 (800) 505
(350) 810 (450) 510
(30) 100 (130) 145
(45) 55 (125) 180
(1,080) 805

Future (2030) Without-Project Peak Hour Traffic Volumes

FIGURE 5

OR City Mixed-Use

transpogroup

Sep 30, 2025 – 3:13pm lilyh M:\25\1.25192.00 – OR City Retail\Graphics\DWG\25192_Distribution_Graphics.dwg Layout: Future Without–Project Vols

Table 1. Existing & Future Without-Project Peak Hour Intersection Operations

Intersection	Traffic Control	Existing		Future (2030) Without-Project	
		v/c[1]	Delay[2]	v/c	Delay
Weekday AM Peak Hour					
1. Molalla Ave/Pearl St	Signal	0.41	4.7	0.46	4.9
2. Molalla Ave/Holmes Ln/Hilda St	Signal	0.36	7.8	0.40	8.1
3. Molalla Ave/Warner Milne Rd	Signal	0.24	10.3	0.27	10.5
4. Molalla Ave/Shared Business Dwy (Safeway)	Signal	0.45	10.6	0.51	10.8
5. Molalla Ave/Beavercreek Rd	Signal	0.46	17.3	0.51	17.9
6. Molalla Ave/Clairmont Way	Signal	0.40	10.4	0.44	10.8
7. OR 213/Molalla Ave	Signal	0.57	27.0	0.64	28.7
8. Shared Business Dwy (South Ridge)/ Beavercreek Rd	Signal	0.65	4.4	0.72	4.8
9. OR 213/Beavercreek Rd	Signal	0.72	35.9	0.81	47.1
Weekday PM Peak Hour					
1. Molalla Ave/Pearl St	Signal	0.54	5.5	0.60	5.9
2. Molalla Ave/Holmes Ln/Hilda St	Signal	0.59	9.6	0.66	10.7
3. Molalla Ave/Warner Milne Rd	Signal	0.39	11.2	0.44	12.2
4. Molalla Ave/Shared Business Dwy (Safeway)	Signal	0.52	13.4	0.58	14.5
5. Molalla Ave/Beavercreek Rd	Signal	0.69	24.7	0.76	28.1
6. Molalla Ave/Clairmont Way	Signal	0.61	13.1	0.68	16.4
7. OR 213/Molalla Ave	Signal	0.68	33.9	0.78	36.3
8. Shared Business Dwy (South Ridge)/ Beavercreek Rd	Signal	0.59	7.6	0.67	8.5
9. OR 213/Beavercreek Rd	Signal	0.82	52.2	0.94	75.4

Note: **Bold** indicates the required V/C standard is not met.
1. Volume to capacity (v/c) ratio reported for the overall intersection at signalized intersections.
2. Average delay per vehicle in seconds reported for the overall intersection delay at signalized intersections.

Table 1 shows that under both existing and future (2030) without project conditions, the study intersections operate acceptably per the respective v/c target during both the existing AM and PM peak hours, operating with a v/c ratio of 0.94 or less.

Traffic Safety

The five most recent years of collision records (January 1, 2019, to December 31, 2023) provided by the Oregon Department of Transportation (ODOT) were reviewed to identify existing traffic safety issues at the study intersections. A summary of the total and average annual number of reported collisions as well as the observed crash rates at the study intersections are provided in 0.

Table 2. Study Intersection Collision Data Summary (2019 – 2023)

Intersection	Number of Reported Collisions					Total	Annual Average	Crash Rate per MEV
	2019	2020	2021	2022	2023			
1. Molalla Ave/Pearl St	4	2	0	2	3	11	2.20	0.39
2. Molalla Ave/Holmes Ln/Hilda St	3	2	3	3	1	12	2.40	0.40
3. Molalla Ave/Warner Milne Rd	6	3	6	2	3	20	4.00	0.60
4. Molalla Ave/Shared Business Dwy (Safeway)	4	3	3	0	0	10	2.00	0.30
5. Molalla Ave/Beavercreek Rd	13	9	5	8	10	45	9.00	0.84
6. Molalla Ave/Clairmont Way	4	2	1	4	3	14	2.80	0.52
7. OR 213/Molalla Ave	10	4	2	5	0	21	4.20	0.39
8. Shared Business Dwy (South Ridge)/ Beavercreek Rd	0	0	1	0	0	1	0.20	0.03
9. OR 213/Beavercreek Rd	29	27	23	16	33	128	25.60	1.25

Source: ODOT 2025.
Note: MEV = million entering vehicles

As shown in Table 2, the most collisions that occurred within the study area over the last five-year review period occurred along Beavercreek Road at Molalla Avenue and OR 213 with an annual average of 9 collisions per year and approximately 2 collisions per year, respectively. The most common collision types experienced at the study intersections were rear-end collisions followed by approach turn collisions, primarily resulting in property damage only and minor injury. There were five collisions over the last five-year review period at the study intersections of Molalla Avenue/Pearl Street, Molalla Avenue/Warner Milne Road and Molalla Avenue/Clairmont Way involving a pedestrian, two of which resulting in fatality at Molalla Avenue/Pearl Street and Molalla Avenue/Warner Milne Road, occurring in 2019 and 2022, respectively. Both intersections are signalized with crosswalks provided across all legs of the intersections. No other fatalities were reported within the study area. Based on the review of existing collisions in the study area, no patterns of safety concerns were identified.

The intersections of Molalla Avenue and Beavercreek Road are located along OR 213, a state highway classified as principal arterial. According to the ODOT CAR Unit Crash Rate Table II, the crash rate along the state highway system principal arterial roadways was observed to range from 1.25 in 2022 to 1.40 in 2019. The statewide 90th percentile intersection crash rates detailed in Exhibit 4-1 of ODOT's *Analysis Procedures Manual* (Version 2, October 2024) show a rate of 0.86 for urban four-legged signalized intersections. As shown in Table 2, the crash rate at OR 213/Molalla Avenue is below both the statewide observed crash rates and less than the 90th percentile crash rates. The OR 213/Beavercreek Road intersection is identified within the top 5 percent of sites in the ODOT's *Safety Priority Index System* (SPIS) sites and the crash rate during the study period exceeds the 90th percentile crash rates but is consistent with the lower of the observed crash rates along a principal arterial. As identified above, the City has been undergoing safety improvements at the OR 213/Beavercreek Road intersection since 2023 including signal modifications and improved signage at the intersection with OR-213 which have since been completed.

Project Impacts

This section of the report documents project-generated impacts within the study area. First, peak hour traffic volumes are estimated, distributed, and assigned to adjacent roadways and intersections within the study area. Next, future (2030) traffic volumes including project traffic are developed and the potential impact to traffic volumes and traffic operations are identified.

Trip Generation

Trip generation for the proposed project was calculated based on trip rates using the Institute of Transportation Engineers (ITE) *Trip Generation Manual* (11th Edition, 2021) as coordinated and approved with City and ODOT staff through scoping of the traffic analysis. ITEs Multifamily Housing (Mid-Rise) (LU #221) and Fast-Food Restaurant with Drive-Through Window (LU #934), and Supermarket (LU #850) land uses were assumed for the proposed residential, restaurant, and retail land uses, respectively[3].

The proposed project trip generation was adjusted for pass-by and internal trips. Pass-by trips reflect traffic already on streets in the vicinity of the project site that would visit the commercial components of the project while driving by the site on the way to its final destination. Based on ITE *Trip Generation Manual* (11th Edition, 2021), the pass-by rates for the supermarket and restaurant uses are 24 percent and up to 55 percent, respectively. The inclusion of internal capture was assumed consistent with the methodology per ITE's *Trip Generation Handbook* (3rd Edition, 2017); however, the overall internal capture rate for the full development was assumed not to exceed 20 percent in order to provide a conservative analysis; as coordinated with City staff.[4]

Table 3 shows the weekday vehicle trips generated by the proposed project. The detailed trip generation calculations are included in Appendix C.

Table 3. Estimated Weekday Vehicle Trip Generation

Land Use[1]	Size	Daily Trips	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Mid-Rise Apartments (LU #221)	210 du	794	18	49	67	40	26	66
Supermarket (LU #850)	13,500 sf	1,022	20	14	34	45	46	91
Pass-by (24%)		*-246*	*-4*	*-4*	*-8*	*-11*	*-11*	*-22*
Restaurant (LU #934)	4,915 sf	2,006	98	104	202	74	61	135
Pass-by (50% AM, 55% PM)		*-1,054*	*-51*	*-51*	*-102*	*-37*	*-37*	*-61*
Total Primary		**2,522**	**81**	**112**	**193**	**111**	**85**	**196**

Note: du = dwelling units, sf = square feet
1. Average trip rates from ITE *Trip Generation Manual*, 11th Edition (2021).

As shown in Table 3, the proposed project is estimated to generate 2,522 new weekday daily trips with 193 trips occurring in the AM peak hour and 196 trips occurring in the PM peak hour.

[3] Note that the supermarket land use was assumed for the retail to provide a conservative analysis as it has a higher weekday trip rates.

[4] The unadjusted internal capture was estimated to be 47 percent during the PM peak hour based on the ITE methodology. The imposed 20 percent internal capture cap is a reduction in over 50 percent in order to provide a conservative estimate of trip generation.

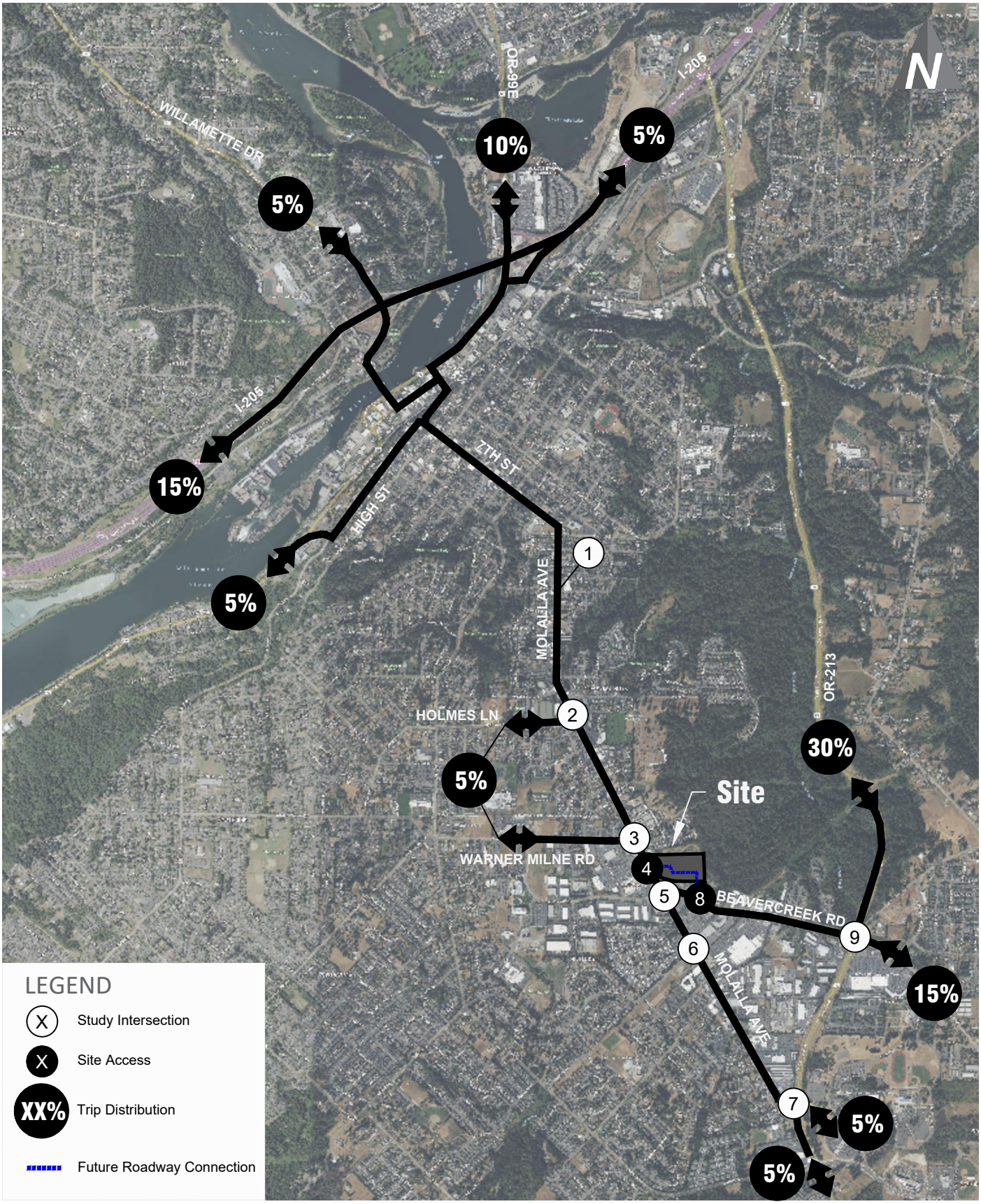
Trip Distribution and Assignment

Individual trip distribution patterns for the residential and commercial uses were estimated to and from the project site and were coordinated with City staff.

The residential trip distribution pattern was estimated based on U.S. Census Bureau's *OnTheMap* tool. *OnTheMap* is a web-based mapping and reporting application, which shows where workers are employed and where they live based on census data. The *OnTheMap* census data was translated to the number of people that live within a quarter-mile radius of the proposed project and where they work. The residential use project trip distribution for vehicle trips is shown in Figure 6.

Trip distribution patterns assumed for the commercial uses to and from the project site were generally assumed to be local and are based on the existing travel patterns in the vicinity of the project. The commercial use project trip distribution for vehicle trips is shown in Figure 7.

The weekday peak hour primary project trips were assigned to the study area based on the respective anticipated project trip distribution patterns. The commercial pass-by trips were assigned via the adjacent intersections of Molalla Avenue/Shared Business (Safeway) Driveway Shared Business (South Ridge) Driveway/Beavercreek Road. The resulting AM and PM peak hour trip assignment is illustrated in Figures 8 and 9, respectively.



Weekday Peak Hour Residential Project Trip Distribution

FIGURE 6

OR City Mixed-Use

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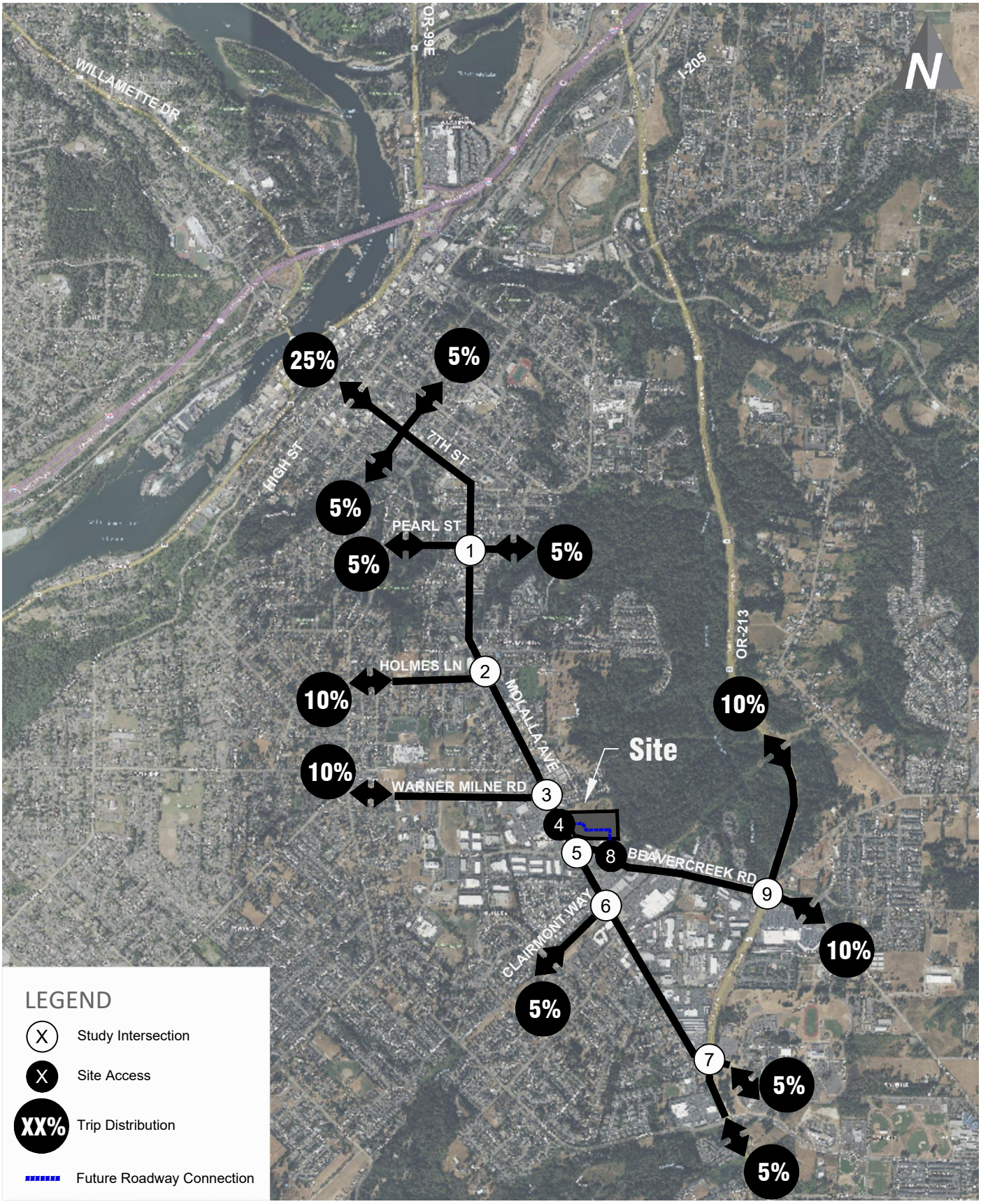

Weekday Peak Hour Commercial Project Trip Distribution

FIGURE 7

OR City Mixed-Use

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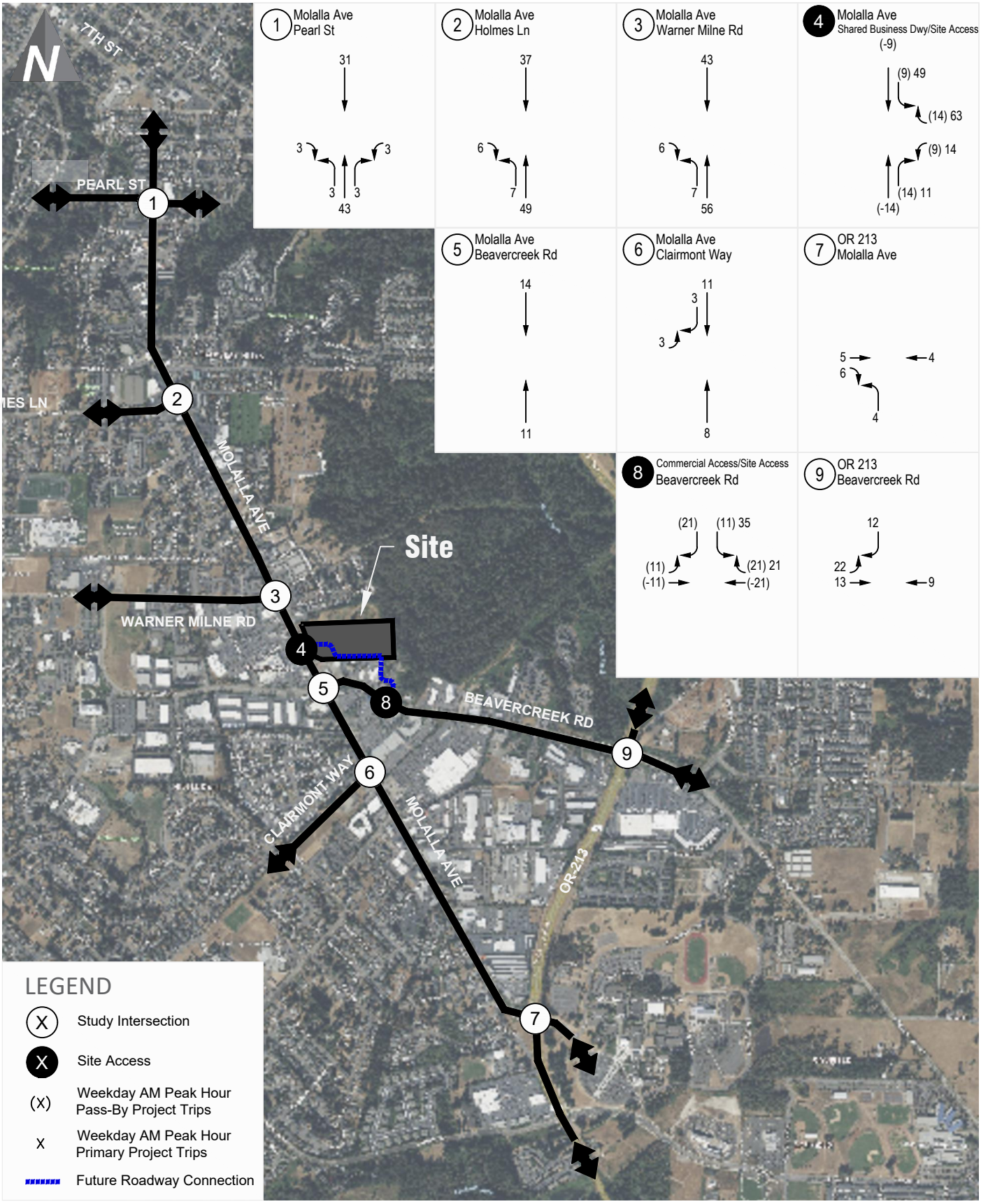

Weekday AM Peak Hour Project Trip Assignment

FIGURE 8

OR City Mixed-Use

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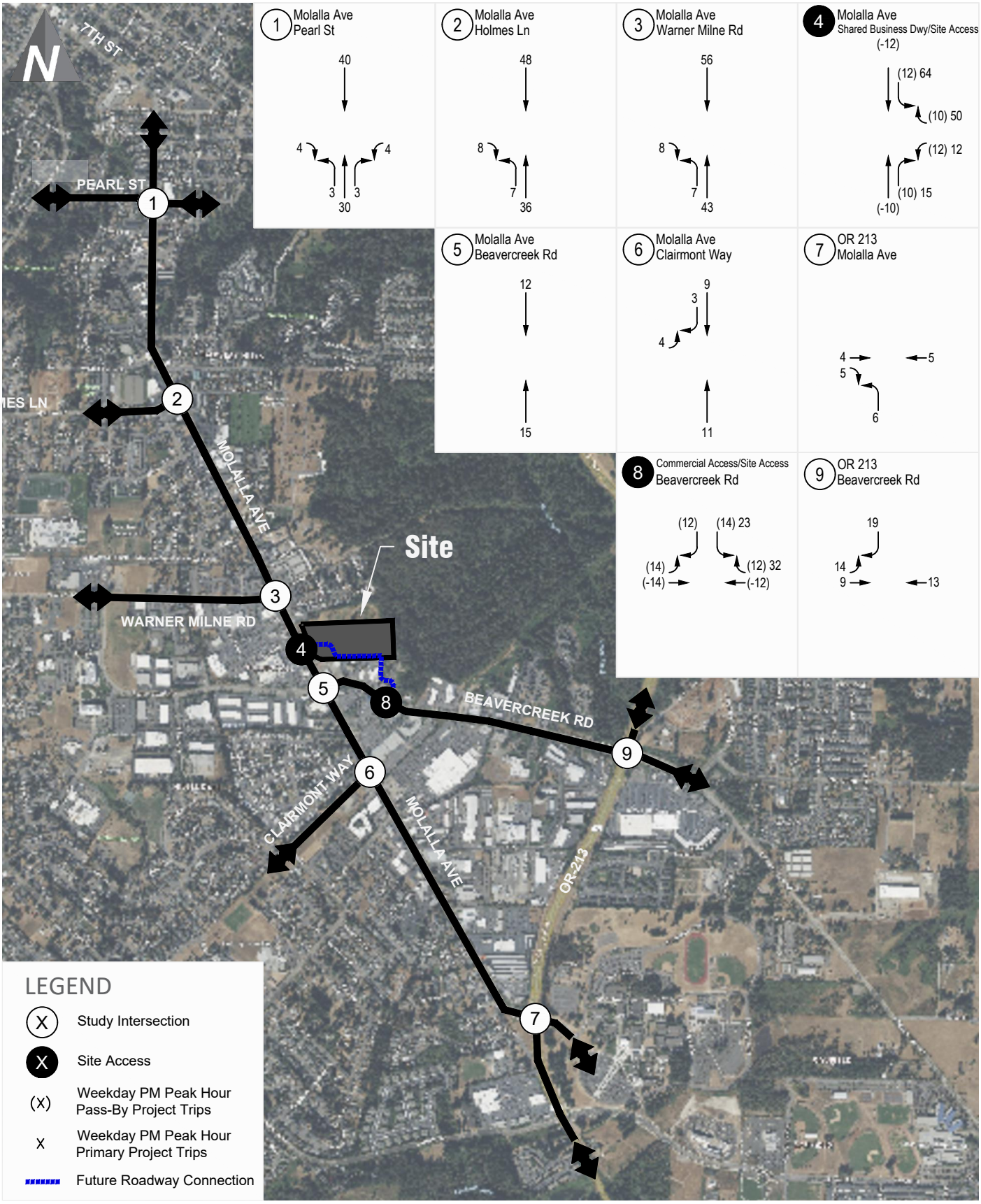

Weekday PM Peak Hour Project Trip Assignment

FIGURE 9

OR City Mixed-Use

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Future With-Project Traffic Volumes

Site-generated weekday peak hour traffic volumes were added to the future without-project traffic volumes at the study intersections. Additionally, with the new roadway connection between the existing signalized intersections along Molalla Avenue and Beavercreek Road, driveways are proposed for the project as well as a new driveway serving the existing commercial uses northeast of the Molalla Avenue/Beavercreek Road intersection. A portion of the estimated existing commercial uses were assumed to utilize the proposed driveway. The resulting future (2030) with-project peak hour traffic volumes are illustrated on Figure 10.

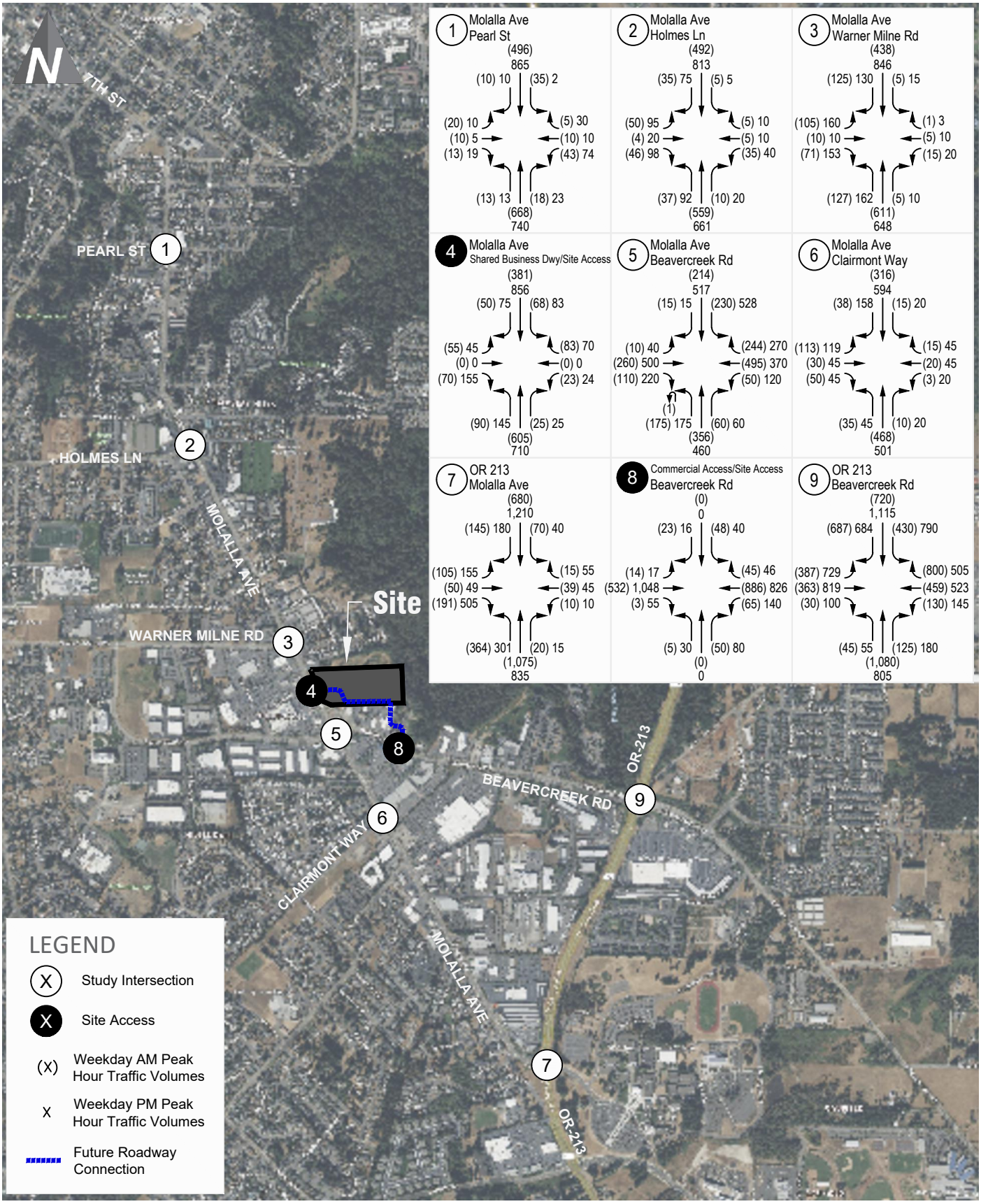
Table 4 summarizes the anticipated increase in total entering traffic at the off-site study intersections as well as the percent of future with-project traffic volumes attributable to the proposed project.

Table 4. Peak Hour Traffic Volume Impacts at Study Intersections

Intersection	Future (2030) Without-Project TEV	Project Trips TEV[1]	Shift of Existing Commercial	Future (2030) With-Project TEV	Percent Share
AM Peak Hour					
1. Molalla Ave/Pearl St	1,255	86	-	1.341	6.4%
2. Molalla Ave/Holmes Ln/Hilda St	1,184	99	-	1,283	7.7%
3. Molalla Ave/Warner Milne Rd	1,406	112	-	1,518	7.4%
4. Molalla Ave/Shared Business Dwy (Safeway)	1,290	160	0	1,450	11.0%
5. Molalla Ave/Beavercreek Rd	2,211	25	-16	2,220	1.1%
6. Molalla Ave/Clairmont Way	1,088	25	-	1,113	2.2%
7. OR 213/Molalla Ave	2,745	19	-	2,764	0.7%
8. Shared Business Dwy (South Ridge)/ Beavercreek Rd	1,578	88	5	1,671	5.3%
9. OR 213/Beavercreek Rd	5,200	56	-	5,256	1.1%
PM Peak Hour					
1. Molalla Ave/Pearl St	1,717	84	-	1,801	4.7%
2. Molalla Ave/Holmes Ln/Hilda St	1,840	99	-	1,939	5.1%
3. Molalla Ave/Warner Milne Rd	2,053	114	-	2,167	5.3%
4. Molalla Ave/Shared Business Dwy (Safeway)	2,025	163	0	2,188	7.4%
5. Molalla Ave/Beavercreek Rd	3,265	27	-17	3,275	0.8%
6. Molalla Ave/Clairmont Way	1,630	27	-	1,657	1.6%
7. OR 213/Molalla Ave	3,380	20	-	3,400	0.6%
8. Shared Business Dwy (South Ridge)/ Beavercreek Rd	2,212	81	6	2,298	3.5%
9. OR 213/Beavercreek Rd	6,395	55	-	6,450	0.9%

Note: TEV = Total Entering Vehicles
1. TEV project trips are inclusive of both primary and pass-by trips at the intersection as applicable.

As shown in Table 4, the project share in future (2030) traffic volumes is estimated to be approximately 8 percent or less during the weekday AM peak hours and approximately 5 percent or less during the weekday PM peak hours at all of the off-site study intersections. Traffic volumes may fluctuate day-to-day by 5 to 10 percent; therefore, the increase in traffic at the off-site study intersections as a result of the proposed project is less than the daily fluctuation. The project share at the intersections of Molalla Avenue/Shared Business (Safeway) Driveway and Shared Business (South Ridge) Driveway/ Beavercreek Road are higher during both the weekday AM and PM peak hours given these intersections serve all project traffic.



Future (2030) With-Project Peak Hour Traffic Volumes

FIGURE 10

OR City Mixed-Use

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Future With-Project Traffic Operations

Future (2030) with-project study intersection operations were evaluated during both the weekday AM and PM peak hours. The v/c ratio and delay were calculated for with-project conditions consistent with the methodology described for existing and without-project conditions. Analysis parameters such as lane channelization and signal timing were assumed to be consistent with the future without-project conditions. Table 5 compares the future (2030) without- and with-project intersection operations for the weekday AM and PM peak hours. Operational worksheets are included in Appendix B.

Note that the intersections of Molalla Avenue/Shared Business Driveway (Safeway) and Shared Business Driveway (South Ridge)/Beavercreek Road both assume the added legs to accommodate the added road connection between the intersections proposed with the project. The new leg at each of the existing traffic signals is assumed to be a three-lane section with a separate left turn lane and shared through-right turn lane. The signal timing at each intersection was assumed to be permissive for the added approaches, consistent with the current timing. Additional discussion of the added roadway segment between Molalla Avenue Beavercreek Road is provided in the site access section in the subsequent section.

Table 5. Future (2030) Without & With-Project Peak Hour Intersection Operations

Intersection	Traffic Control	Future (2030) Without-Project		Future (2030) With-Project	
		v/c[1]	Delay[2]	v/c	Delay
Weekday AM Peak Hour					
1. Molalla Ave/Pearl St	Signal	0.46	4.9	0.50	5.1
2. Molalla Ave/Holmes Ln/Hilda St	Signal	0.40	8.1	0.44	8.3
3. Molalla Ave/Warner Milne Rd	Signal	0.27	10.5	0.29	10.5
4. Molalla Ave/Shared Business Dwy (Safeway)	Signal	0.51	10.8	0.41	11.8
5. Molalla Ave/Beavercreek Rd	Signal	0.51	17.9	0.51	18.0
6. Molalla Ave/Clairmont Way	Signal	0.44	10.8	0.44	10.9
7. OR 213/Molalla Ave	Signal	0.64	28.7	0.65	28.9
8. Shared Business Dwy (South Ridge)/ Beavercreek Rd	Signal	0.72	4.8	0.40	7.3
9. OR 213/Beavercreek Rd	Signal	0.81	47.1	0.82	49.1
Weekday PM Peak Hour					
1. Molalla Ave/Pearl St	Signal	0.60	5.9	0.63	6.1
2. Molalla Ave/Holmes Ln/Hilda St	Signal	0.66	10.7	0.70	11.5
3. Molalla Ave/Warner Milne Rd	Signal	0.44	12.2	0.48	12.8
4. Molalla Ave/Shared Business Dwy (Safeway)	Signal	0.58	14.5	0.50	15.3
5. Molalla Ave/Beavercreek Rd	Signal	0.76	28.1	0.77	28.5
6. Molalla Ave/Clairmont Way	Signal	0.68	16.4	0.70	17.0
7. OR 213/Molalla Ave	Signal	0.78	36.3	0.78	36.6
8. Shared Business Dwy (South Ridge)/ Beavercreek Rd	Signal	0.67	8.5	0.55	9.3
9. OR 213/Beavercreek Rd	Signal	0.94	75.4	0.94	78.0

Note: **Bold** indicates the required V/C standard is not met.
1. Volume to capacity (v/c) ratio reported for the overall intersection at signalized intersections.
2. Average delay per vehicle in seconds reported for the overall intersection delay at signalized intersections.

As shown in Table 5, with the addition of the project traffic all of the study intersections are forecast to continue meeting the required v/c standards with a v/c ratio of 0.94 or less during the weekday AM and PM peak hour conditions. The v/c ratio is forecast to increase by 0.04 or less during both the weekday AM and PM peak hours relative to future (2030) without project conditions.

Site Access Analysis

Access to and from the site will be provided via the new roadway constructed between the existing signalized intersections of Molalla Avenue/Shared Business (Safeway) Driveway Shared Business (South Ridge) Driveway/Beavercreek Road. The proposed road section between Molalla Avenue and Beavercreek Road is illustrated in Figure 2. As shown in the figure, a three-lane section is proposed along the project frontage extending from Molalla Avenue beyond the commercial accesses which then transitions to a two lane section to Beavercreek Road.

The traffic operational review for the site focused on the following key aspects as requested by City staff which are reviewed in the sections below.

- **Modified Traffic Signals** – The operations at the modified signals was evaluated both in terms of v/c of the intersections as well as 95th percentile queues.
- **Left-turn lane warrants** – A three lane section providing a two-way left turn lane is proposed through the project's commercial driveways but then is proposed to transition to a two-lane section. A warrant review is conducted to confirm if left turn lanes are recommended at the two driveways further to the east of this section. The two known driveway locations are illustrated in Figure 2.
- **On-site queueing** – The on-site queuing associated with the proposed restaurant with drive-through.

Modified Traffic Signals

The traffic operations at the intersections of Molalla Avenue/Shared Business (Safeway) Driveway and Shared Business (South Ridge) Driveway/Beavercreek Road intersections were evaluated under future (2030) with-project conditions for the weekday AM and PM peak hours. As noted above, the new leg at each of the existing traffic signals is assumed to be a three-lane section with a separate left turn lane and shared through-right turn lane. The signal timing at each intersection was assumed to be permissive for the added approaches, consistent with the current timing. The resulting operations are summarized in Table 5 above. As shown in the table, both intersections are forecast to meet the required operational standards, operating with a v/c of 0.55 or lower during the weekday AM and PM peak hours.

The 95th percentile queues (the queues that are only exceeded 5% of the time) at the signalized access intersections along Molalla Avenue and Beavercreek Road were also evaluated using synchro, consistent with the operational analysis and are summarized in Table 6.

Table 6. Future (2030) Molalla Ave & Beavercreek Rd Intersection 95th Percentile Queues

	4. Molalla Ave/Shared Business Dwy (Safeway)					8. Shared Business Dwy (South Ridge)/ Beavercreek Rd				
		AM Peak Hour		PM Peak Hour			AM Peak Hour		PM Peak Hour	
Movement	Available Storage[2]	Without-Project	With-Project	Without-Project	With-Project	Available Storage	Without-Project	With-Project	Without-Project	With-Project
Eastbound Left-Turn	110'	25'	25'	30'	30'	115'	<25'	<25'	<25'	<25'
Eastbound through/right	110'	30'	30'	105'	110'	715'	35'	45'	160'	160'
Westbound Left-Turn	-[1]	-	<25'	-	25'	115'	<25'	<25'	25'	25'
Westbound through/right	-[1]	-	35'	-	45'	630'	<25'	65'	60'	80'
Northbound Left-Turn	100'	45'	50'	**110'**	**115'**	50'	<25'	<25'	25'	25'
Northbound through/right	530'	60'	75'	95'	105'	50'	25'	25'	40'	40'
Southbound Left-Turn	-[1]	<25'	25'	<25'	35'	-[1]	-	25'	-	25'
Southbound through/right	500'	75'	75'	225'	230'	-[1]	-	<25'	-	<25'

Note: **Bold** indicates the 95th percentile queues exceeds the available storage.
1. Intersection movement being added and/or modified with project.
2. Available queueing storage distance to the adjacent intersection. Turn lane storage assumes storage plus full width opening (not including the taper).

The 95th percentile queues of the westbound approach at the Molalla Avenue signal and the southbound approach at the Beavercreek Road signal (i.e. the approaches of the new roadway added with the project) are forecast to be 2 vehicles or less. These forecast queues will be able to be accomdoated within the provided storage at each intersection. This forecast queues correspond with the forecast weekday AM and PM peak hour volumes along the proposed roadway section with the opening of the project of approximately 300 trips (in/out) split between the 2 accesses as illustrated in Figure 10 above.

The queues of the other approaches are anticipated to have minimal change with the project relative to without project conditions (i.e. approximately 1 car length or less increase in 95th percentile queues with the project compared to without the project). Additionally, all 95th percentile queues at the two signals are forecast to be accomdoated within the available storage with the exception of the northbound left-turn queue at the Molalla Avenue signal during the PM peak hour.

The northbound left-turn 95th percentile queue at the Molalla Avenue signal is forecast to have up to 1 vehicle extending beyond the available storage under both future (2030) without-project and with-project conditions. The table shows that the 95th percentile queue is forecast to increase by 5' (less than 1 vehicle) with the project as compared to without project conditions, even though the project does not add any trips to the northbound left-turn movement. This minimal increase in 95th percentile queue is due to the actuated signal timing of the intersection, which adapts phasing time allocations to movements based on volumes of the intersection. Due to the addition of the east leg added with the project, the phase time at the actuated signal adjusts accordingly, resulting in the slight added forecast 95th percentile queue of the northbound left-turn movement. Although the 95th northbound left-turn percentile queue is forecast to exceed the storage, the average queue is forecast to be accomdoated within the available storage under both future (2030) without- and with-project conditions at approximately 60 feet or less during the PM peak hour.

Left-Turn Lane Warrants

Left-turn lane warrants have been reviewed for the proposed Les Schwab Access and the eastern residential access located on the east side of the project site along the proposed Public Access Road. Based on the City of Oregon City's Turn Lane Warrant guidelines defined in the Transportation Impact Analysis Guidelines (July 2021), Section 7.14.2, the "Engineer shall exercise professional judgement in evaluating the need for, and benefit of, providing dedicated left-turn lanes". The City provided references to consider include the AASHTO *Policy on Geometric Design of Highways and Streets* and the National Cooperative Highway Research Program (NCHRP) Report 457 *Evaluating Intersection Improvements.* The left turn warrants from both sources were evaluated assuming the future (2030) with-project weekday peak hour traffic volumes. The left-turn warrant evaluation is included in Appendix D. As shown in the appendix, no left-turn lanes are warranted at any of the site access intersections under the future (2030) weekday AM or PM peak hours.

In addition to these known driveway locations, as illustrated in Figure 2, additional access(es) are anticipated on the south side of the internal roadway in the future as identified as part of the Beavercreek Road Access Management Plan. These access points would serve the existing commercial development adjacent to Les Schwab. The exact driveway placement is unknown; however, the access would be located between the commercial and residential driveways within the proposed two-lane roadway section. The turn lane needs associated with that potential future development would be evaluated as part of that future project and if shown to be warranted, the widening to accommodate a turn lane could be provided to the south of the proposed road.

On-Site Queueing

Additionally, on-site queuing associated with the proposed restaurant with drive-through was evaluated. The drive-through queue was estimated using the Poisson queuing distribution. The

total external inbound vehicle trips (inclusive of pass-by trips) for the restaurant use were assumed to utilize the drive through for purposes of providing for a conservative queueing analysis. The average service time for a fast-food restaurant drive-through window is approximately 4 minutes based on the annual study conducted by QSR[5]. A detailed Poisson queuing worksheet is provided in Appendix E. The weekday AM and PM peak hour anticipated drive-through 95th-percentile queue lengths are estimated to be 12 vehicles or less or approximately 6 vehicles per lane. The proposed site plan illustrates each drive lane can accommodate a queue of at least 275' or 11 vehicles per lane; therefore, the queues are anticipated to be accommodated within the proposed driveway storage.

[5] *25th Anniversary Edition Drive-Thru Study (Intouch Insight and QSR).*

Mitigation Measures

Based on the operational review above for both without and with-project conditions, all off-site study intersections are forecast to continue to meet the established v/c thresholds with the addition of project generated traffic.

Based on coordination with City staff, a pro-rata share contribution is required for the TSP project #D95, Beavercreek Road/OR-213 added westbound right turn merge lane as noted above. The City has indicated the current rate is $404 per weekday PM peak hour trip. As shown in Table 4 above, the project is forecast to contribute 55 project trips to the intersection during the PM peak hour. This results in an estimated fee of $22,220 at this location as pro-rata share contribution to the planned improvement project.

Additionally, a Transportation System Development Charge (TSDC) will be required associated with the development of the project's land uses.[6] The project site is located inside the Molalla Avenue Corridor SDC Special Location Discount Area. Based on the current TSDC rates (Effective July 1, 2018), multi-family developments are required to pay a fee of $6,474 per multi-family dwelling unit constructed. Non-residential developments are required to submit a *System Development Charges Request Form* to the City to determine the fee required. The residential portion of the project proposed to construct 210 multifamily dwelling units will require a fee of $1,359,540. The TSDC associated with the non-residential uses proposed on site will be determined by the City of Oregon City following the submittal of the *System Development Charges Request Form*.

[6] Each of the pad users will pay their own fees when they proceed with their own pad development.

Findings and Recommendations

This traffic impact analysis summarizes the project traffic impacts of the proposed Oregon City Mixed-Use project located at 1367 Molalla Avenue in Oregon City. General findings and recommendations include:

- **Project Description** – The proposed project will construct a 13,500 sf retail, a 4,915 sf fast food restaurant with drive through, and up to 210 multifamily apartment units on 3 parcels in Oregon City along with a 4th parcel being used for right-of-way.

- **Trip Generation** – Accounting for internal capture of trips that will occur between the proposed uses and pass-by trips associated with the commercial uses of the project, the proposed project is estimated to generate 2,522 new primary weekday daily trips with 193 trips occurring in the AM peak hour and 196 trips occurring in the PM peak hour.

- **Traffic Operations** – With the addition of project generated traffic, all of the study intersections are forecast to continue meeting the required v/c standards with a v/c ratio of 0.94 or less during the weekday AM and PM peak hour conditions. The v/c ratio is forecast to increase by 0.04 or less during both the weekday AM and PM peak hours relative to future (2030) without project conditions.

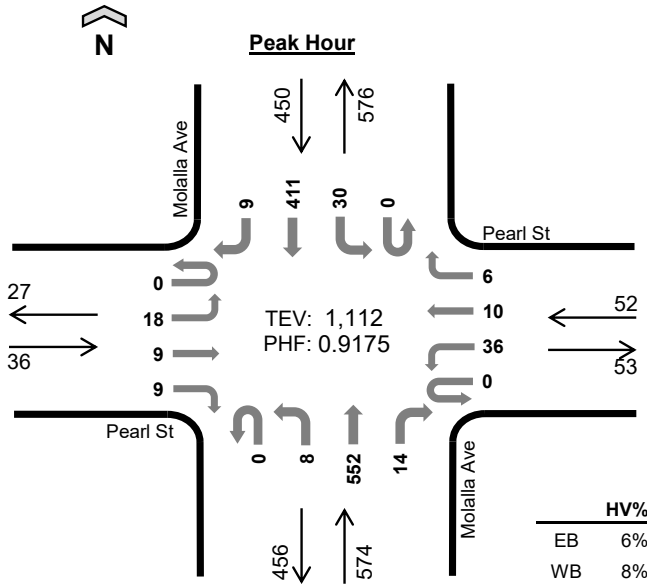
- **Site Access** – Access to and from the site will be provided via the new roadway constructed between the existing signalized intersections of Molalla Avenue/Shared Business (Safeway) Driveway Shared Business (South Ridge) Driveway/Beavercreek Road.
    - The two signalized intersections are forecast to operate acceptably.
    - The 95th percentile queues of the westbound approach at the Molalla Avenue signal and the southbound approach at the Beavercreek Road signal (i.e. the approaches of the new roadway added with the project) are forecast to be 2 vehicles or less. Additionally, the queues of the other approaches at the two signalized intersections are anticipated to have minimal change with the project relative to without project conditions (i.e. approximately 1 car length or less increase in 95th percentile queues with the project compared to without the project).
    - The proposed road section is three-lane through the commercial area and then transitions to a two-lane section further east. This proposed section was confirmed through a warrant analysis for current uses. Any future development and associated need for widening to accommodate turn lanes would be assessed and could be provided to the south of the proposed road.

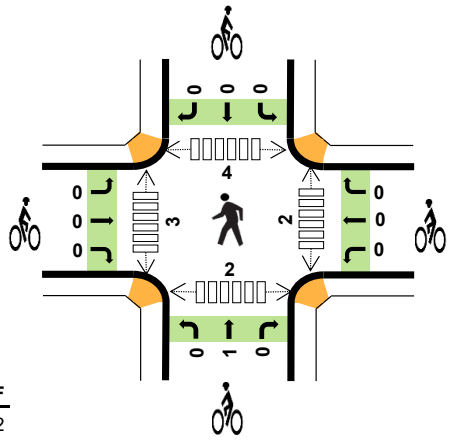
- **Mitigation** – The total TSDC associated with the land uses of the proposed project will be determined by the City of Oregon City following the submittal of the *System Development Charges Request Form*. Additionally, the project would contribute its pro-rata share at the Beavercreek Road/OR-213 intersection toward TSP project #D95, Beavercreek Road/OR-213 added westbound right turn merge lane.

Appendix A: Traffic Counts

Molalla Ave
Pearl St

Date: 9/9/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM





	HV%	PHF
EB	6%	0.82
WB	8%	0.76
NB	4%	0.91
SB	4%	0.92
TOTAL	4%	0.92

Peak Hour Count Summaries

Peak Hour Interval Start		Pearl St Eastbound				Pearl St Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:45 AM		**0**	**3**	**4**	**4**	**0**	**11**	**1**	**2**	**0**	**3**	**147**	**7**	**0**	**11**	**108**	**2**	**303**	**0**
8:00 AM		**0**	**4**	**3**	**1**	**0**	**8**	**6**	**1**	**0**	**1**	**125**	**2**	**0**	**14**	**105**	**3**	**273**	**0**
8:15 AM		**0**	**6**	**0**	**1**	**0**	**4**	**2**	**0**	**0**	**2**	**137**	**2**	**0**	**4**	**87**	**3**	**248**	**0**
8:30 AM		**0**	**5**	**2**	**3**	**0**	**13**	**1**	**3**	**0**	**2**	**143**	**3**	**0**	**1**	**111**	**1**	**288**	**1,112**
Pk Hr	All	**0**	**18**	**9**	**9**	**0**	**36**	**10**	**6**	**0**	**8**	**552**	**14**	**0**	**30**	**411**	**9**	**1,112**	
	HV	**0**	**1**	**0**	**1**	**0**	**2**	**2**	**0**	**0**	**0**	**22**	**0**	**0**	**0**	**16**	**1**	**45**	
	HV%	-	**6%**	**0%**	**11%**	-	**6%**	**20%**	**0%**	-	**0%**	**4%**	**0%**	-	**0%**	**4%**	**11%**	**4%**	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:45 AM	**1**	**1**	**5**	**4**	***11***	**0**	**0**	**0**	**0**	***0***	**1**	**1**	**0**	**2**	***4***
8:00 AM	**0**	**2**	**5**	**6**	***13***	**0**	**0**	**0**	**0**	***0***	**1**	**2**	**1**	**0**	***4***
8:15 AM	**1**	**0**	**6**	**2**	***9***	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**1**	**0**	***1***
8:30 AM	**0**	**1**	**6**	**5**	***12***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**2**	**0**	***2***
Peak Hour	**2**	**4**	**22**	**17**	***45***	**0**	**0**	**1**	**0**	***1***	**2**	**3**	**4**	**2**	***11***

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Count Summaries - All Vehicles

Interval Start	Pearl St Eastbound				Pearl St Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	7	4	2	0	4	1	0	0	1	140	2	0	0	46	2	209	0
7:15 AM	0	2	1	2	0	5	0	0	0	2	158	3	0	2	66	3	244	0
7:30 AM	0	4	7	3	0	3	0	1	0	4	161	3	0	5	79	0	270	0
7:45 AM	**0**	**3**	**4**	**4**	**0**	**11**	**1**	**2**	**0**	**3**	**147**	**7**	**0**	**11**	**108**	**2**	**303**	**1,026**
8:00 AM	**0**	**4**	**3**	**1**	**0**	**8**	**6**	**1**	**0**	**1**	**125**	**2**	**0**	**14**	**105**	**3**	**273**	**1,090**
8:15 AM	**0**	**6**	**0**	**1**	**0**	**4**	**2**	**0**	**0**	**2**	**137**	**2**	**0**	**4**	**87**	**3**	**248**	**1,094**
8:30 AM	**0**	**5**	**2**	**3**	**0**	**13**	**1**	**3**	**0**	**2**	**143**	**3**	**0**	**1**	**111**	**1**	**288**	**1,112**
8:45 AM	0	4	1	6	0	14	2	1	0	3	131	5	0	1	130	1	299	1,108
Count Total	0	35	22	22	0	62	13	8	0	18	1,142	27	0	38	732	15	2,134	
Pk Hr All	**0**	**18**	**9**	**9**	**0**	**36**	**10**	**6**	**0**	**8**	**552**	**14**	**0**	**30**	**411**	**9**	**1,112**	
Pk Hr HV	**0**	**1**	**0**	**1**	**0**	**2**	**2**	**0**	**0**	**0**	**22**	**0**	**0**	**0**	**16**	**1**	**45**	
Pk Hr HV%	**-**	**6%**	**0%**	**11%**	**-**	**6%**	**20%**	**0%**	**-**	**0%**	**4%**	**0%**	**-**	**0%**	**4%**	**11%**	**4%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	1	0	7	3	*11*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	0	0	7	2	*9*	0	0	2	1	*3*	1	0	1	0	*2*
7:30 AM	0	0	3	4	*7*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	**1**	**1**	**5**	**4**	**11**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**2**	**4**
8:00 AM	**0**	**2**	**5**	**6**	**13**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**1**	**0**	**4**
8:15 AM	**1**	**0**	**6**	**2**	**9**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**1**	**0**	**1**
8:30 AM	**0**	**1**	**6**	**5**	**12**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**
8:45 AM	1	1	6	2	*10*	0	0	0	1	*1*	0	2	0	0	*2*
Count Total	4	5	45	28	*82*	0	0	3	2	*5*	3	5	5	2	*15*
Peak Hour	**2**	**4**	**22**	**17**	***45***	**0**	**0**	**1**	**0**	***1***	**2**	**3**	**4**	**2**	**11**

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Count Summaries - Heavy Vehicles

Interval Start	Pearl St				Pearl St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	1	0	0	0	0	0	1	5	1	0	0	3	0	11	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	7	0	0	0	2	0	9	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	4	0	7	0
7:45 AM	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**4**	**0**	**11**	**38**
8:00 AM	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**6**	**0**	**13**	**40**
8:15 AM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**2**	**0**	**9**	**40**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**4**	**1**	**12**	**45**
8:45 AM	0	1	0	0	0	0	1	0	0	1	5	0	0	0	2	0	10	44
Count Total	0	2	0	2	0	2	3	0	0	2	42	1	0	0	27	1	82	
Pk Hr Heavy	**0**	**1**	**0**	**1**	**0**	**2**	**2**	**0**	**0**	**0**	**22**	**0**	**0**	**0**	**16**	**1**	**45**	

Count Summaries - Bikes

Interval Start	Pearl St				Pearl St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	3	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**1**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
Count Total	0	0	0	0	0	0	0	0	0	0	3	0	0	0	2	0	5	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	

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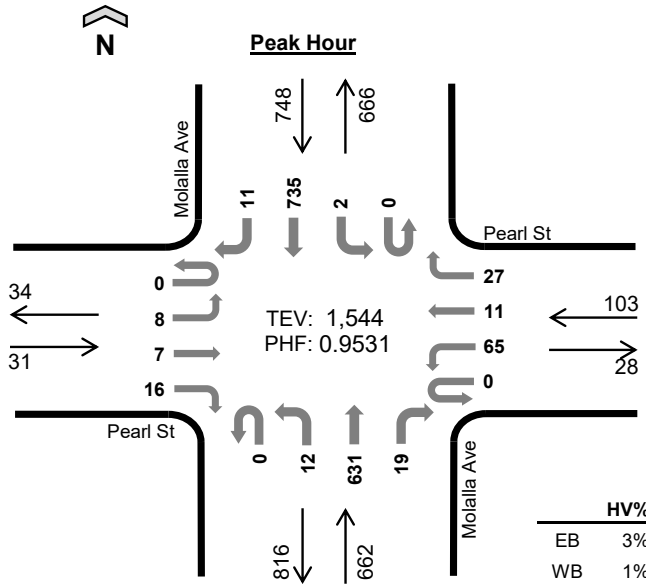
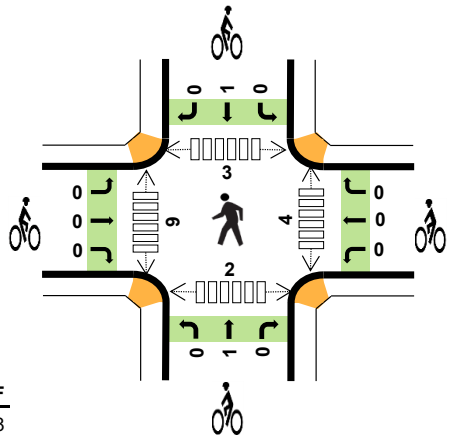
Molalla Ave
Pearl St

Date: 9/9/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM





	HV%	PHF
EB	3%	0.78
WB	1%	0.74
NB	2%	0.93
SB	1%	0.87
TOTAL	1%	0.95

Peak Hour Count Summaries

Peak Hour Interval Start		Pearl St Eastbound				Pearl St Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:30 PM		**0**	**3**	**2**	**3**	**0**	**14**	**4**	**5**	**0**	**3**	**151**	**6**	**0**	**2**	**207**	**5**	**405**	**0**
4:45 PM		**0**	**0**	**4**	**3**	**0**	**18**	**2**	**3**	**0**	**6**	**148**	**3**	**0**	**0**	**204**	**4**	**395**	**0**
5:00 PM		**0**	**1**	**1**	**4**	**0**	**16**	**5**	**14**	**0**	**2**	**170**	**6**	**0**	**0**	**166**	**0**	**385**	**0**
5:15 PM		**0**	**4**	**0**	**6**	**0**	**17**	**0**	**5**	**0**	**1**	**162**	**4**	**0**	**0**	**158**	**2**	**359**	**1,544**
Pk Hr	All	**0**	**8**	**7**	**16**	**0**	**65**	**11**	**27**	**0**	**12**	**631**	**19**	**0**	**2**	**735**	**11**	**1,544**	
	HV	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**10**	**0**	**0**	**0**	**8**	**0**	**20**	
	HV%	-	**0%**	**0%**	**6%**	-	**0%**	**9%**	**0%**	-	**0%**	**2%**	**0%**	-	**0%**	**1%**	**0%**	**1%**	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:30 PM	**0**	**1**	**3**	**1**	***5***	**0**	**0**	**1**	**0**	***1***	**1**	**3**	**0**	**2**	***6***
4:45 PM	**0**	**0**	**5**	**2**	***7***	**0**	**0**	**0**	**1**	***1***	**1**	**3**	**0**	**0**	***4***
5:00 PM	**1**	**0**	**1**	**3**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**3**	**3**	**0**	***6***
5:15 PM	**0**	**0**	**1**	**2**	***3***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**0**	**0**	***2***
Peak Hour	**1**	**1**	**10**	**8**	***20***	**0**	**0**	**1**	**1**	**2**	**4**	**9**	**3**	**2**	***18***

Kyle Campbell
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Count Summaries - All Vehicles

Interval Start	Pearl St				Pearl St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	3	3	0	23	1	2	0	3	158	2	0	0	189	4	388	0
4:15 PM	0	0	2	6	0	17	3	2	0	1	144	1	0	0	138	5	319	0
4:30 PM	**0**	**3**	**2**	**3**	**0**	**14**	**4**	**5**	**0**	**3**	**151**	**6**	**0**	**2**	**207**	**5**	**405**	**0**
4:45 PM	**0**	**0**	**4**	**3**	**0**	**18**	**2**	**3**	**0**	**6**	**148**	**3**	**0**	**0**	**204**	**4**	**395**	**1,507**
5:00 PM	**0**	**1**	**1**	**4**	**0**	**16**	**5**	**14**	**0**	**2**	**170**	**6**	**0**	**0**	**166**	**0**	**385**	**1,504**
5:15 PM	**0**	**4**	**0**	**6**	**0**	**17**	**0**	**5**	**0**	**1**	**162**	**4**	**0**	**0**	**158**	**2**	**359**	**1,544**
5:30 PM	0	6	3	2	0	14	0	8	0	2	153	6	0	1	141	2	338	1,477
5:45 PM	0	3	0	4	0	9	2	3	0	2	126	3	0	1	149	1	303	1,385
Count Total	0	17	15	31	0	128	17	42	0	20	1,212	31	0	4	1,352	23	2,892	
Pk Hr All	**0**	**8**	**7**	**16**	**0**	**65**	**11**	**27**	**0**	**12**	**631**	**19**	**0**	**2**	**735**	**11**	**1,544**	
Pk Hr HV	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**10**	**0**	**0**	**0**	**8**	**0**	**20**	
Pk Hr HV%	**-**	**0%**	**0%**	**6%**	**-**	**0%**	**9%**	**0%**	**-**	**0%**	**2%**	**0%**	**-**	**0%**	**1%**	**0%**	**1%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	1	0	2	3	*6*	0	0	1	0	*1*	1	1	0	0	*2*
4:15 PM	0	0	3	4	*7*	0	0	1	2	*3*	3	0	4	0	*7*
4:30 PM	**0**	**1**	**3**	**1**	**5**	**0**	**0**	**1**	**0**	**1**	**1**	**3**	**0**	**2**	**6**
4:45 PM	**0**	**0**	**5**	**2**	**7**	**0**	**0**	**0**	**1**	**1**	**1**	**3**	**0**	**0**	**4**
5:00 PM	**1**	**0**	**1**	**3**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**3**	**0**	**6**
5:15 PM	**0**	**0**	**1**	**2**	**3**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**2**
5:30 PM	1	0	0	1	*2*	0	0	1	1	*2*	2	0	1	4	*7*
5:45 PM	0	0	2	0	*2*	0	0	0	0	*0*	0	2	0	0	*2*
Count Total	3	1	17	16	*37*	0	0	4	4	*8*	10	12	8	6	*36*
Peak Hour	**1**	**1**	**10**	**8**	***20***	**0**	**0**	**1**	**1**	***2***	**4**	**9**	**3**	**2**	**18**

Kyle Campbell
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Count Summaries - Heavy Vehicles

Interval Start	Pearl St				Pearl St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	1	0	0	0	0	0	0	0	2	0	0	0	3	0	6	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	1	7	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**1**	**0**	**5**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**2**	**0**	**7**	**25**
5:00 PM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**3**	**0**	**5**	**24**
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**3**	**20**
5:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	17
5:45 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	12
Count Total	0	1	1	1	0	0	1	0	0	0	17	0	0	0	15	1	37	
Pk Hr Heavy	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**10**	**0**	**0**	**0**	**8**	**0**	**20**	

Count Summaries - Bikes

Interval Start	Pearl St				Pearl St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	3	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**6**
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
5:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2	3
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Count Total	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	0	8	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**2**	

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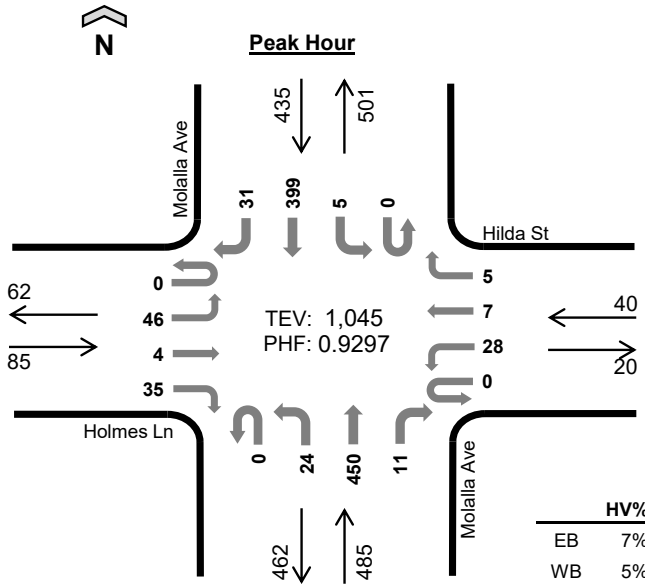
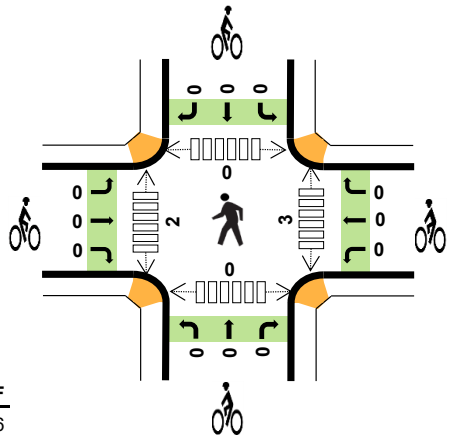
Molalla Ave
Holmes Ln

Date: 9/9/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 8:00 AM to 9:00 AM





	HV%	PHF
EB	7%	0.76
WB	5%	0.63
NB	4%	0.90
SB	4%	0.81
TOTAL	4%	0.93

Peak Hour Count Summaries

Peak Hour Interval Start		Holmes Ln Eastbound				Hilda St Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
8:00 AM		0	8	0	9	0	6	2	2	0	6	102	3	0	3	97	10	248	0
8:15 AM		0	10	2	7	0	12	3	1	0	5	115	2	0	0	77	5	239	0
8:30 AM		0	19	0	9	0	5	1	1	0	10	122	2	0	2	98	8	277	0
8:45 AM		0	9	2	10	0	5	1	1	0	3	111	4	0	0	127	8	281	1,045
Pk Hr	All	0	46	4	35	0	28	7	5	0	24	450	11	0	5	399	31	1,045	
	HV	0	3	0	3	0	2	0	0	0	3	16	0	0	0	12	4	43	
	HV%	-	7%	0%	9%	-	7%	0%	0%	-	13%	4%	0%	-	0%	3%	13%	4%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
8:00 AM	3	2	3	7	*15*	0	0	0	0	*0*	0	1	0	0	*1*
8:15 AM	2	0	6	2	*10*	0	0	0	0	*0*	1	0	0	0	*1*
8:30 AM	1	0	7	3	*11*	0	0	0	0	*0*	1	1	0	0	*2*
8:45 AM	0	0	3	4	*7*	0	0	0	0	*0*	1	0	0	0	*1*
Peak Hour	6	2	19	16	*43*	0	0	0	0	*0*	3	2	0	0	*5*

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Count Summaries - All Vehicles

Interval Start	Holmes Ln				Hilda St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	10	0	9	0	2	0	3	0	2	92	3	0	0	31	4	156	0
7:15 AM	0	16	0	3	0	2	3	7	0	2	107	1	0	1	65	4	211	0
7:30 AM	0	15	2	4	0	7	3	2	0	2	118	2	0	1	76	4	236	0
7:45 AM	0	23	5	7	0	9	1	3	0	3	106	2	0	2	99	2	262	865
8:00 AM	**0**	**8**	**0**	**9**	**0**	**6**	**2**	**2**	**0**	**6**	**102**	**3**	**0**	**3**	**97**	**10**	**248**	**957**
8:15 AM	**0**	**10**	**2**	**7**	**0**	**12**	**3**	**1**	**0**	**5**	**115**	**2**	**0**	**0**	**77**	**5**	**239**	**985**
8:30 AM	**0**	**19**	**0**	**9**	**0**	**5**	**1**	**1**	**0**	**10**	**122**	**2**	**0**	**2**	**98**	**8**	**277**	**1,026**
8:45 AM	**0**	**9**	**2**	**10**	**0**	**5**	**1**	**1**	**0**	**3**	**111**	**4**	**0**	**0**	**127**	**8**	**281**	**1,045**
Count Total	0	110	11	58	0	48	14	20	0	33	873	19	0	9	670	45	1,910	
Pk Hr All	**0**	**46**	**4**	**35**	**0**	**28**	**7**	**5**	**0**	**24**	**450**	**11**	**0**	**5**	**399**	**31**	**1,045**	
Pk Hr HV	**0**	**3**	**0**	**3**	**0**	**2**	**0**	**0**	**0**	**3**	**16**	**0**	**0**	**0**	**12**	**4**	**43**	
Pk Hr HV%	**-**	**7%**	**0%**	**9%**	**-**	**7%**	**0%**	**0%**	**-**	**13%**	**4%**	**0%**	**-**	**0%**	**3%**	**13%**	**4%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	5	0	3	2	*10*	0	0	0	0	*0*	1	1	0	0	*2*
7:15 AM	1	0	7	1	*9*	0	0	0	1	*1*	0	1	0	1	*2*
7:30 AM	0	0	2	2	*4*	0	0	0	0	*0*	1	0	0	0	*1*
7:45 AM	1	1	6	3	*11*	0	0	0	0	*0*	1	0	0	0	*1*
8:00 AM	**3**	**2**	**3**	**7**	**15**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**
8:15 AM	**2**	**0**	**6**	**2**	**10**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**
8:30 AM	**1**	**0**	**7**	**3**	**11**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**2**
8:45 AM	**0**	**0**	**3**	**4**	**7**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**
Count Total	13	3	37	24	*77*	0	0	0	1	*1*	6	4	0	1	*11*
Peak Hour	**6**	**2**	**19**	**16**	***43***	**0**	**0**	**0**	**0**	***0***	**3**	**2**	**0**	**0**	**5**

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Count Summaries - Heavy Vehicles

Interval Start	Holmes Ln				Hilda St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	1	0	4	0	0	0	0	0	1	2	0	0	0	2	0	10	0
7:15 AM	0	0	0	1	0	0	0	0	0	0	7	0	0	0	1	0	9	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	4	0
7:45 AM	0	0	0	1	0	1	0	0	0	2	4	0	0	0	3	0	11	34
8:00 AM	**0**	**1**	**0**	**2**	**0**	**2**	**0**	**0**	**0**	**1**	**2**	**0**	**0**	**0**	**6**	**1**	**15**	**39**
8:15 AM	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**2**	**0**	**10**	**40**
8:30 AM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**2**	**5**	**0**	**0**	**0**	**1**	**2**	**11**	**47**
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**3**	**1**	**7**	**43**
Count Total	0	4	0	9	0	3	0	0	0	6	31	0	0	0	20	4	77	
Pk Hr Heavy	**0**	**3**	**0**	**3**	**0**	**2**	**0**	**0**	**0**	**3**	**16**	**0**	**0**	**0**	**12**	**4**	**43**	

Count Summaries - Bikes

Interval Start	Holmes Ln				Hilda St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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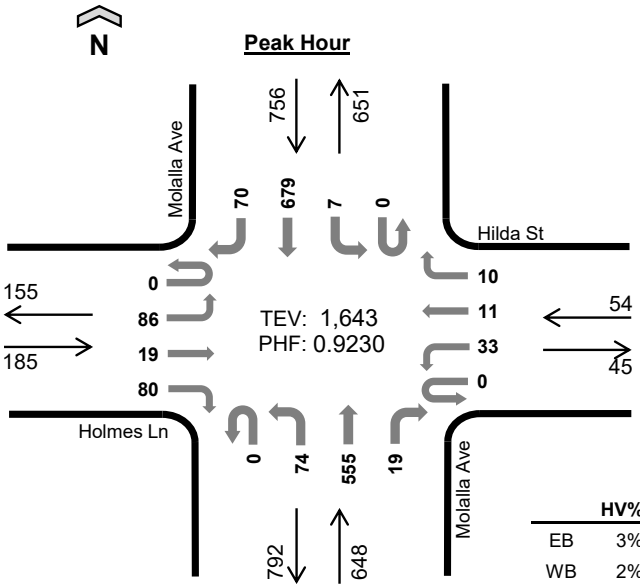
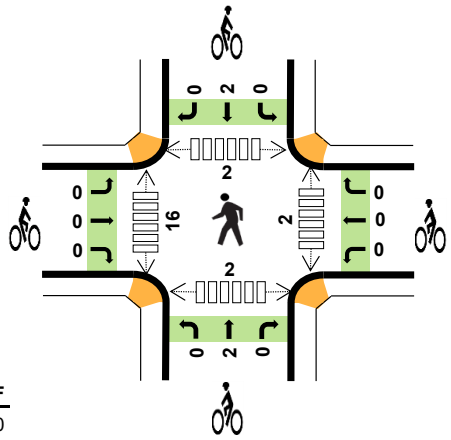
Molalla Ave
Holmes Ln

Date: 9/9/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM





	HV%	PHF
EB	3%	0.70
WB	2%	0.84
NB	2%	0.90
SB	1%	0.94
TOTAL	2%	0.92

Peak Hour Count Summaries

Peak Hour Interval Start		Holmes Ln Eastbound				Hilda St Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		**0**	**29**	**4**	**33**	**0**	**10**	**3**	**3**	**0**	**14**	**142**	**5**	**0**	**3**	**178**	**21**	**445**	**0**
4:15 PM		**0**	**20**	**5**	**18**	**0**	**11**	**2**	**3**	**0**	**24**	**126**	**7**	**0**	**2**	**144**	**9**	**371**	**0**
4:30 PM		**0**	**15**	**7**	**16**	**0**	**4**	**4**	**1**	**0**	**22**	**156**	**3**	**0**	**0**	**182**	**19**	**429**	**0**
4:45 PM		**0**	**22**	**3**	**13**	**0**	**8**	**2**	**3**	**0**	**14**	**131**	**4**	**0**	**2**	**175**	**21**	**398**	**1,643**
Pk Hr	All	**0**	**86**	**19**	**80**	**0**	**33**	**11**	**10**	**0**	**74**	**555**	**19**	**0**	**7**	**679**	**70**	**1,643**	
	HV	**0**	**2**	**0**	**3**	**0**	**1**	**0**	**0**	**0**	**3**	**10**	**0**	**0**	**0**	**8**	**3**	**30**	
	HV%	-	**2%**	**0%**	**4%**	-	**3%**	**0%**	**0%**	-	**4%**	**2%**	**0%**	-	**0%**	**1%**	**4%**	**2%**	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	**0**	**1**	**2**	**7**	***10***	**0**	**0**	**1**	**0**	***1***	**0**	**4**	**0**	**1**	***5***
4:15 PM	**1**	**0**	**2**	**1**	***4***	**0**	**0**	**1**	**1**	***2***	**1**	**2**	**0**	**1**	***4***
4:30 PM	**2**	**0**	**5**	**2**	***9***	**0**	**0**	**0**	**1**	***1***	**0**	**7**	**0**	**0**	***7***
4:45 PM	**2**	**0**	**4**	**1**	***7***	**0**	**0**	**0**	**0**	***0***	**1**	**3**	**2**	**0**	***6***
Peak Hour	**5**	**1**	**13**	**11**	***30***	**0**	**0**	**2**	**2**	***4***	**2**	**16**	**2**	**2**	***22***

Kyle Campbell
(425) 213-7345

Count Summaries - All Vehicles

Interval Start	Holmes Ln				Hilda St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**29**	**4**	**33**	**0**	**10**	**3**	**3**	**0**	**14**	**142**	**5**	**0**	**3**	**178**	**21**	**445**	0
4:15 PM	**0**	**20**	**5**	**18**	**0**	**11**	**2**	**3**	**0**	**24**	**126**	**7**	**0**	**2**	**144**	**9**	**371**	**0**
4:30 PM	**0**	**15**	**7**	**16**	**0**	**4**	**4**	**1**	**0**	**22**	**156**	**3**	**0**	**0**	**182**	**19**	**429**	**0**
4:45 PM	**0**	**22**	**3**	**13**	**0**	**8**	**2**	**3**	**0**	**14**	**131**	**4**	**0**	**2**	**175**	**21**	**398**	**1,643**
5:00 PM	0	17	3	8	0	10	3	4	0	16	145	5	0	0	163	19	393	1,591
5:15 PM	0	19	2	19	0	7	1	4	0	16	139	8	0	2	128	20	365	1,585
5:30 PM	0	13	3	18	0	8	1	0	0	17	132	6	0	2	129	17	346	1,502
5:45 PM	0	13	1	13	0	6	4	2	0	20	128	4	0	1	125	17	334	1,438
Count Total	0	148	28	138	0	64	20	20	0	143	1,099	42	0	12	1,224	143	3,081	
Pk Hr All	**0**	**86**	**19**	**80**	**0**	**33**	**11**	**10**	**0**	**74**	**555**	**19**	**0**	**7**	**679**	**70**	**1,643**	
Pk Hr HV	**0**	**2**	**0**	**3**	**0**	**1**	**0**	**0**	**0**	**3**	**10**	**0**	**0**	**0**	**8**	**3**	**30**	
Pk Hr HV%	**-**	**2%**	**0%**	**4%**	**-**	**3%**	**0%**	**0%**	**-**	**4%**	**2%**	**0%**	**-**	**0%**	**1%**	**4%**	**2%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	**0**	**1**	**2**	**7**	**10**	**0**	**0**	**1**	**0**	**1**	**0**	**4**	**0**	**1**	**5**
4:15 PM	**1**	**0**	**2**	**1**	**4**	**0**	**0**	**1**	**1**	**2**	**1**	**2**	**0**	**1**	**4**
4:30 PM	**2**	**0**	**5**	**2**	**9**	**0**	**0**	**0**	**1**	**1**	**0**	**7**	**0**	**0**	**7**
4:45 PM	**2**	**0**	**4**	**1**	**7**	**0**	**0**	**0**	**0**	**0**	**1**	**3**	**2**	**0**	**6**
5:00 PM	0	0	1	1	*2*	0	0	0	1	*1*	1	0	1	0	*2*
5:15 PM	0	0	0	3	*3*	0	0	0	0	*0*	0	2	0	1	*3*
5:30 PM	0	0	0	0	*0*	0	0	1	1	*2*	3	2	0	0	*5*
5:45 PM	0	0	1	1	*2*	0	0	0	0	*0*	3	1	1	1	*6*
Count Total	5	1	15	16	*37*	0	0	3	4	*7*	9	21	4	4	*38*
Peak Hour	**5**	**1**	**13**	**11**	***30***	**0**	**0**	**2**	**2**	***4***	**2**	**16**	**2**	**2**	**22**

Kyle Campbell
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Count Summaries - Heavy Vehicles

Interval Start	Holmes Ln				Hilda St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**5**	**2**	**10**	0
4:15 PM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**4**	**0**
4:30 PM	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**1**	**4**	**0**	**0**	**0**	**1**	**1**	**9**	**0**
4:45 PM	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**1**	**0**	**7**	**30**
5:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2	22
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	3	21
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
5:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2	7
Count Total	0	2	0	3	0	1	0	0	0	3	12	0	0	0	12	4	37	
Pk Hr Heavy	**0**	**2**	**0**	**3**	**0**	**1**	**0**	**0**	**0**	**3**	**10**	**0**	**0**	**0**	**8**	**3**	**30**	

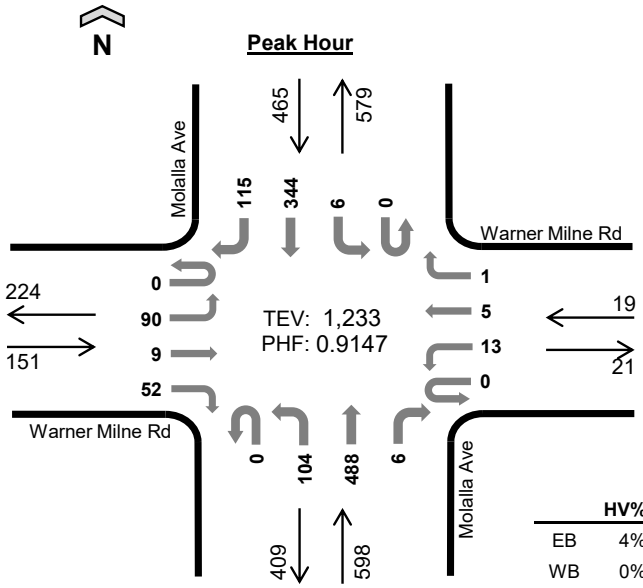
Count Summaries - Bikes

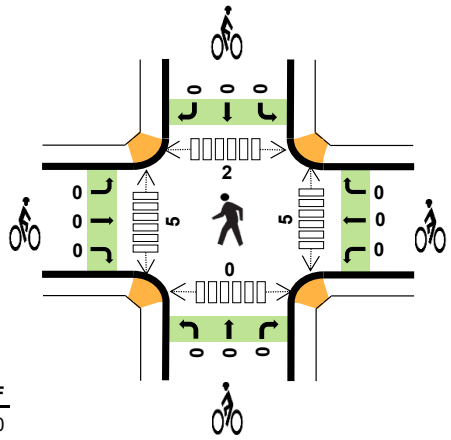
Interval Start	Holmes Ln				Hilda St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**2**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	4
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2	3
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Count Total	0	0	0	0	0	0	0	0	0	0	3	0	0	0	4	0	7	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**2**	**0**	**4**	

Kyle Campbell
(425) 213-7345

Molalla Ave
Warner Milne Rd

Date: 9/9/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 8:00 AM to 9:00 AM





	HV%	PHF
EB	4%	0.80
WB	0%	0.79
NB	5%	0.94
SB	4%	0.87
TOTAL	4%	0.91

Peak Hour Count Summaries

Peak Hour Interval Start		Warner Milne Rd Eastbound				Warner Milne Rd Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
8:00 AM		0	19	2	16	0	4	0	0	0	21	110	1	0	1	82	28	284	0
8:15 AM		0	17	3	7	0	2	2	1	0	25	123	2	0	1	72	34	289	0
8:30 AM		0	25	2	20	0	2	2	0	0	24	134	1	0	3	85	25	323	0
8:45 AM		0	29	2	9	0	5	1	0	0	34	121	2	0	1	105	28	337	1,233
Pk Hr	All	0	90	9	52	0	13	5	1	0	104	488	6	0	6	344	115	1,233	
	HV	0	2	0	4	0	0	0	0	0	1	25	1	0	0	17	3	53	
	HV%	-	2%	0%	8%	-	0%	0%	0%	-	1%	5%	17%	-	0%	5%	3%	4%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
8:00 AM	3	0	7	9	*19*	0	0	0	0	*0*	0	1	0	0	*1*
8:15 AM	2	0	7	2	*11*	0	0	0	0	*0*	1	1	0	0	*2*
8:30 AM	0	0	6	3	*9*	0	0	0	0	*0*	1	2	0	0	*3*
8:45 AM	1	0	7	6	*14*	0	0	0	0	*0*	3	1	2	0	*6*
Peak Hour	6	0	27	20	*53*	0	0	0	0	*0*	5	5	2	0	*12*

Kyle Campbell
(425) 213-7345

Count Summaries - All Vehicles

Interval Start	Warner Milne Rd				Warner Milne Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	22	2	4	0	1	2	2	0	14	81	1	0	1	32	13	175	0
7:15 AM	0	29	0	15	0	3	0	1	0	15	89	0	0	0	51	19	222	0
7:30 AM	0	14	1	10	0	6	0	0	0	22	113	0	0	0	67	14	247	0
7:45 AM	0	21	2	19	0	5	0	1	0	29	103	1	0	0	75	25	281	925
8:00 AM	**0**	**19**	**2**	**16**	**0**	**4**	**0**	**0**	**0**	**21**	**110**	**1**	**0**	**1**	**82**	**28**	**284**	**1,034**
8:15 AM	**0**	**17**	**3**	**7**	**0**	**2**	**2**	**1**	**0**	**25**	**123**	**2**	**0**	**1**	**72**	**34**	**289**	**1,101**
8:30 AM	**0**	**25**	**2**	**20**	**0**	**2**	**2**	**0**	**0**	**24**	**134**	**1**	**0**	**3**	**85**	**25**	**323**	**1,177**
8:45 AM	**0**	**29**	**2**	**9**	**0**	**5**	**1**	**0**	**0**	**34**	**121**	**2**	**0**	**1**	**105**	**28**	**337**	**1,233**
Count Total	0	176	14	100	0	28	7	5	0	184	874	8	0	7	569	186	2,158	
Pk Hr All	**0**	**90**	**9**	**52**	**0**	**13**	**5**	**1**	**0**	**104**	**488**	**6**	**0**	**6**	**344**	**115**	**1,233**	
Pk Hr HV	**0**	**2**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**1**	**25**	**1**	**0**	**0**	**17**	**3**	**53**	
Pk Hr HV%	**-**	**2%**	**0%**	**8%**	**-**	**0%**	**0%**	**0%**	**-**	**1%**	**5%**	**17%**	**-**	**0%**	**5%**	**3%**	**4%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	0	0	4	6	*10*	1	0	0	0	*1*	2	1	1	1	*5*
7:15 AM	2	0	5	3	*10*	0	0	0	0	*0*	0	2	0	1	*3*
7:30 AM	1	0	5	3	*9*	0	0	0	1	*1*	0	0	0	1	*1*
7:45 AM	1	0	1	3	*5*	0	0	0	0	*0*	0	0	0	0	*0*
8:00 AM	**3**	**0**	**7**	**9**	**19**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**
8:15 AM	**2**	**0**	**7**	**2**	**11**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**2**
8:30 AM	**0**	**0**	**6**	**3**	**9**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**0**	**0**	**3**
8:45 AM	**1**	**0**	**7**	**6**	**14**	**0**	**0**	**0**	**0**	**0**	**3**	**1**	**2**	**0**	**6**
Count Total	10	0	42	35	*87*	1	0	0	1	*2*	7	8	3	3	*21*
Peak Hour	**6**	**0**	**27**	**20**	***53***	**0**	**0**	**0**	**0**	***0***	**5**	**5**	**2**	**0**	**12**

Kyle Campbell
(425) 213-7345

Count Summaries - Heavy Vehicles

Interval Start	Warner Milne Rd				Warner Milne Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	3	1	0	0	6	0	10	0
7:15 AM	0	1	0	1	0	0	0	0	0	0	5	0	0	0	3	0	10	0
7:30 AM	0	0	0	1	0	0	0	0	0	0	5	0	0	0	3	0	9	0
7:45 AM	0	1	0	0	0	0	0	0	0	0	0	1	0	0	3	0	5	34
8:00 AM	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**1**	**6**	**0**	**0**	**0**	**7**	**2**	**19**	**43**
8:15 AM	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**2**	**0**	**11**	**44**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**1**	**0**	**0**	**3**	**0**	**9**	**44**
8:45 AM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**5**	**1**	**14**	**53**
Count Total	0	4	0	6	0	0	0	0	0	1	38	3	0	0	32	3	87	
Pk Hr Heavy	**0**	**2**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**1**	**25**	**1**	**0**	**0**	**17**	**3**	**53**	

Count Summaries - Bikes

Interval Start	Warner Milne Rd				Warner Milne Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	2	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

Kyle Campbell
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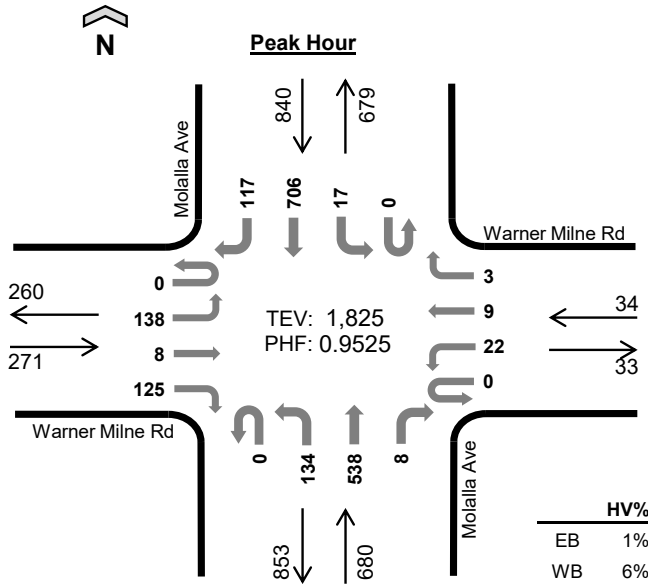
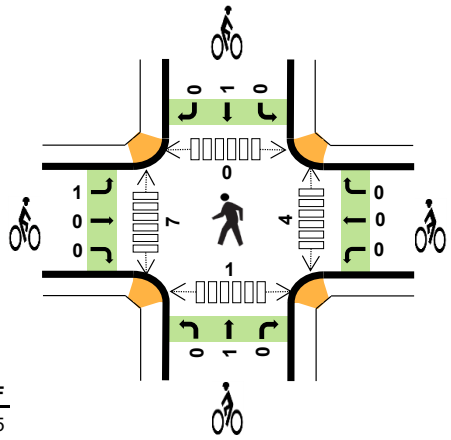
Molalla Ave
Warner Milne Rd

Date: 9/9/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM





	HV%	PHF
EB	1%	0.95
WB	6%	0.85
NB	2%	0.89
SB	2%	0.88
TOTAL	2%	0.95

Peak Hour Count Summaries

Peak Hour Interval Start		Warner Milne Rd Eastbound				Warner Milne Rd Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		**0**	**36**	**1**	**34**	**0**	**9**	**1**	**0**	**0**	**27**	**132**	**0**	**0**	**3**	**203**	**33**	**479**	**0**
4:15 PM		**0**	**38**	**0**	**24**	**0**	**6**	**2**	**2**	**0**	**36**	**118**	**5**	**0**	**3**	**164**	**32**	**430**	**0**
4:30 PM		**0**	**33**	**3**	**32**	**0**	**2**	**4**	**1**	**0**	**41**	**149**	**2**	**0**	**5**	**159**	**32**	**463**	**0**
4:45 PM		**0**	**31**	**4**	**35**	**0**	**5**	**2**	**0**	**0**	**30**	**139**	**1**	**0**	**6**	**180**	**20**	**453**	**1,825**
Pk Hr	All	**0**	**138**	**8**	**125**	**0**	**22**	**9**	**3**	**0**	**134**	**538**	**8**	**0**	**17**	**706**	**117**	**1,825**	
	HV	**0**	**2**	**1**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**12**	**1**	**0**	**0**	**16**	**0**	**35**	
	HV%	**-**	**1%**	**13%**	**1%**	**-**	**9%**	**0%**	**0%**	**-**	**0%**	**2%**	**13%**	**-**	**0%**	**2%**	**0%**	**2%**	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	**1**	**1**	**3**	**8**	***13***	**0**	**0**	**1**	**0**	***1***	**1**	**4**	**0**	**1**	***6***
4:15 PM	**2**	**0**	**3**	**4**	***9***	**0**	**0**	**0**	**1**	***1***	**3**	**3**	**0**	**0**	***6***
4:30 PM	**0**	**0**	**3**	**3**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
4:45 PM	**1**	**1**	**4**	**1**	***7***	**1**	**0**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***
Peak Hour	**4**	**2**	**13**	**16**	***35***	**1**	**0**	**1**	**1**	***3***	**4**	**7**	**0**	**1**	***12***

Kyle Campbell
(425) 213-7345

Count Summaries - All Vehicles

Interval Start	Warner Milne Rd Eastbound				Warner Milne Rd Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**36**	**1**	**34**	**0**	**9**	**1**	**0**	**0**	**27**	**132**	**0**	**0**	**3**	**203**	**33**	**479**	0
4:15 PM	**0**	**38**	**0**	**24**	**0**	**6**	**2**	**2**	**0**	**36**	**118**	**5**	**0**	**3**	**164**	**32**	**430**	**0**
4:30 PM	**0**	**33**	**3**	**32**	**0**	**2**	**4**	**1**	**0**	**41**	**149**	**2**	**0**	**5**	**159**	**32**	**463**	**0**
4:45 PM	**0**	**31**	**4**	**35**	**0**	**5**	**2**	**0**	**0**	**30**	**139**	**1**	**0**	**6**	**180**	**20**	**453**	**1,825**
5:00 PM	0	36	1	45	0	9	0	1	0	31	116	1	0	4	165	33	442	1,788
5:15 PM	0	32	2	19	0	4	5	2	0	18	128	5	0	1	135	28	379	1,737
5:30 PM	0	33	1	31	0	9	4	2	0	34	110	2	0	1	137	16	380	1,654
5:45 PM	0	31	1	36	0	4	4	2	0	35	119	6	0	5	135	23	401	1,602
Count Total	0	270	13	256	0	48	22	10	0	252	1,011	22	0	28	1,278	217	3,427	
Pk Hr All	**0**	**138**	**8**	**125**	**0**	**22**	**9**	**3**	**0**	**134**	**538**	**8**	**0**	**17**	**706**	**117**	**1,825**	
Pk Hr HV	**0**	**2**	**1**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**12**	**1**	**0**	**0**	**16**	**0**	**35**	
Pk Hr HV%	**-**	**1%**	**13%**	**1%**	**-**	**9%**	**0%**	**0%**	**-**	**0%**	**2%**	**13%**	**-**	**0%**	**2%**	**0%**	**2%**	

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) E	W	N	S	Total
4:00 PM	**1**	**1**	**3**	**8**	**13**	**0**	**0**	**1**	**0**	**1**	**1**	**4**	**0**	**1**	**6**
4:15 PM	**2**	**0**	**3**	**4**	**9**	**0**	**0**	**0**	**1**	**1**	**3**	**3**	**0**	**0**	**6**
4:30 PM	**0**	**0**	**3**	**3**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:45 PM	**1**	**1**	**4**	**1**	**7**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**
5:00 PM	0	0	0	1	*1*	0	0	0	1	*1*	0	1	2	3	*6*
5:15 PM	0	0	0	2	*2*	0	0	0	0	*0*	0	2	0	4	*6*
5:30 PM	0	0	0	0	*0*	0	1	0	0	*1*	1	0	2	1	*4*
5:45 PM	1	0	1	1	*3*	0	0	0	1	*1*	6	1	0	4	*11*
Count Total	5	2	14	20	*41*	1	1	1	3	*6*	11	11	4	13	*39*
Peak Hour	**4**	**2**	**13**	**16**	***35***	**1**	**0**	**1**	**1**	***3***	**4**	**7**	**0**	**1**	**12**

Kyle Campbell
(425) 213-7345

Count Summaries - Heavy Vehicles

Interval Start	Warner Milne Rd				Warner Milne Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**8**	**0**	**13**	0
4:15 PM	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**0**	**4**	**0**	**9**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**3**	**0**	**6**	**0**
4:45 PM	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**1**	**0**	**7**	**35**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	23
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	16
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
5:45 PM	0	0	0	1	0	0	0	0	0	0	1	0	0	0	1	0	3	6
Count Total	0	2	1	2	0	2	0	0	0	0	13	1	0	0	20	0	41	
Pk Hr Heavy	**0**	**2**	**1**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**12**	**1**	**0**	**0**	**16**	**0**	**35**	

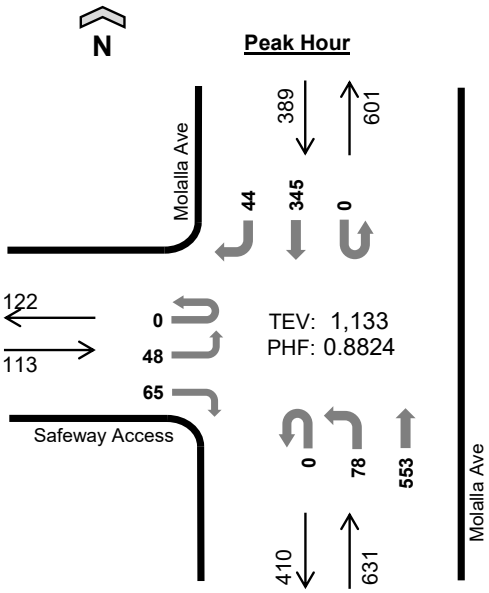
Count Summaries - Bikes

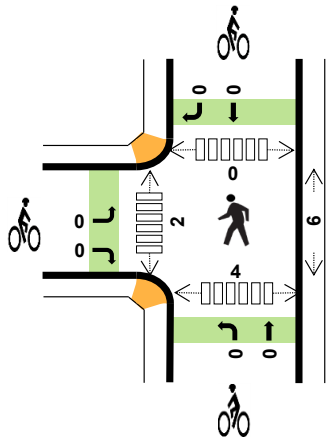
Interval Start	Warner Milne Rd				Warner Milne Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:45 PM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**3**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	3
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3
Count Total	0	1	0	0	0	0	0	1	0	0	1	0	0	0	2	1	6	
Pk Hr Bike	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**3**	

Kyle Campbell
(425) 213-7345

Molalla Ave
Safeway Access

Date: 9/9/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 8:00 AM to 9:00 AM





	HV%	PHF
EB	1%	0.71
WB	--	--
NB	3%	0.91
SB	4%	0.79
TOTAL	4%	0.88

Peak Hour Count Summaries

Peak Hour Interval Start		Safeway Access				n/a				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
8:00 AM		0	11	0	16	0	0	0	0	0	17	126	0	0	0	87	9	266	0
8:15 AM		0	10	0	11	0	0	0	0	0	21	141	0	0	0	66	12	261	0
8:30 AM		0	20	0	20	0	0	0	0	0	15	138	0	0	0	83	9	285	0
8:45 AM		0	7	0	18	0	0	0	0	0	25	148	0	0	0	109	14	321	1,133
Pk Hr	All	0	48	0	65	0	0	0	0	0	78	553	0	0	0	345	44	1,133	
	HV	0	0	0	1	0	0	0	0	0	0	22	0	0	0	16	1	40	
	HV%	-	0%	-	2%	-	-	-	-	-	0%	4%	-	-	-	5%	2%	4%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
8:00 AM	1	0	4	8	*13*	0	0	0	0	*0*	0	0	0	0	*0*
8:15 AM	0	0	6	2	*8*	0	0	0	0	*0*	1	1	0	2	*4*
8:30 AM	0	0	5	2	*7*	0	0	0	0	*0*	3	1	0	2	*6*
8:45 AM	0	0	7	5	*12*	0	0	0	0	*0*	2	0	0	0	*2*
Peak Hour	1	0	22	17	*40*	0	0	0	0	*0*	6	2	0	4	*12*

Kyle Campbell
(425) 213-7345

Count Summaries - All Vehicles

Interval Start	Safeway Access				n/a				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	8	0	6	0	0	0	0	0	8	88	0	0	0	29	5	144	0
7:15 AM	0	1	0	14	0	0	0	0	0	9	107	0	0	0	68	3	202	0
7:30 AM	0	9	0	17	0	0	0	0	0	20	127	0	0	0	79	7	259	0
7:45 AM	0	7	0	17	0	0	0	0	0	12	124	0	0	0	90	9	259	864
8:00 AM	**0**	**11**	**0**	**16**	**0**	**0**	**0**	**0**	**0**	**17**	**126**	**0**	**0**	**0**	**87**	**9**	**266**	**986**
8:15 AM	**0**	**10**	**0**	**11**	**0**	**0**	**0**	**0**	**0**	**21**	**141**	**0**	**0**	**0**	**66**	**12**	**261**	**1,045**
8:30 AM	**0**	**20**	**0**	**20**	**0**	**0**	**0**	**0**	**0**	**15**	**138**	**0**	**0**	**0**	**83**	**9**	**285**	**1,071**
8:45 AM	**0**	**7**	**0**	**18**	**0**	**0**	**0**	**0**	**0**	**25**	**148**	**0**	**0**	**0**	**109**	**14**	**321**	**1,133**
Count Total	0	73	0	119	0	0	0	0	0	127	999	0	0	0	611	68	1,997	
Pk Hr All	**0**	**48**	**0**	**65**	**0**	**0**	**0**	**0**	**0**	**78**	**553**	**0**	**0**	**0**	**345**	**44**	**1,133**	
Pk Hr HV	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**22**	**0**	**0**	**0**	**16**	**1**	**40**	
Pk Hr HV%	**-**	**0%**	**-**	**2%**	**-**	**-**	**-**	**-**	**-**	**0%**	**4%**	**-**	**-**	**-**	**5%**	**2%**	**4%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	0	0	4	6	*10*	0	0	0	0	*0*	1	0	2	0	*3*
7:15 AM	1	0	8	2	*11*	0	0	0	0	*0*	0	0	2	2	*4*
7:30 AM	1	0	6	4	*11*	0	0	0	0	*0*	0	0	2	0	*2*
7:45 AM	1	0	2	2	*5*	0	0	0	1	*1*	0	0	0	0	*0*
8:00 AM	**1**	**0**	**4**	**8**	**13**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	**0**	**0**	**6**	**2**	**8**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**2**	**4**
8:30 AM	**0**	**0**	**5**	**2**	**7**	**0**	**0**	**0**	**0**	**0**	**3**	**1**	**0**	**2**	**6**
8:45 AM	**0**	**0**	**7**	**5**	**12**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**2**
Count Total	4	0	42	31	*77*	0	0	0	1	*1*	7	2	6	6	*21*
Peak Hour	**1**	**0**	**22**	**17**	***40***	**0**	**0**	**0**	**0**	***0***	**6**	**2**	**0**	**4**	**12**

Kyle Campbell
(425) 213-7345

Count Summaries - Heavy Vehicles

Interval Start	Safeway Access				n/a				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	6	0	10	0
7:15 AM	0	0	0	1	0	0	0	0	0	0	8	0	0	0	2	0	11	0
7:30 AM	0	0	0	1	0	0	0	0	0	0	6	0	0	0	3	1	11	0
7:45 AM	0	0	0	1	0	0	0	0	0	1	1	0	0	0	2	0	5	37
8:00 AM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**7**	**1**	**13**	**40**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**2**	**0**	**8**	**37**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**2**	**0**	**7**	**33**
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**5**	**0**	**12**	**40**
Count Total	0	0	0	4	0	0	0	0	0	1	41	0	0	0	29	2	77	
Pk Hr Heavy	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**22**	**0**	**0**	**0**	**16**	**1**	**40**	

Count Summaries - Bikes

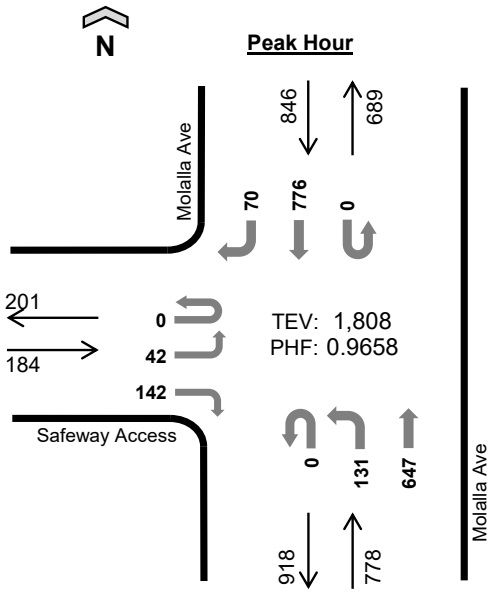
Interval Start	Safeway Access				n/a				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

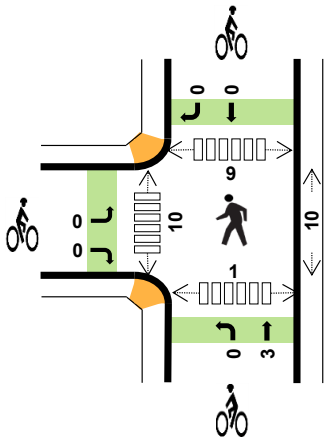
Kyle Campbell
(425) 213-7345

project.manager.wa@idaxdata.com

Molalla Ave
Safeway Access

Date: 9/9/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM





	HV%	PHF
EB	0%	0.79
WB	--	--
NB	1%	0.89
SB	2%	0.90
TOTAL	1%	0.97

Peak Hour Count Summaries

Peak Hour Interval Start		Safeway Access				n/a				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	11	0	27	0	0	0	0	0	28	148	0	0	0	213	21	448	0
4:15 PM		0	13	0	42	0	0	0	0	0	37	155	0	0	0	187	12	446	0
4:30 PM		0	3	0	30	0	0	0	0	0	29	189	0	0	0	177	18	446	0
4:45 PM		0	15	0	43	0	0	0	0	0	37	155	0	0	0	199	19	468	1,808
Pk Hr	All	0	42	0	142	0	0	0	0	0	131	647	0	0	0	776	70	1,808	
	HV	0	0	0	0	0	0	0	0	0	0	11	0	0	0	15	0	26	
	HV%	-	0%	-	0%	-	-	-	-	-	0%	2%	-	-	-	2%	0%	1%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	0	0	2	8	*10*	0	0	3	0	*3*	2	1	0	0	*3*
4:15 PM	0	0	1	3	*4*	0	0	0	0	*0*	4	1	2	0	*7*
4:30 PM	0	0	4	3	*7*	0	0	0	0	*0*	1	5	2	1	*9*
4:45 PM	0	0	4	1	*5*	0	0	0	0	*0*	3	3	5	0	*11*
Peak Hour	0	0	11	15	*26*	0	0	3	0	*3*	10	10	9	1	*30*

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Count Summaries - All Vehicles

Interval Start	Safeway Access				n/a				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**11**	**0**	**27**	**0**	**0**	**0**	**0**	**0**	**28**	**148**	**0**	**0**	**0**	**213**	**21**	**448**	0
4:15 PM	**0**	**13**	**0**	**42**	**0**	**0**	**0**	**0**	**0**	**37**	**155**	**0**	**0**	**0**	**187**	**12**	**446**	**0**
4:30 PM	**0**	**3**	**0**	**30**	**0**	**0**	**0**	**0**	**0**	**29**	**189**	**0**	**0**	**0**	**177**	**18**	**446**	**0**
4:45 PM	**0**	**15**	**0**	**43**	**0**	**0**	**0**	**0**	**0**	**37**	**155**	**0**	**0**	**0**	**199**	**19**	**468**	**1,808**
5:00 PM	0	13	0	23	0	0	0	0	0	35	141	0	0	0	211	18	441	1,801
5:15 PM	0	21	0	32	0	0	0	0	0	34	145	0	0	0	150	14	396	1,751
5:30 PM	0	7	0	34	0	0	0	0	0	29	148	0	0	0	169	16	403	1,708
5:45 PM	0	15	0	28	0	0	0	0	0	29	155	0	0	0	153	18	398	1,638
Count Total	0	98	0	259	0	0	0	0	0	258	1,236	0	0	0	1,459	136	3,446	
Pk Hr All	**0**	**42**	**0**	**142**	**0**	**0**	**0**	**0**	**0**	**131**	**647**	**0**	**0**	**0**	**776**	**70**	**1,808**	
Pk Hr HV	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**11**	**0**	**0**	**0**	**15**	**0**	**26**	
Pk Hr HV%	**-**	**0%**	**-**	**0%**	**-**	**-**	**-**	**-**	**-**	**0%**	**2%**	**-**	**-**	**-**	**2%**	**0%**	**1%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	**0**	**0**	**2**	**8**	**10**	**0**	**0**	**3**	**0**	**3**	**2**	**1**	**0**	**0**	**3**
4:15 PM	**0**	**0**	**1**	**3**	**4**	**0**	**0**	**0**	**0**	**0**	**4**	**1**	**2**	**0**	**7**
4:30 PM	**0**	**0**	**4**	**3**	**7**	**0**	**0**	**0**	**0**	**0**	**1**	**5**	**2**	**1**	**9**
4:45 PM	**0**	**0**	**4**	**1**	**5**	**0**	**0**	**0**	**0**	**0**	**3**	**3**	**5**	**0**	**11**
5:00 PM	0	0	0	3	*3*	0	0	0	0	*0*	0	7	0	0	*7*
5:15 PM	1	0	0	2	*3*	0	0	1	0	*1*	1	0	0	0	*1*
5:30 PM	0	0	0	0	*0*	0	0	0	0	*0*	3	0	3	1	*7*
5:45 PM	0	0	1	2	*3*	0	0	0	0	*0*	5	1	3	1	*10*
Count Total	1	0	12	22	*35*	0	0	4	0	*4*	19	18	15	3	*55*
Peak Hour	**0**	**0**	**11**	**15**	***26***	**0**	**0**	**3**	**0**	***3***	**10**	**10**	**9**	**1**	**30**

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Count Summaries - Heavy Vehicles

Interval Start	Safeway Access				n/a				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**8**	**0**	**10**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**3**	**0**	**4**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**3**	**0**	**7**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**1**	**0**	**5**	**26**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	19
5:15 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	3	18
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
5:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	3	9
Count Total	0	0	0	1	0	0	0	0	0	0	12	0	0	0	22	0	35	
Pk Hr Heavy	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**11**	**0**	**0**	**0**	**15**	**0**	**26**	

Count Summaries - Bikes

Interval Start	Safeway Access				n/a				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**3**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	4	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**3**	

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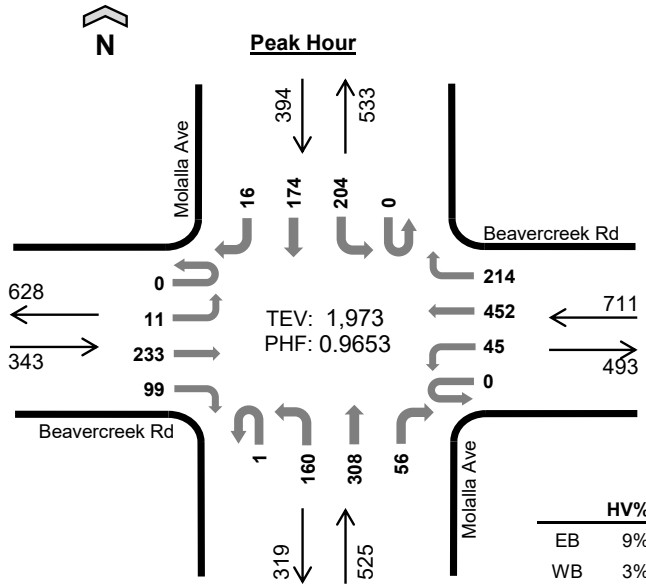
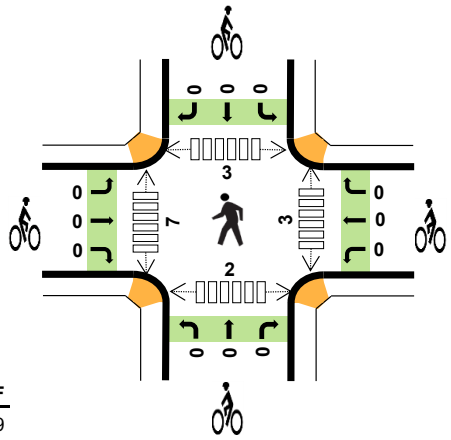
Molalla Ave
Beavercreek Rd

Date: 9/9/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM





	HV%	PHF
EB	9%	0.89
WB	3%	0.94
NB	3%	0.97
SB	4%	0.90
TOTAL	4%	0.97

Peak Hour Count Summaries

Peak Hour Interval Start		Beavercreek Rd Eastbound				Beavercreek Rd Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:45 AM		0	2	60	21	0	10	123	57	0	36	69	22	0	56	48	5	509	0
8:00 AM		0	2	63	31	0	19	122	42	0	40	79	16	0	57	37	3	511	0
8:15 AM		0	4	56	21	0	9	105	56	1	40	83	8	0	38	40	5	466	0
8:30 AM		0	3	54	26	0	7	102	59	0	44	77	10	0	53	49	3	487	1,973
Pk Hr	All	0	11	233	99	0	45	452	214	1	160	308	56	0	204	174	16	1,973	
	HV	0	0	25	6	0	5	13	6	0	6	5	4	0	11	4	0	85	
	HV%	-	0%	11%	6%	-	11%	3%	3%	0%	4%	2%	7%	-	5%	2%	0%	4%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:45 AM	8	6	2	4	*20*	0	0	0	0	*0*	0	2	0	0	*2*
8:00 AM	14	3	6	6	*29*	0	0	0	0	*0*	0	2	0	1	*3*
8:15 AM	5	6	4	2	*17*	0	0	0	0	*0*	3	3	1	1	*8*
8:30 AM	4	9	3	3	*19*	0	0	0	0	*0*	0	0	2	0	*2*
Peak Hour	31	24	15	15	*85*	0	0	0	0	*0*	3	7	3	2	*15*

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Count Summaries - All Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	10	48	25	0	9	100	28	0	20	54	14	0	21	21	2	352	0
7:15 AM	0	5	49	22	0	9	109	47	0	26	61	12	0	37	41	1	419	0
7:30 AM	0	7	64	20	0	6	93	72	0	42	57	15	0	41	48	5	470	0
7:45 AM	**0**	**2**	**60**	**21**	**0**	**10**	**123**	**57**	**0**	**36**	**69**	**22**	**0**	**56**	**48**	**5**	**509**	**1,750**
8:00 AM	**0**	**2**	**63**	**31**	**0**	**19**	**122**	**42**	**0**	**40**	**79**	**16**	**0**	**57**	**37**	**3**	**511**	**1,909**
8:15 AM	**0**	**4**	**56**	**21**	**0**	**9**	**105**	**56**	**1**	**40**	**83**	**8**	**0**	**38**	**40**	**5**	**466**	**1,956**
8:30 AM	**0**	**3**	**54**	**26**	**0**	**7**	**102**	**59**	**0**	**44**	**77**	**10**	**0**	**53**	**49**	**3**	**487**	**1,973**
8:45 AM	0	2	41	25	0	12	106	75	0	44	49	15	0	60	66	5	500	1,964
Count Total	0	35	435	191	0	81	860	436	1	292	529	112	0	363	350	29	3,714	
Pk Hr All	**0**	**11**	**233**	**99**	**0**	**45**	**452**	**214**	**1**	**160**	**308**	**56**	**0**	**204**	**174**	**16**	**1,973**	
Pk Hr HV	**0**	**0**	**25**	**6**	**0**	**5**	**13**	**6**	**0**	**6**	**5**	**4**	**0**	**11**	**4**	**0**	**85**	
Pk Hr HV%	**-**	**0%**	**11%**	**6%**	**-**	**11%**	**3%**	**3%**	**0%**	**4%**	**2%**	**7%**	**-**	**5%**	**2%**	**0%**	**4%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	4	4	7	6	*21*	0	0	0	0	*0*	1	4	1	2	*8*
7:15 AM	3	7	3	3	*16*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	12	3	4	3	*22*	0	0	0	0	*0*	0	1	0	0	*1*
7:45 AM	**8**	**6**	**2**	**4**	**20**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**2**
8:00 AM	**14**	**3**	**6**	**6**	**29**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**3**
8:15 AM	**5**	**6**	**4**	**2**	**17**	**0**	**0**	**0**	**0**	**0**	**3**	**3**	**1**	**1**	**8**
8:30 AM	**4**	**9**	**3**	**3**	**19**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**
8:45 AM	1	4	5	5	*15*	0	0	0	0	*0*	0	5	1	0	*6*
Count Total	51	42	34	32	*159*	0	0	0	0	*0*	4	17	5	4	*30*
Peak Hour	**31**	**24**	**15**	**15**	***85***	**0**	**0**	**0**	**0**	***0***	**3**	**7**	**3**	**2**	**15**

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Count Summaries - Heavy Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	3	1	0	3	1	0	0	3	3	1	0	3	1	2	21	0
7:15 AM	0	1	2	0	0	2	3	2	0	1	0	2	0	1	2	0	16	0
7:30 AM	0	1	9	2	0	0	2	1	0	3	1	0	0	1	2	0	22	0
7:45 AM	**0**	**0**	**8**	**0**	**0**	**3**	**2**	**1**	**0**	**0**	**0**	**2**	**0**	**4**	**0**	**0**	**20**	**79**
8:00 AM	**0**	**0**	**11**	**3**	**0**	**0**	**2**	**1**	**0**	**2**	**2**	**2**	**0**	**5**	**1**	**0**	**29**	**87**
8:15 AM	**0**	**0**	**3**	**2**	**0**	**1**	**4**	**1**	**0**	**3**	**1**	**0**	**0**	**2**	**0**	**0**	**17**	**88**
8:30 AM	**0**	**0**	**3**	**1**	**0**	**1**	**5**	**3**	**0**	**1**	**2**	**0**	**0**	**0**	**3**	**0**	**19**	**85**
8:45 AM	0	0	1	0	0	1	0	3	0	3	2	0	0	2	3	0	15	80
Count Total	0	2	40	9	0	11	19	12	0	16	11	7	0	18	12	2	159	
Pk Hr Heavy	**0**	**0**	**25**	**6**	**0**	**5**	**13**	**6**	**0**	**6**	**5**	**4**	**0**	**11**	**4**	**0**	**85**	

Count Summaries - Bikes

Interval Start	Beavercreek Rd				Beavercreek Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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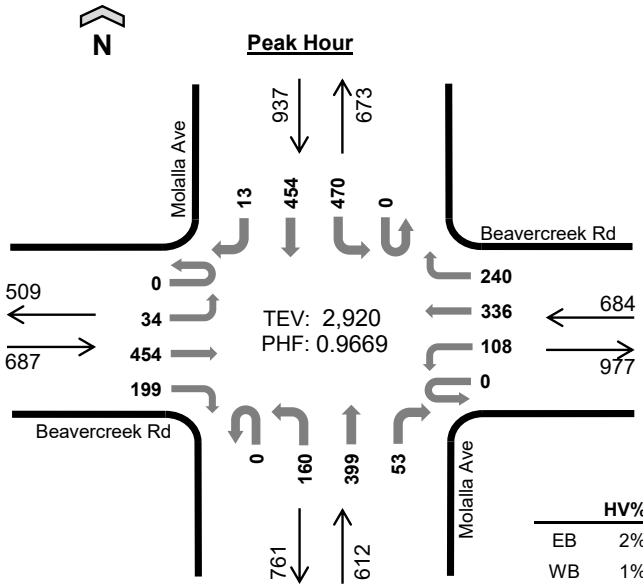
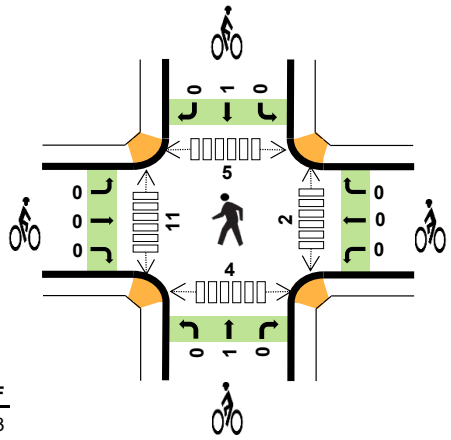
Molalla Ave
Beavercreek Rd

Date: 9/9/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:15 PM to 5:15 PM





	HV%	PHF
EB	2%	0.73
WB	1%	0.98
NB	2%	0.86
SB	1%	0.90
TOTAL	2%	0.97

Peak Hour Count Summaries

Peak Hour Interval Start		Beavercreek Rd Eastbound				Beavercreek Rd Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:15 PM		0	7	87	44	0	26	79	62	0	38	97	13	0	110	128	7	698	0
4:30 PM		0	10	113	46	0	22	97	55	0	42	123	13	0	102	108	2	733	0
4:45 PM		0	9	96	41	0	30	72	68	0	45	100	13	0	138	121	1	734	0
5:00 PM		0	8	158	68	0	30	88	55	0	35	79	14	0	120	97	3	755	2,920
Pk Hr	All	0	34	454	199	0	108	336	240	0	160	399	53	0	470	454	13	2,920	
	HV	0	1	7	7	0	1	5	4	0	8	2	0	0	5	8	0	48	
	HV%	-	3%	2%	4%	-	1%	1%	2%	-	5%	1%	0%	-	1%	2%	0%	2%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:15 PM	5	3	2	5	*15*	0	0	1	1	*2*	1	1	1	0	*3*
4:30 PM	2	5	3	4	*14*	0	0	0	0	*0*	0	2	1	0	*3*
4:45 PM	7	0	4	2	*13*	0	0	0	0	*0*	1	2	1	0	*4*
5:00 PM	1	2	1	2	*6*	0	0	0	0	*0*	0	6	2	4	*12*
Peak Hour	15	10	10	13	*48*	0	0	1	1	2	2	11	5	4	*22*

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Count Summaries - All Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	13	114	52	0	24	73	60	0	43	85	21	0	122	113	1	721	0
4:15 PM	**0**	**7**	**87**	**44**	**0**	**26**	**79**	**62**	**0**	**38**	**97**	**13**	**0**	**110**	**128**	**7**	**698**	**0**
4:30 PM	**0**	**10**	**113**	**46**	**0**	**22**	**97**	**55**	**0**	**42**	**123**	**13**	**0**	**102**	**108**	**2**	**733**	**0**
4:45 PM	**0**	**9**	**96**	**41**	**0**	**30**	**72**	**68**	**0**	**45**	**100**	**13**	**0**	**138**	**121**	**1**	**734**	**2,886**
5:00 PM	**0**	**8**	**158**	**68**	**0**	**30**	**88**	**55**	**0**	**35**	**79**	**14**	**0**	**120**	**97**	**3**	**755**	**2,920**
5:15 PM	0	5	104	33	0	30	60	69	0	37	86	25	0	100	104	3	656	2,878
5:30 PM	0	5	139	56	0	20	85	67	0	36	85	18	0	99	96	1	707	2,852
5:45 PM	0	5	72	28	0	26	72	68	0	37	90	15	0	100	100	3	616	2,734
Count Total	0	62	883	368	0	208	626	504	0	313	745	132	0	891	867	21	5,620	
Pk Hr All	**0**	**34**	**454**	**199**	**0**	**108**	**336**	**240**	**0**	**160**	**399**	**53**	**0**	**470**	**454**	**13**	**2,920**	
Pk Hr HV	**0**	**1**	**7**	**7**	**0**	**1**	**5**	**4**	**0**	**8**	**2**	**0**	**0**	**5**	**8**	**0**	**48**	
Pk Hr HV%	**-**	**3%**	**2%**	**4%**	**-**	**1%**	**1%**	**2%**	**-**	**5%**	**1%**	**0%**	**-**	**1%**	**2%**	**0%**	**2%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	6	7	3	9	*25*	0	0	0	0	*0*	2	4	2	2	*10*
4:15 PM	**5**	**3**	**2**	**5**	**15**	**0**	**0**	**1**	**1**	**2**	**1**	**1**	**1**	**0**	**3**
4:30 PM	**2**	**5**	**3**	**4**	**14**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**3**
4:45 PM	**7**	**0**	**4**	**2**	**13**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**1**	**0**	**4**
5:00 PM	**1**	**2**	**1**	**2**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**2**	**4**	**12**
5:15 PM	1	2	2	2	*7*	0	0	1	0	*1*	1	5	0	1	*7*
5:30 PM	2	2	1	1	*6*	0	0	0	0	*0*	1	4	0	1	*6*
5:45 PM	1	2	1	1	*5*	0	0	0	0	*0*	5	4	1	3	*13*
Count Total	25	23	17	26	*91*	0	0	2	1	*3*	11	28	8	11	*58*
Peak Hour	**15**	**10**	**10**	**13**	***48***	**0**	**0**	**1**	**1**	**2**	**2**	**11**	**5**	**4**	**22**

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Count Summaries - Heavy Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	2	4	0	1	6	0	0	3	0	0	0	4	5	0	25	0
4:15 PM	**0**	**0**	**5**	**0**	**0**	**1**	**1**	**1**	**0**	**2**	**0**	**0**	**0**	**3**	**2**	**0**	**15**	**0**
4:30 PM	**0**	**0**	**0**	**2**	**0**	**0**	**2**	**3**	**0**	**3**	**0**	**0**	**0**	**1**	**3**	**0**	**14**	**0**
4:45 PM	**0**	**1**	**2**	**4**	**0**	**0**	**0**	**0**	**0**	**2**	**2**	**0**	**0**	**1**	**1**	**0**	**13**	**67**
5:00 PM	**0**	**0**	**0**	**1**	**0**	**0**	**2**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**2**	**0**	**6**	**48**
5:15 PM	0	0	0	1	0	0	2	0	0	1	0	1	0	1	1	0	7	40
5:30 PM	0	0	1	1	0	1	1	0	0	1	0	0	0	1	0	0	6	32
5:45 PM	0	0	0	1	0	1	1	0	0	1	0	0	0	1	0	0	5	24
Count Total	0	1	10	14	0	4	15	4	0	14	2	1	0	12	14	0	91	
Pk Hr Heavy	**0**	**1**	**7**	**7**	**0**	**1**	**5**	**4**	**0**	**8**	**2**	**0**	**0**	**5**	**8**	**0**	**48**	

Count Summaries - Bikes

Interval Start	Beavercreek Rd				Beavercreek Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**2**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	3	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**2**	

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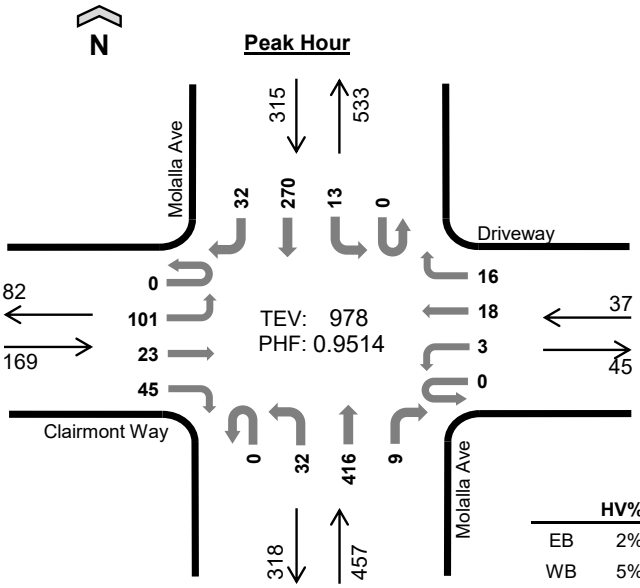
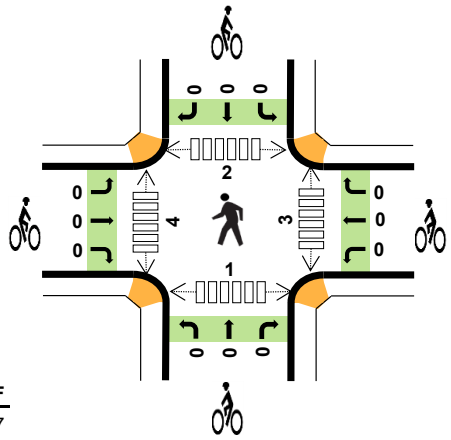
Molalla Ave
Clairmont Way

Date: 9/9/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 8:00 AM to 9:00 AM





	HV%	PHF
EB	2%	0.77
WB	5%	0.58
NB	4%	0.94
SB	5%	0.87
TOTAL	4%	0.95

Peak Hour Count Summaries

Peak Hour Interval Start		Clairmont Way (Eastbound)				Driveway (Westbound)				Molalla Ave (Northbound)				Molalla Ave (Southbound)				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
8:00 AM		0	29	9	17	0	1	3	1	0	5	93	2	0	2	70	12	244	0
8:15 AM		0	21	7	12	0	1	8	7	0	9	105	4	0	3	58	8	243	0
8:30 AM		0	26	4	7	0	1	3	4	0	9	108	1	0	4	63	4	234	0
8:45 AM		0	25	3	9	0	0	4	4	0	9	110	2	0	4	79	8	257	978
Pk Hr	All	0	101	23	45	0	3	18	16	0	32	416	9	0	13	270	32	978	
	HV	0	2	0	1	0	0	0	2	0	3	16	0	0	1	13	1	39	
	HV%	-	2%	0%	2%	-	0%	0%	13%	-	9%	4%	0%	-	8%	5%	3%	4%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
8:00 AM	2	0	6	4	*12*	0	0	0	0	*0*	0	1	0	0	*1*
8:15 AM	0	1	4	2	*7*	0	0	0	0	*0*	2	0	1	0	*3*
8:30 AM	0	1	3	6	*10*	0	0	0	0	*0*	0	0	1	0	*1*
8:45 AM	1	0	6	3	*10*	0	0	0	0	*0*	1	3	0	1	*5*
Peak Hour	3	2	19	15	*39*	0	0	0	0	*0*	3	4	2	1	*10*

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Count Summaries - All Vehicles

Interval Start	Clairmont Way				Driveway				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	30	2	6	0	0	1	2	0	4	58	0	0	0	48	1	152	0
7:15 AM	0	34	7	5	0	1	0	1	0	2	58	1	0	0	47	11	167	0
7:30 AM	0	31	11	11	0	1	4	3	0	4	77	1	0	1	61	12	217	0
7:45 AM	0	44	11	16	0	0	2	0	0	2	95	1	0	1	58	12	242	778
8:00 AM	**0**	**29**	**9**	**17**	**0**	**1**	**3**	**1**	**0**	**5**	**93**	**2**	**0**	**2**	**70**	**12**	**244**	**870**
8:15 AM	**0**	**21**	**7**	**12**	**0**	**1**	**8**	**7**	**0**	**9**	**105**	**4**	**0**	**3**	**58**	**8**	**243**	**946**
8:30 AM	**0**	**26**	**4**	**7**	**0**	**1**	**3**	**4**	**0**	**9**	**108**	**1**	**0**	**4**	**63**	**4**	**234**	**963**
8:45 AM	**0**	**25**	**3**	**9**	**0**	**0**	**4**	**4**	**0**	**9**	**110**	**2**	**0**	**4**	**79**	**8**	**257**	**978**
Count Total	0	240	54	83	0	5	25	22	0	44	704	12	0	15	484	68	1,756	
Pk Hr All	**0**	**101**	**23**	**45**	**0**	**3**	**18**	**16**	**0**	**32**	**416**	**9**	**0**	**13**	**270**	**32**	**978**	
Pk Hr HV	**0**	**2**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**3**	**16**	**0**	**0**	**1**	**13**	**1**	**39**	
Pk Hr HV%	**-**	**2%**	**0%**	**2%**	**-**	**0%**	**0%**	**13%**	**-**	**9%**	**4%**	**0%**	**-**	**8%**	**5%**	**3%**	**4%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	3	0	9	2	*14*	0	0	0	0	*0*	1	1	2	0	*4*
7:15 AM	2	0	2	0	*4*	0	0	0	0	*0*	2	1	2	0	*5*
7:30 AM	1	0	5	5	*11*	0	0	0	0	*0*	1	1	4	1	*7*
7:45 AM	1	0	0	4	*5*	0	0	0	0	*0*	0	2	0	1	*3*
8:00 AM	**2**	**0**	**6**	**4**	**12**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**
8:15 AM	**0**	**1**	**4**	**2**	**7**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**0**	**3**
8:30 AM	**0**	**1**	**3**	**6**	**10**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**
8:45 AM	**1**	**0**	**6**	**3**	**10**	**0**	**0**	**0**	**0**	**0**	**1**	**3**	**0**	**1**	**5**
Count Total	10	2	35	26	*73*	0	0	0	0	*0*	7	9	10	3	*29*
Peak Hour	**3**	**2**	**19**	**15**	***39***	**0**	**0**	**0**	**0**	***0***	**3**	**4**	**2**	**1**	**10**

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Count Summaries - Heavy Vehicles

Interval Start	Clairmont Way				Driveway				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	2	0	1	0	0	0	0	0	3	6	0	0	0	2	0	14	0
7:15 AM	0	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	4	0
7:30 AM	0	0	0	1	0	0	0	0	0	0	5	0	0	1	3	1	11	0
7:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	3	1	5	34
8:00 AM	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**4**	**0**	**12**	**32**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**3**	**0**	**0**	**0**	**2**	**0**	**7**	**35**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**3**	**0**	**0**	**0**	**5**	**1**	**10**	**34**
8:45 AM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**4**	**0**	**0**	**1**	**2**	**0**	**10**	**39**
Count Total	0	7	0	3	0	0	0	2	0	6	29	0	0	2	21	3	73	
Pk Hr Heavy	**0**	**2**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**3**	**16**	**0**	**0**	**1**	**13**	**1**	**39**	

Count Summaries - Bikes

Interval Start	Clairmont Way				Driveway				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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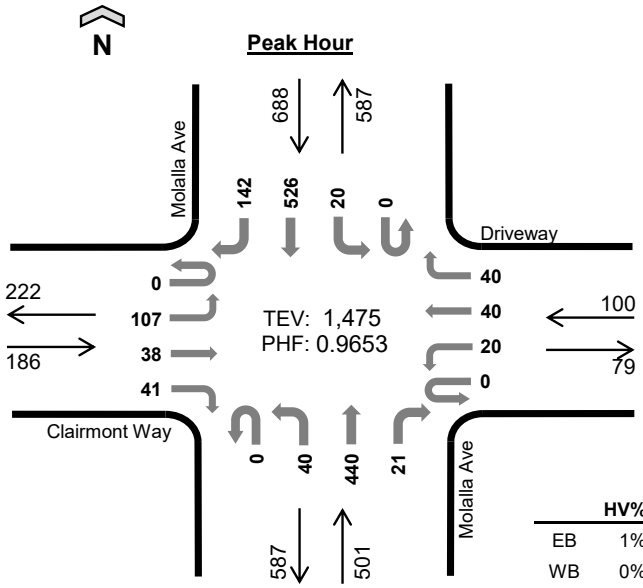
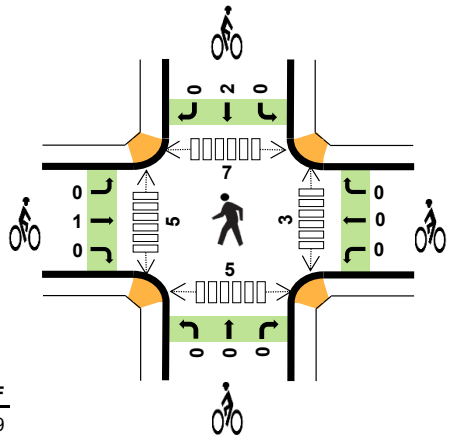
Molalla Ave
Clairmont Way

Date: 9/9/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM





	HV%	PHF
EB	1%	0.79
WB	0%	0.89
NB	3%	0.86
SB	3%	0.93
TOTAL	3%	0.97

Peak Hour Count Summaries

Peak Hour Interval Start		Clairmont Way Eastbound				Driveway Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		**0**	**29**	**4**	**4**	**0**	**6**	**10**	**12**	**0**	**9**	**120**	**8**	**0**	**8**	**131**	**41**	**382**	**0**
4:15 PM		**0**	**19**	**5**	**15**	**0**	**4**	**11**	**9**	**0**	**11**	**88**	**2**	**0**	**3**	**140**	**41**	**348**	**0**
4:30 PM		**0**	**29**	**13**	**9**	**0**	**3**	**8**	**11**	**0**	**13**	**126**	**6**	**0**	**6**	**117**	**30**	**371**	**0**
4:45 PM		**0**	**30**	**16**	**13**	**0**	**7**	**11**	**8**	**0**	**7**	**106**	**5**	**0**	**3**	**138**	**30**	**374**	**1,475**
Pk Hr	All	**0**	**107**	**38**	**41**	**0**	**20**	**40**	**40**	**0**	**40**	**440**	**21**	**0**	**20**	**526**	**142**	**1,475**	
	HV	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**12**	**0**	**0**	**1**	**18**	**5**	**38**	
	HV%	**-**	**0%**	**0%**	**2%**	**-**	**0%**	**0%**	**0%**	**-**	**3%**	**3%**	**0%**	**-**	**5%**	**3%**	**4%**	**3%**	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	**0**	**0**	**3**	**8**	***11***	**0**	**0**	**0**	**0**	***0***	**1**	**2**	**5**	**0**	***8***
4:15 PM	**1**	**0**	**3**	**4**	***8***	**0**	**0**	**0**	**1**	***1***	**0**	**0**	**1**	**3**	***4***
4:30 PM	**0**	**0**	**4**	**6**	***10***	**0**	**0**	**0**	**1**	***1***	**1**	**2**	**0**	**1**	***4***
4:45 PM	**0**	**0**	**3**	**6**	***9***	**1**	**0**	**0**	**0**	***1***	**1**	**1**	**1**	**1**	***4***
Peak Hour	**1**	**0**	**13**	**24**	***38***	**1**	**0**	**0**	**2**	***3***	**3**	**5**	**7**	**5**	***20***

Kyle Campbell
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Count Summaries - All Vehicles

Interval Start	Clairmont Way				Driveway				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**29**	**4**	**4**	**0**	**6**	**10**	**12**	**0**	**9**	**120**	**8**	**0**	**8**	**131**	**41**	**382**	0
4:15 PM	**0**	**19**	**5**	**15**	**0**	**4**	**11**	**9**	**0**	**11**	**88**	**2**	**0**	**3**	**140**	**41**	**348**	**0**
4:30 PM	**0**	**29**	**13**	**9**	**0**	**3**	**8**	**11**	**0**	**13**	**126**	**6**	**0**	**6**	**117**	**30**	**371**	**0**
4:45 PM	**0**	**30**	**16**	**13**	**0**	**7**	**11**	**8**	**0**	**7**	**106**	**5**	**0**	**3**	**138**	**30**	**374**	**1,475**
5:00 PM	0	22	9	11	0	3	17	7	0	15	105	4	0	2	140	38	373	1,466
5:15 PM	0	23	9	11	0	6	6	10	0	7	83	2	0	5	120	43	325	1,443
5:30 PM	0	26	7	14	0	2	10	8	0	14	97	4	0	2	108	32	324	1,396
5:45 PM	0	23	7	13	0	5	16	9	0	14	94	3	0	3	106	44	337	1,359
Count Total	0	201	70	90	0	36	89	74	0	90	819	34	0	32	1,000	299	2,834	
Pk Hr All	**0**	**107**	**38**	**41**	**0**	**20**	**40**	**40**	**0**	**40**	**440**	**21**	**0**	**20**	**526**	**142**	**1,475**	
Pk Hr HV	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**12**	**0**	**0**	**1**	**18**	**5**	**38**	
Pk Hr HV%	**-**	**0%**	**0%**	**2%**	**-**	**0%**	**0%**	**0%**	**-**	**3%**	**3%**	**0%**	**-**	**5%**	**3%**	**4%**	**3%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	**0**	**0**	**3**	**8**	**11**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**5**	**0**	**8**
4:15 PM	**1**	**0**	**3**	**4**	**8**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**1**	**3**	**4**
4:30 PM	**0**	**0**	**4**	**6**	**10**	**0**	**0**	**0**	**1**	**1**	**1**	**2**	**0**	**1**	**4**
4:45 PM	**0**	**0**	**3**	**6**	**9**	**1**	**0**	**0**	**0**	**1**	**1**	**1**	**1**	**1**	**4**
5:00 PM	0	0	1	3	*4*	0	0	0	0	*0*	5	1	5	1	*12*
5:15 PM	0	0	1	2	*3*	0	0	0	0	*0*	1	1	0	0	*2*
5:30 PM	1	0	1	2	*4*	0	0	0	0	*0*	2	1	5	1	*9*
5:45 PM	1	0	1	1	*3*	0	0	0	0	*0*	4	1	0	1	*6*
Count Total	3	0	17	32	*52*	1	0	0	2	*3*	15	9	17	8	*49*
Peak Hour	**1**	**0**	**13**	**24**	***38***	**1**	**0**	**0**	**2**	***3***	**3**	**5**	**7**	**5**	**20**

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Count Summaries - Heavy Vehicles

Interval Start	Clairmont Way				Driveway				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**1**	**6**	**1**	**11**	0
4:15 PM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**0**	**0**	**0**	**2**	**2**	**8**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**5**	**1**	**10**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**5**	**1**	**9**	**38**
5:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0	4	31
5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	3	26
5:30 PM	0	0	0	1	0	0	0	0	0	0	1	0	0	0	2	0	4	20
5:45 PM	0	0	0	1	0	0	0	0	0	0	1	0	0	0	1	0	3	14
Count Total	0	0	0	3	0	0	0	0	0	1	16	0	0	1	26	5	52	
Pk Hr Heavy	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**12**	**0**	**0**	**1**	**18**	**5**	**38**	

Count Summaries - Bikes

Interval Start	Clairmont Way				Driveway				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**
4:45 PM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**3**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	3	
Pk Hr Bike	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**3**	

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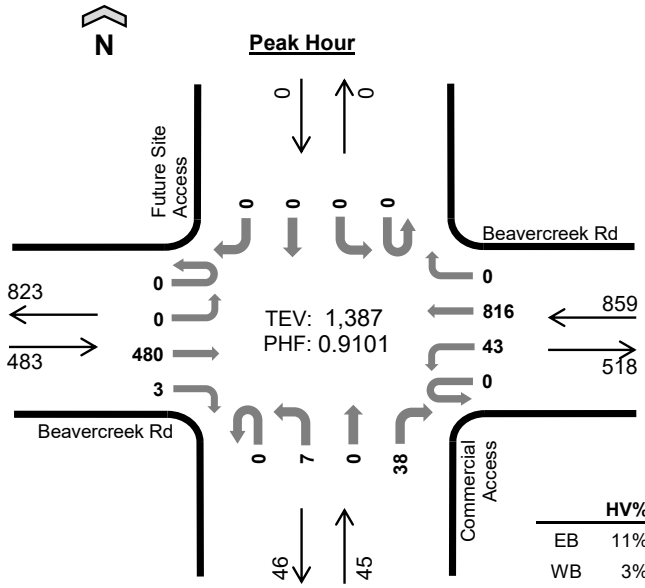
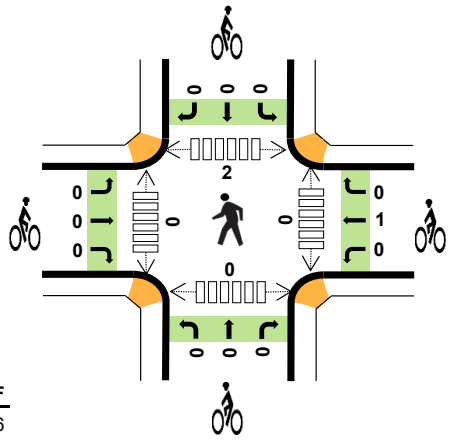
Commercial Access
Beavercreek Rd

Date: 9/9/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM





	HV%	PHF
EB	11%	0.86
WB	3%	0.94
NB	0%	0.70
SB	--	--
TOTAL	6%	0.91

Peak Hour Count Summaries

Peak Hour Interval Start		Beavercreek Rd Eastbound				Beavercreek Rd Westbound				Commercial Access Northbound				Future Site Access Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:30 AM		0	0	111	1	0	12	203	0	0	3	0	8	0	0	0	0	338	0
7:45 AM		0	0	130	1	0	12	197	0	0	1	0	15	0	0	0	0	356	0
8:00 AM		0	0	140	0	0	12	217	0	0	2	0	10	0	0	0	0	381	0
8:15 AM		0	0	99	1	0	7	199	0	0	1	0	5	0	0	0	0	312	1,387
Pk Hr	All	0	0	480	3	0	43	816	0	0	7	0	38	0	0	0	0	1,387	
	HV	0	0	52	0	0	0	27	0	0	0	0	0	0	0	0	0	79	
	HV%	-	-	11%	0%	-	0%	3%	-	-	0%	-	0%	-	-	-	-	6%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:30 AM	9	8	0	0	*17*	0	1	0	0	*1*	0	0	0	0	*0*
7:45 AM	15	5	0	0	*20*	0	0	0	0	*0*	0	0	0	0	*0*
8:00 AM	22	5	0	0	*27*	0	0	0	0	*0*	0	0	0	0	*0*
8:15 AM	6	9	0	0	*15*	0	0	0	0	*0*	0	0	2	0	*2*
Peak Hour	52	27	0	0	*79*	0	1	0	0	*1*	0	0	2	0	*2*

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Count Summaries - All Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				Commercial Access				Future Site Access				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	86	0	0	8	148	0	0	2	0	5	0	0	0	0	249	0
7:15 AM	0	0	101	0	0	7	179	0	0	0	0	3	0	0	0	0	290	0
7:30 AM	**0**	**0**	**111**	**1**	**0**	**12**	**203**	**0**	**0**	**3**	**0**	**8**	**0**	**0**	**0**	**0**	**338**	**0**
7:45 AM	**0**	**0**	**130**	**1**	**0**	**12**	**197**	**0**	**0**	**1**	**0**	**15**	**0**	**0**	**0**	**0**	**356**	**1,233**
8:00 AM	**0**	**0**	**140**	**0**	**0**	**12**	**217**	**0**	**0**	**2**	**0**	**10**	**0**	**0**	**0**	**0**	**381**	**1,365**
8:15 AM	**0**	**0**	**99**	**1**	**0**	**7**	**199**	**0**	**0**	**1**	**0**	**5**	**0**	**0**	**0**	**0**	**312**	**1,387**
8:30 AM	0	0	115	2	0	8	187	0	0	1	0	3	0	0	0	0	316	1,365
8:45 AM	0	0	107	4	0	16	210	0	0	2	0	7	0	0	0	0	346	1,355
Count Total	0	0	889	9	0	82	1,540	0	0	12	0	56	0	0	0	0	2,588	
Pk Hr All	**0**	**0**	**480**	**3**	**0**	**43**	**816**	**0**	**0**	**7**	**0**	**38**	**0**	**0**	**0**	**0**	**1,387**	
Pk Hr HV	**0**	**0**	**52**	**0**	**0**	**0**	**27**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**79**	
Pk Hr HV%	**-**	**-**	**11%**	**0%**	**-**	**0%**	**3%**	**-**	**-**	**0%**	**-**	**0%**	**-**	**-**	**-**	**-**	**6%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	7	6	0	0	*13*	0	0	0	0	*0*	0	0	2	1	*3*
7:15 AM	5	7	0	0	*12*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	**9**	**8**	**0**	**0**	**17**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**
7:45 AM	**15**	**5**	**0**	**0**	**20**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:00 AM	**22**	**5**	**0**	**0**	**27**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	**6**	**9**	**0**	**0**	**15**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**
8:30 AM	3	9	0	0	*12*	0	2	0	0	*2*	0	0	1	0	*1*
8:45 AM	3	7	0	0	*10*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	70	56	0	0	*126*	0	3	0	0	*3*	0	0	5	1	*6*
Peak Hour	**52**	**27**	**0**	**0**	***79***	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**2**	**0**	**2**

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Count Summaries - Heavy Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				Commercial Access				Future Site Access				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	7	0	0	0	6	0	0	0	0	0	0	0	0	0	13	0
7:15 AM	0	0	5	0	0	0	7	0	0	0	0	0	0	0	0	0	12	0
7:30 AM	**0**	**0**	**9**	**0**	**0**	**0**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**17**	**0**
7:45 AM	**0**	**0**	**15**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**20**	**62**
8:00 AM	**0**	**0**	**22**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**27**	**76**
8:15 AM	**0**	**0**	**6**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**15**	**79**
8:30 AM	0	0	3	0	0	0	9	0	0	0	0	0	0	0	0	0	12	74
8:45 AM	0	0	3	0	0	0	7	0	0	0	0	0	0	0	0	0	10	64
Count Total	0	0	70	0	0	0	56	0	0	0	0	0	0	0	0	0	126	
Pk Hr Heavy	**0**	**0**	**52**	**0**	**0**	**0**	**27**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**79**	

Count Summaries - Bikes

Interval Start	Beavercreek Rd				Beavercreek Rd				Commercial Access				Future Site Access				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:30 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	2
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Count Total	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	

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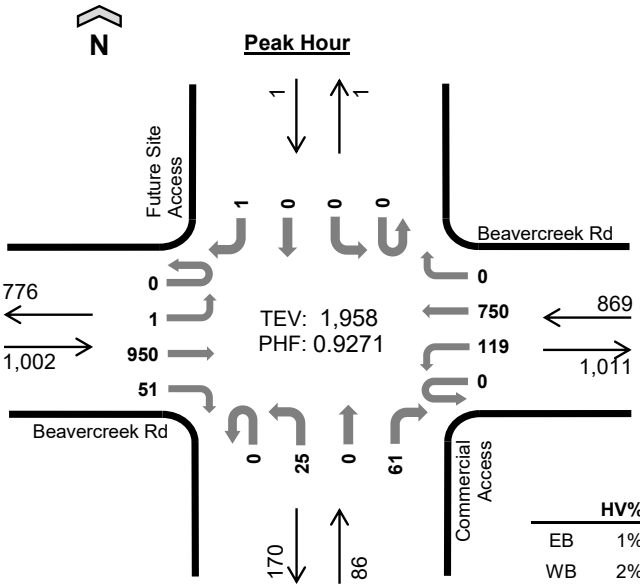
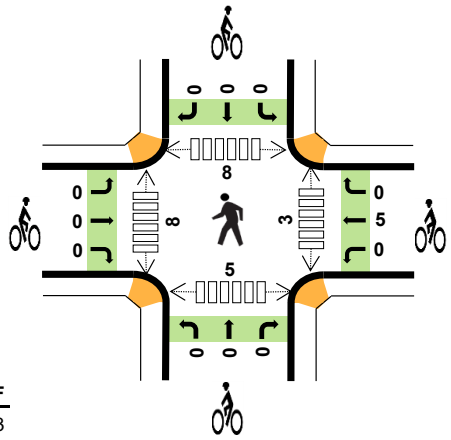
Commercial Access
Beavercreek Rd

Date: 9/9/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:15 PM to 5:15 PM





	HV%	PHF
EB	1%	0.83
WB	2%	0.97
NB	0%	0.65
SB	0%	0.25
TOTAL	1%	0.93

Peak Hour Count Summaries

Peak Hour Interval Start		Beavercreek Rd Eastbound				Beavercreek Rd Westbound				Commercial Access Northbound				Future Site Access Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:15 PM		0	0	202	13	0	27	196	0	0	7	0	26	0	0	0	0	471	0
4:30 PM		0	1	220	12	0	40	182	0	0	6	0	1	0	0	0	0	462	0
4:45 PM		0	0	238	14	0	26	191	0	0	8	0	19	0	0	0	1	497	0
5:00 PM		0	0	290	12	0	26	181	0	0	4	0	15	0	0	0	0	528	1,958
Pk Hr	All	0	1	950	51	0	119	750	0	0	25	0	61	0	0	0	1	1,958	
	HV	0	0	12	0	0	2	13	0	0	0	0	0	0	0	0	0	27	
	HV%	-	0%	1%	0%	-	2%	2%	-	-	0%	-	0%	-	-	-	0%	1%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:15 PM	9	4	0	0	*13*	0	1	0	0	*1*	2	4	3	0	*9*
4:30 PM	1	4	0	0	*5*	0	0	0	0	*0*	0	2	3	0	*5*
4:45 PM	2	3	0	0	*5*	0	2	0	0	*2*	1	2	1	0	*4*
5:00 PM	0	4	0	0	*4*	0	2	0	0	*2*	0	0	1	5	*6*
Peak Hour	12	15	0	0	*27*	0	5	0	0	*5*	3	8	8	5	*24*

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Count Summaries - All Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				Commercial Access				Future Site Access				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	1	230	10	0	32	170	0	0	7	0	23	0	0	0	1	474	0
4:15 PM	**0**	**0**	**202**	**13**	**0**	**27**	**196**	**0**	**0**	**7**	**0**	**26**	**0**	**0**	**0**	**0**	**471**	**0**
4:30 PM	**0**	**1**	**220**	**12**	**0**	**40**	**182**	**0**	**0**	**6**	**0**	**1**	**0**	**0**	**0**	**0**	**462**	**0**
4:45 PM	**0**	**0**	**238**	**14**	**0**	**26**	**191**	**0**	**0**	**8**	**0**	**19**	**0**	**0**	**0**	**1**	**497**	**1,904**
5:00 PM	**0**	**0**	**290**	**12**	**0**	**26**	**181**	**0**	**0**	**4**	**0**	**15**	**0**	**0**	**0**	**0**	**528**	**1,958**
5:15 PM	0	0	228	10	0	26	167	0	0	9	0	11	0	0	0	0	451	1,938
5:30 PM	0	0	240	13	0	16	184	0	0	7	0	14	0	0	0	0	474	1,950
5:45 PM	0	0	190	12	0	27	185	0	0	5	0	9	0	0	0	0	428	1,881
Count Total	0	2	1,838	96	0	220	1,456	0	0	53	0	118	0	0	0	2	3,785	
Pk Hr All	**0**	**1**	**950**	**51**	**0**	**119**	**750**	**0**	**0**	**25**	**0**	**61**	**0**	**0**	**0**	**1**	**1,958**	
Pk Hr HV	**0**	**0**	**12**	**0**	**0**	**2**	**13**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**27**	
Pk Hr HV%	**-**	**0%**	**1%**	**0%**	**-**	**2%**	**2%**	**-**	**-**	**0%**	**-**	**0%**	**-**	**-**	**-**	**0%**	**1%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	4	7	1	0	*12*	0	3	0	0	*3*	0	0	2	0	*2*
4:15 PM	**9**	**4**	**0**	**0**	**13**	**0**	**1**	**0**	**0**	**1**	**2**	**4**	**3**	**0**	**9**
4:30 PM	**1**	**4**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**3**	**0**	**5**
4:45 PM	**2**	**3**	**0**	**0**	**5**	**0**	**2**	**0**	**0**	**2**	**1**	**2**	**1**	**0**	**4**
5:00 PM	**0**	**4**	**0**	**0**	**4**	**0**	**2**	**0**	**0**	**2**	**0**	**0**	**1**	**5**	**6**
5:15 PM	2	3	0	0	*5*	0	0	0	0	*0*	1	0	1	0	*2*
5:30 PM	2	2	0	0	*4*	0	1	0	0	*1*	0	0	0	0	*0*
5:45 PM	2	2	0	0	*4*	0	0	0	0	*0*	0	1	2	0	*3*
Count Total	22	29	1	0	*52*	0	9	0	0	*9*	4	9	13	5	*31*
Peak Hour	**12**	**15**	**0**	**0**	***27***	**0**	**5**	**0**	**0**	***5***	**3**	**8**	**8**	**5**	**24**

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Count Summaries - Heavy Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				Commercial Access				Future Site Access				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	4	0	0	0	7	0	0	0	0	1	0	0	0	0	12	0
4:15 PM	**0**	**0**	**9**	**0**	**0**	**1**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**13**	**0**
4:30 PM	**0**	**0**	**1**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**
4:45 PM	**0**	**0**	**2**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**35**
5:00 PM	**0**	**0**	**0**	**0**	**0**	**1**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**27**
5:15 PM	0	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	5	19
5:30 PM	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	4	18
5:45 PM	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	4	17
Count Total	0	0	22	0	0	2	27	0	0	0	0	1	0	0	0	0	52	
Pk Hr Heavy	**0**	**0**	**12**	**0**	**0**	**2**	**13**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**27**	

Count Summaries - Bikes

Interval Start	Beavercreek Rd				Beavercreek Rd				Commercial Access				Future Site Access				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**6**
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**5**
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
5:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	5
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Count Total	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	9	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	

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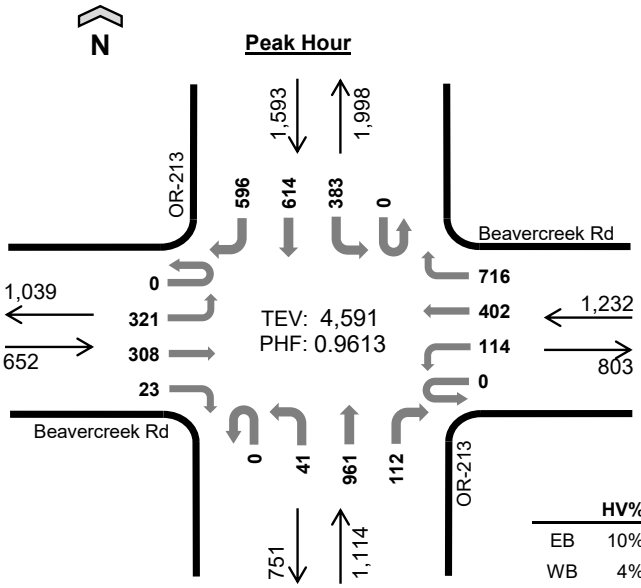
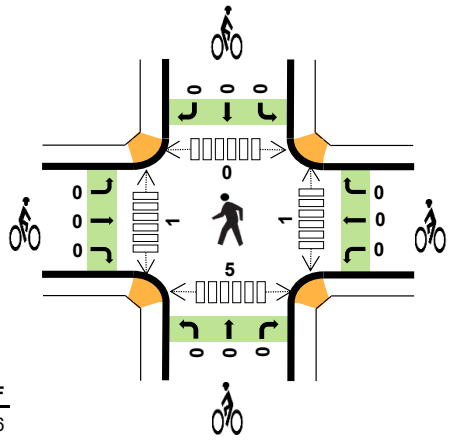
OR-213
Beavercreek Rd

Date: 9/9/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM



	HV%	PHF
EB	10%	0.76
WB	4%	0.88
NB	6%	0.90
SB	5%	0.88
TOTAL	6%	0.96



Peak Hour Count Summaries

Peak Hour Interval Start		Beavercreek Rd Eastbound				Beavercreek Rd Westbound				OR-213 Northbound				OR-213 Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:30 AM		0	88	54	3	0	22	116	180	0	8	282	20	0	80	122	126	1,101	0
7:45 AM		0	87	81	8	0	39	108	203	0	7	224	14	0	86	164	160	1,181	0
8:00 AM		0	86	125	3	0	30	82	164	0	10	199	42	0	122	170	161	1,194	0
8:15 AM		0	60	48	9	0	23	96	169	0	16	256	36	0	95	158	149	1,115	4,591
Pk Hr	All	0	321	308	23	0	114	402	716	0	41	961	112	0	383	614	596	4,591	
	HV	0	39	26	1	0	4	11	34	0	1	58	11	0	14	48	21	268	
	HV%	-	12%	8%	4%	-	4%	3%	5%	-	2%	6%	10%	-	4%	8%	4%	6%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:30 AM	18	14	18	16	*66*	0	0	0	0	*0*	0	1	0	0	*1*
7:45 AM	14	10	18	15	*57*	0	0	0	0	*0*	1	0	0	1	*2*
8:00 AM	26	9	18	28	*81*	0	0	0	0	*0*	0	0	0	2	*2*
8:15 AM	8	16	16	24	*64*	0	0	0	0	*0*	0	0	0	2	*2*
Peak Hour	66	49	70	83	*268*	0	0	0	0	*0*	1	1	0	5	*7*

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Count Summaries - All Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	65	36	1	0	17	72	192	0	11	284	24	0	72	112	105	991	0
7:15 AM	0	81	51	3	0	22	93	207	0	3	249	16	0	93	115	132	1,065	0
7:30 AM	**0**	**88**	**54**	**3**	**0**	**22**	**116**	**180**	**0**	**8**	**282**	**20**	**0**	**80**	**122**	**126**	**1,101**	**0**
7:45 AM	**0**	**87**	**81**	**8**	**0**	**39**	**108**	**203**	**0**	**7**	**224**	**14**	**0**	**86**	**164**	**160**	**1,181**	**4,338**
8:00 AM	**0**	**86**	**125**	**3**	**0**	**30**	**82**	**164**	**0**	**10**	**199**	**42**	**0**	**122**	**170**	**161**	**1,194**	**4,541**
8:15 AM	**0**	**60**	**48**	**9**	**0**	**23**	**96**	**169**	**0**	**16**	**256**	**36**	**0**	**95**	**158**	**149**	**1,115**	**4,591**
8:30 AM	0	83	68	11	0	29	109	168	0	8	221	29	0	82	124	146	1,078	4,568
8:45 AM	0	80	78	15	0	24	118	148	1	15	176	31	0	92	135	142	1,055	4,442
Count Total	0	630	541	53	0	206	794	1,431	1	78	1,891	212	0	722	1,100	1,121	8,780	
Pk Hr All	**0**	**321**	**308**	**23**	**0**	**114**	**402**	**716**	**0**	**41**	**961**	**112**	**0**	**383**	**614**	**596**	**4,591**	
Pk Hr HV	**0**	**39**	**26**	**1**	**0**	**4**	**11**	**34**	**0**	**1**	**58**	**11**	**0**	**14**	**48**	**21**	**268**	
Pk Hr HV%	**-**	**12%**	**8%**	**4%**	**-**	**4%**	**3%**	**5%**	**-**	**2%**	**6%**	**10%**	**-**	**4%**	**8%**	**4%**	**6%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	6	13	18	14	*51*	0	1	0	0	*1*	0	0	0	1	*1*
7:15 AM	9	11	15	18	*53*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	**18**	**14**	**18**	**16**	**66**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**
7:45 AM	**14**	**10**	**18**	**15**	**57**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**2**
8:00 AM	**26**	**9**	**18**	**28**	**81**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**2**
8:15 AM	**8**	**16**	**16**	**24**	**64**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**2**
8:30 AM	12	14	29	23	*78*	0	0	0	0	*0*	0	0	0	0	*0*
8:45 AM	10	8	14	29	*61*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	103	95	146	167	*511*	0	1	0	0	*1*	1	1	0	6	*8*
Peak Hour	**66**	**49**	**70**	**83**	***268***	**0**	**0**	**0**	**0**	***0***	**1**	**1**	**0**	**5**	**7**

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Count Summaries - Heavy Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	3	3	0	0	1	4	8	0	0	16	2	0	0	12	2	51	0
7:15 AM	0	7	1	1	0	0	5	6	0	0	14	1	0	3	11	4	53	0
7:30 AM	**0**	**15**	**3**	**0**	**0**	**0**	**4**	**10**	**0**	**0**	**17**	**1**	**0**	**1**	**9**	**6**	**66**	**0**
7:45 AM	**0**	**10**	**4**	**0**	**0**	**2**	**1**	**7**	**0**	**0**	**16**	**2**	**0**	**2**	**11**	**2**	**57**	**227**
8:00 AM	**0**	**8**	**18**	**0**	**0**	**2**	**1**	**6**	**0**	**1**	**12**	**5**	**0**	**10**	**12**	**6**	**81**	**257**
8:15 AM	**0**	**6**	**1**	**1**	**0**	**0**	**5**	**11**	**0**	**0**	**13**	**3**	**0**	**1**	**16**	**7**	**64**	**268**
8:30 AM	0	11	1	0	0	2	6	6	0	0	26	3	0	8	12	3	78	280
8:45 AM	0	8	2	0	0	1	3	4	0	2	10	2	0	8	17	4	61	284
Count Total	0	68	33	2	0	8	29	58	0	3	124	19	0	33	100	34	511	
Pk Hr Heavy	**0**	**39**	**26**	**1**	**0**	**4**	**11**	**34**	**0**	**1**	**58**	**11**	**0**	**14**	**48**	**21**	**268**	

Count Summaries - Bikes

Interval Start	Beavercreek Rd				Beavercreek Rd				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

Kyle Campbell
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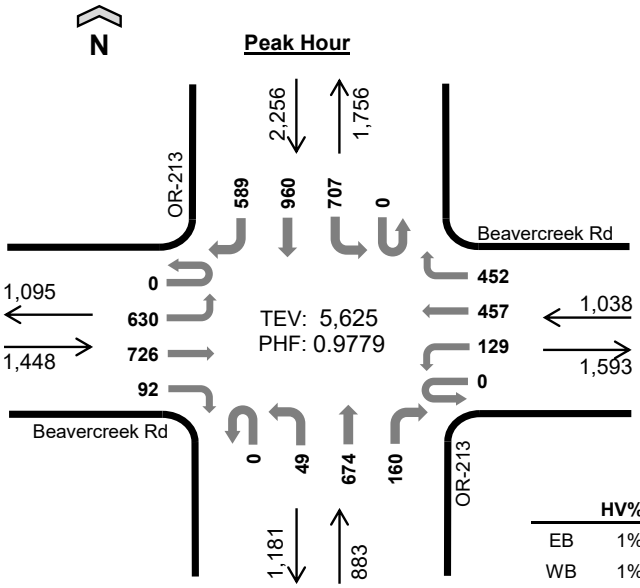
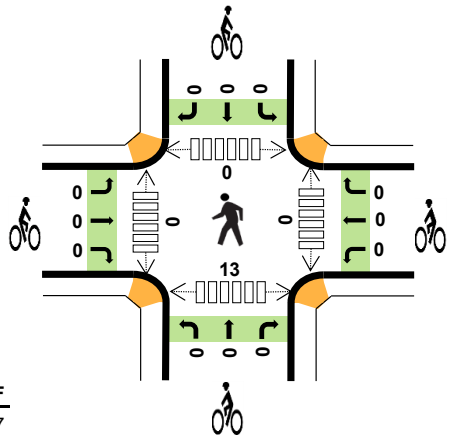
OR-213
Beavercreek Rd

Date: 9/9/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM





	HV%	PHF
EB	1%	0.87
WB	1%	0.83
NB	3%	0.93
SB	2%	0.97
TOTAL	2%	0.98

Peak Hour Count Summaries

Peak Hour Interval Start		Beavercreek Rd Eastbound				Beavercreek Rd Westbound				OR-213 Northbound				OR-213 Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:30 PM		0	156	174	27	0	48	148	115	0	10	151	34	0	173	242	148	1,426	0
4:45 PM		0	139	168	22	0	28	100	125	0	17	146	49	0	195	233	152	1,374	0
5:00 PM		0	142	182	20	0	22	118	118	0	14	181	43	0	162	241	144	1,387	0
5:15 PM		0	193	202	23	0	31	91	94	0	8	196	34	0	177	244	145	1,438	5,625
Pk Hr	All	0	630	726	92	0	129	457	452	0	49	674	160	0	707	960	589	5,625	
	HV	0	6	8	0	0	0	4	5	0	1	26	2	0	25	24	7	108	
	HV%	-	1%	1%	0%	-	0%	1%	1%	-	2%	4%	1%	-	4%	3%	1%	2%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:30 PM	8	2	7	19	*36*	0	0	0	0	*0*	0	0	0	3	*3*
4:45 PM	2	2	13	10	*27*	0	0	0	0	*0*	0	0	0	4	*4*
5:00 PM	0	1	5	17	*23*	0	0	0	0	*0*	0	0	0	5	*5*
5:15 PM	4	4	4	10	*22*	0	0	0	0	*0*	0	0	0	1	*1*
Peak Hour	14	9	29	56	*108*	0	0	0	0	*0*	0	0	0	13	*13*

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Count Summaries - All Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	189	134	14	0	31	107	110	0	14	182	35	0	162	231	159	1,368	0
4:15 PM	0	131	136	15	0	22	103	146	0	13	170	36	0	182	263	162	1,379	0
4:30 PM	**0**	**156**	**174**	**27**	**0**	**48**	**148**	**115**	**0**	**10**	**151**	**34**	**0**	**173**	**242**	**148**	**1,426**	**0**
4:45 PM	**0**	**139**	**168**	**22**	**0**	**28**	**100**	**125**	**0**	**17**	**146**	**49**	**0**	**195**	**233**	**152**	**1,374**	**5,547**
5:00 PM	**0**	**142**	**182**	**20**	**0**	**22**	**118**	**118**	**0**	**14**	**181**	**43**	**0**	**162**	**241**	**144**	**1,387**	**5,566**
5:15 PM	**0**	**193**	**202**	**23**	**0**	**31**	**91**	**94**	**0**	**8**	**196**	**34**	**0**	**177**	**244**	**145**	**1,438**	**5,625**
5:30 PM	0	143	141	21	0	30	109	142	0	12	149	47	0	197	259	136	1,386	5,585
5:45 PM	0	138	154	14	0	28	116	113	0	12	176	30	0	148	199	123	1,251	5,462
Count Total	0	1,231	1,291	156	0	240	892	963	0	100	1,351	308	0	1,396	1,912	1,169	11,009	
Pk Hr All	**0**	**630**	**726**	**92**	**0**	**129**	**457**	**452**	**0**	**49**	**674**	**160**	**0**	**707**	**960**	**589**	**5,625**	
Pk Hr HV	**0**	**6**	**8**	**0**	**0**	**0**	**4**	**5**	**0**	**1**	**26**	**2**	**0**	**25**	**24**	**7**	**108**	
Pk Hr HV%	**-**	**1%**	**1%**	**0%**	**-**	**0%**	**1%**	**1%**	**-**	**2%**	**4%**	**1%**	**-**	**4%**	**3%**	**1%**	**2%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	7	5	6	25	*43*	0	0	0	0	*0*	1	0	0	1	*2*
4:15 PM	8	5	8	23	*44*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	**8**	**2**	**7**	**19**	**36**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**3**
4:45 PM	**2**	**2**	**13**	**10**	**27**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**4**
5:00 PM	**0**	**1**	**5**	**17**	**23**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**5**
5:15 PM	**4**	**4**	**4**	**10**	**22**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**
5:30 PM	4	3	3	16	*26*	0	0	0	0	*0*	0	0	0	3	*3*
5:45 PM	5	1	6	12	*24*	0	0	0	0	*0*	0	0	0	6	*6*
Count Total	38	23	52	132	*245*	0	0	0	0	*0*	1	0	0	23	*24*
Peak Hour	**14**	**9**	**29**	**56**	***108***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**13**	**13**

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Count Summaries - Heavy Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	3	4	0	0	0	2	3	0	0	6	0	0	5	12	8	43	0
4:15 PM	0	4	3	1	0	1	2	2	0	0	8	0	0	11	10	2	44	0
4:30 PM	**0**	**2**	**6**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**7**	**0**	**0**	**10**	**7**	**2**	**36**	**0**
4:45 PM	**0**	**2**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**11**	**2**	**0**	**3**	**6**	**1**	**27**	**150**
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**4**	**0**	**0**	**9**	**5**	**3**	**23**	**130**
5:15 PM	**0**	**2**	**2**	**0**	**0**	**0**	**2**	**2**	**0**	**0**	**4**	**0**	**0**	**3**	**6**	**1**	**22**	**108**
5:30 PM	0	4	0	0	0	0	1	2	0	0	3	0	0	6	4	6	26	98
5:45 PM	0	3	2	0	0	0	1	0	0	0	6	0	0	8	2	2	24	95
Count Total	0	20	17	1	0	1	10	12	0	1	49	2	0	55	52	25	245	
Pk Hr Heavy	**0**	**6**	**8**	**0**	**0**	**0**	**4**	**5**	**0**	**1**	**26**	**2**	**0**	**25**	**24**	**7**	**108**	

Count Summaries - Bikes

Interval Start	Beavercreek Rd				Beavercreek Rd				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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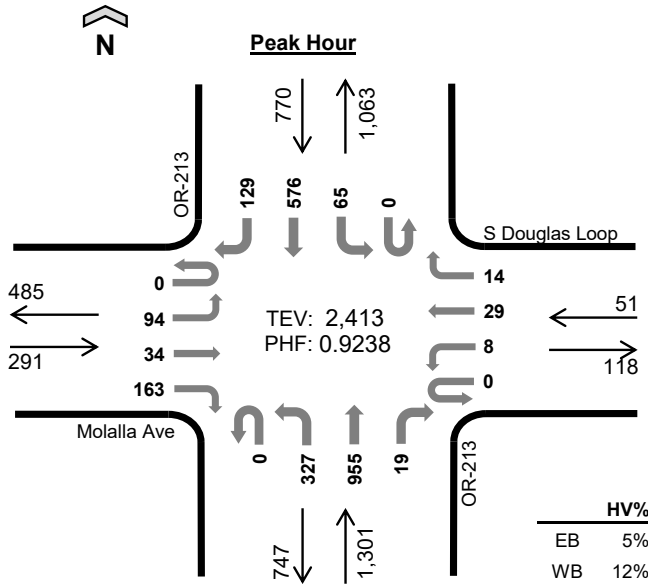
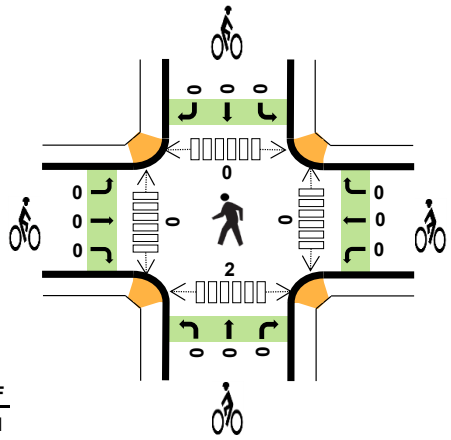
OR-213
Molalla Ave

Date: 9/9/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM





	HV%	PHF
EB	5%	0.71
WB	12%	0.64
NB	6%	0.91
SB	8%	0.86
TOTAL	6%	0.92

Peak Hour Count Summaries

Peak Hour Interval Start		Molalla Ave				S Douglas Loop				OR-213				OR-213				15-min Total	Rolling Hour Total
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:30 AM		0	21	6	31	0	0	6	2	0	64	250	4	0	17	121	24	546	0
7:45 AM		0	18	7	39	0	1	4	0	0	82	233	7	0	18	138	39	586	0
8:00 AM		0	36	12	55	0	4	11	5	0	82	220	3	0	15	173	37	653	0
8:15 AM		0	19	9	38	0	3	8	7	0	99	252	5	0	15	144	29	628	2,413
Pk Hr	All	0	94	34	163	0	8	29	14	0	327	955	19	0	65	576	129	2,413	
	HV	0	4	4	7	0	2	4	0	0	8	65	3	0	1	54	3	155	
	HV%	-	4%	12%	4%	-	25%	14%	0%	-	2%	7%	16%	-	2%	9%	2%	6%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:30 AM	3	1	16	11	*31*	0	0	0	0	*0*	0	0	0	1	*1*
7:45 AM	4	1	22	8	*35*	0	0	0	0	*0*	0	0	0	1	*1*
8:00 AM	6	1	16	20	*43*	0	0	0	0	*0*	0	0	0	0	*0*
8:15 AM	2	3	22	19	*46*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	15	6	76	58	*155*	0	0	0	0	*0*	0	0	0	2	*2*

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Count Summaries - All Vehicles

Interval Start	Molalla Ave				S Douglas Loop				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	25	5	22	0	1	5	3	0	60	275	1	0	6	121	23	547	0
7:15 AM	0	17	0	33	0	3	5	3	0	59	271	1	0	14	110	31	547	0
7:30 AM	**0**	**21**	**6**	**31**	**0**	**0**	**6**	**2**	**0**	**64**	**250**	**4**	**0**	**17**	**121**	**24**	**546**	**0**
7:45 AM	**0**	**18**	**7**	**39**	**0**	**1**	**4**	**0**	**0**	**82**	**233**	**7**	**0**	**18**	**138**	**39**	**586**	**2,226**
8:00 AM	**0**	**36**	**12**	**55**	**0**	**4**	**11**	**5**	**0**	**82**	**220**	**3**	**0**	**15**	**173**	**37**	**653**	**2,332**
8:15 AM	**0**	**19**	**9**	**38**	**0**	**3**	**8**	**7**	**0**	**99**	**252**	**5**	**0**	**15**	**144**	**29**	**628**	**2,413**
8:30 AM	0	20	8	45	0	3	14	3	0	73	218	2	0	10	115	33	544	2,411
8:45 AM	0	22	2	47	0	1	9	4	0	82	210	3	0	13	151	30	574	2,399
Count Total	0	178	49	310	0	16	62	27	0	601	1,929	26	0	108	1,073	246	4,625	
Pk Hr All	**0**	**94**	**34**	**163**	**0**	**8**	**29**	**14**	**0**	**327**	**955**	**19**	**0**	**65**	**576**	**129**	**2,413**	
Pk Hr HV	**0**	**4**	**4**	**7**	**0**	**2**	**4**	**0**	**0**	**8**	**65**	**3**	**0**	**1**	**54**	**3**	**155**	
Pk Hr HV%	**-**	**4%**	**12%**	**4%**	**-**	**25%**	**14%**	**0%**	**-**	**2%**	**7%**	**16%**	**-**	**2%**	**9%**	**2%**	**6%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	3	2	25	13	*43*	0	0	0	0	*0*	0	0	0	1	*1*
7:15 AM	0	1	17	10	*28*	0	0	0	0	*0*	12	0	0	1	*13*
7:30 AM	**3**	**1**	**16**	**11**	**31**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**
7:45 AM	**4**	**1**	**22**	**8**	**35**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**
8:00 AM	**6**	**1**	**16**	**20**	**43**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	**2**	**3**	**22**	**19**	**46**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	4	1	25	15	*45*	0	0	0	0	*0*	0	0	1	0	*1*
8:45 AM	4	1	21	17	*43*	0	0	0	0	*0*	0	0	3	0	*3*
Count Total	26	11	164	113	*314*	0	0	0	0	*0*	12	0	4	4	*20*
Peak Hour	**15**	**6**	**76**	**58**	***155***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**2**	**2**

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Count Summaries - Heavy Vehicles

Interval Start	Molalla Ave				S Douglas Loop				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	1	1	1	0	0	2	0	0	6	18	1	0	1	12	0	43	0
7:15 AM	0	0	0	0	0	1	0	0	0	0	17	0	0	0	9	1	28	0
7:30 AM	**0**	**1**	**1**	**1**	**0**	**0**	**1**	**0**	**0**	**1**	**14**	**1**	**0**	**0**	**11**	**0**	**31**	**0**
7:45 AM	**0**	**0**	**1**	**3**	**0**	**1**	**0**	**0**	**0**	**2**	**20**	**0**	**0**	**0**	**7**	**1**	**35**	**137**
8:00 AM	**0**	**2**	**1**	**3**	**0**	**0**	**1**	**0**	**0**	**1**	**15**	**0**	**0**	**0**	**19**	**1**	**43**	**137**
8:15 AM	**0**	**1**	**1**	**0**	**0**	**1**	**2**	**0**	**0**	**4**	**16**	**2**	**0**	**1**	**17**	**1**	**46**	**155**
8:30 AM	0	1	0	3	0	0	1	0	0	0	25	0	0	0	15	0	45	169
8:45 AM	0	1	0	3	0	0	1	0	0	4	16	1	0	1	14	2	43	177
Count Total	0	7	5	14	0	3	8	0	0	18	141	5	0	3	104	6	314	
Pk Hr Heavy	**0**	**4**	**4**	**7**	**0**	**2**	**4**	**0**	**0**	**8**	**65**	**3**	**0**	**1**	**54**	**3**	**155**	

Count Summaries - Bikes

Interval Start	Molalla Ave				S Douglas Loop				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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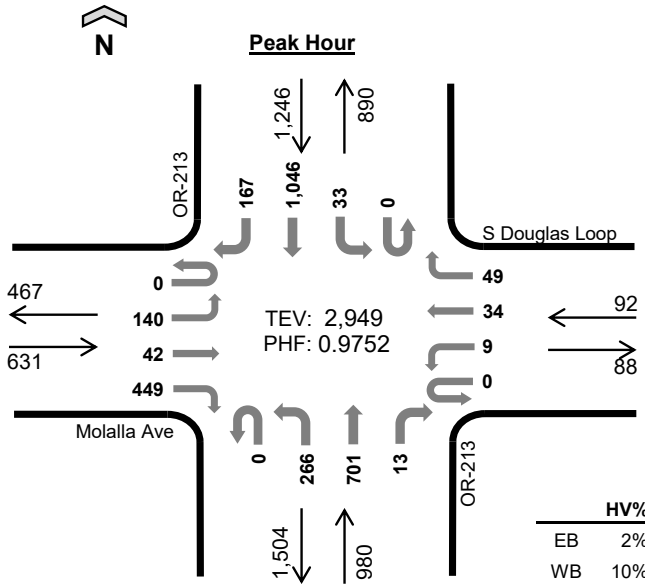
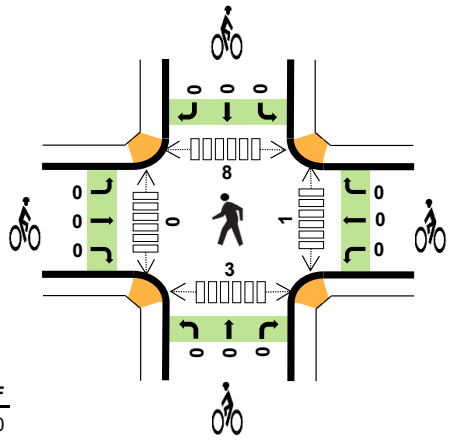
OR-213
Molalla Ave

Date: 9/9/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM





	HV%	PHF
EB	2%	0.90
WB	10%	0.70
NB	3%	0.92
SB	2%	0.96
TOTAL	3%	0.98

Peak Hour Count Summaries

Peak Hour Interval Start		Molalla Ave Eastbound				S Douglas Loop Westbound				OR-213 Northbound				OR-213 Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:45 PM		0	31	14	104	0	3	11	9	0	65	167	1	0	8	265	51	729	0
5:00 PM		0	41	8	126	0	2	10	21	0	56	167	3	0	10	227	44	715	0
5:15 PM		0	28	10	118	0	4	10	15	0	65	189	2	0	8	280	27	756	0
5:30 PM		0	40	10	101	0	0	3	4	0	80	178	7	0	7	274	45	749	2,949
Pk Hr	All	0	140	42	449	0	9	34	49	0	266	701	13	0	33	1,046	167	2,949	
	HV	0	2	5	4	0	2	5	2	0	4	23	2	0	1	20	4	74	
	HV%	-	1%	12%	1%	-	22%	15%	4%	-	2%	3%	15%	-	3%	2%	2%	3%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:45 PM	6	4	9	6	*25*	0	0	0	0	*0*	0	0	6	0	*6*
5:00 PM	3	1	7	7	*18*	0	0	0	0	*0*	1	0	1	1	*3*
5:15 PM	1	3	6	8	*18*	0	0	0	0	*0*	0	0	1	1	*2*
5:30 PM	1	1	7	4	*13*	0	0	0	0	*0*	0	0	0	1	*1*
Peak Hour	11	9	29	25	*74*	0	0	0	0	*0*	1	0	8	3	*12*

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Count Summaries - All Vehicles

Interval Start	Molalla Ave				S Douglas Loop				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	23	5	108	0	3	10	18	0	82	152	1	0	7	273	51	733	0
4:15 PM	0	26	9	108	0	4	8	12	0	63	162	0	0	1	277	41	711	0
4:30 PM	0	24	7	107	0	1	7	15	0	79	174	2	0	5	263	42	726	0
4:45 PM	**0**	**31**	**14**	**104**	**0**	**3**	**11**	**9**	**0**	**65**	**167**	**1**	**0**	**8**	**265**	**51**	**729**	**2,899**
5:00 PM	**0**	**41**	**8**	**126**	**0**	**2**	**10**	**21**	**0**	**56**	**167**	**3**	**0**	**10**	**227**	**44**	**715**	**2,881**
5:15 PM	**0**	**28**	**10**	**118**	**0**	**4**	**10**	**15**	**0**	**65**	**189**	**2**	**0**	**8**	**280**	**27**	**756**	**2,926**
5:30 PM	**0**	**40**	**10**	**101**	**0**	**0**	**3**	**4**	**0**	**80**	**178**	**7**	**0**	**7**	**274**	**45**	**749**	**2,949**
5:45 PM	0	28	11	106	0	4	11	5	0	63	152	3	0	15	234	31	663	2,883
Count Total	0	241	74	878	0	21	70	99	0	553	1,341	19	0	61	2,093	332	5,782	
Pk Hr All	**0**	**140**	**42**	**449**	**0**	**9**	**34**	**49**	**0**	**266**	**701**	**13**	**0**	**33**	**1,046**	**167**	**2,949**	
Pk Hr HV	**0**	**2**	**5**	**4**	**0**	**2**	**5**	**2**	**0**	**4**	**23**	**2**	**0**	**1**	**20**	**4**	**74**	
Pk Hr HV%	**-**	**1%**	**12%**	**1%**	**-**	**22%**	**15%**	**4%**	**-**	**2%**	**3%**	**15%**	**-**	**3%**	**2%**	**2%**	**3%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	2	2	6	10	*20*	0	0	0	0	*0*	0	0	1	1	*2*
4:15 PM	3	1	10	13	*27*	0	0	0	0	*0*	0	0	2	0	*2*
4:30 PM	2	1	10	12	*25*	1	0	0	0	*1*	0	0	2	0	*2*
4:45 PM	**6**	**4**	**9**	**6**	**25**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**6**
5:00 PM	**3**	**1**	**7**	**7**	**18**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**1**	**3**
5:15 PM	**1**	**3**	**6**	**8**	**18**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**2**
5:30 PM	**1**	**1**	**7**	**4**	**13**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**
5:45 PM	3	2	6	3	*14*	0	0	0	0	*0*	0	0	0	1	*1*
Count Total	21	15	61	63	*160*	1	0	0	0	*1*	1	0	13	5	*19*
Peak Hour	**11**	**9**	**29**	**25**	***74***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**8**	**3**	**12**

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Count Summaries - Heavy Vehicles

Interval Start	Molalla Ave				S Douglas Loop				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	1	0	1	0	0	2	0	0	0	5	1	0	0	9	1	20	0
4:15 PM	0	0	1	2	0	1	0	0	0	2	8	0	0	0	11	2	27	0
4:30 PM	0	0	0	2	0	0	1	0	0	0	9	1	0	0	12	0	25	0
4:45 PM	**0**	**0**	**3**	**3**	**0**	**1**	**2**	**1**	**0**	**1**	**8**	**0**	**0**	**0**	**6**	**0**	**25**	**97**
5:00 PM	**0**	**1**	**1**	**1**	**0**	**0**	**1**	**0**	**0**	**1**	**5**	**1**	**0**	**0**	**7**	**0**	**18**	**95**
5:15 PM	**0**	**0**	**1**	**0**	**0**	**1**	**1**	**1**	**0**	**1**	**5**	**0**	**0**	**0**	**5**	**3**	**18**	**86**
5:30 PM	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**5**	**1**	**0**	**1**	**2**	**1**	**13**	**74**
5:45 PM	0	1	1	1	0	1	1	0	0	1	5	0	0	1	2	0	14	63
Count Total	0	4	7	10	0	4	9	2	0	7	50	4	0	2	54	7	160	
Pk Hr Heavy	**0**	**2**	**5**	**4**	**0**	**2**	**5**	**2**	**0**	**4**	**23**	**2**	**0**	**1**	**20**	**4**	**74**	

Count Summaries - Bikes

Interval Start	Molalla Ave				S Douglas Loop				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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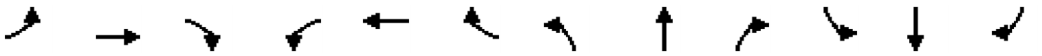
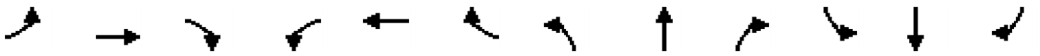
Appendix B: Operations Worksheets



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	10	10	35	10	5	10	550	15	30	410	10
Future Volume (veh/h)	20	10	10	35	10	5	10	550	15	30	410	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1811	1811	1781	1781	1781	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	22	11	11	38	11	5	11	598	16	33	446	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	8	8	8	4	4	4	4	4	4
Cap, veh/h	264	76	51	327	62	18	667	1050	28	554	1054	26
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.59	0.59	0.59	0.59	0.59	0.59
Sat Flow, veh/h	575	575	383	855	468	135	919	1783	48	795	1789	44
Grp Volume(v), veh/h	44	0	0	54	0	0	11	0	614	33	0	457
Grp Sat Flow(s),veh/h/ln	1533	0	0	1457	0	0	919	0	1831	795	0	1833
Q Serve(g_s), s	0.0	0.0	0.0	0.2	0.0	0.0	0.2	0.0	5.9	0.8	0.0	3.9
Cycle Q Clear(g_c), s	0.7	0.0	0.0	0.8	0.0	0.0	4.1	0.0	5.9	6.7	0.0	3.9
Prop In Lane	0.50		0.25	0.70		0.09	1.00		0.03	1.00		0.02
Lane Grp Cap(c), veh/h	391	0	0	406	0	0	667	0	1079	554	0	1080
V/C Ratio(X)	0.11	0.00	0.00	0.13	0.00	0.00	0.02	0.00	0.57	0.06	0.00	0.42
Avail Cap(c_a), veh/h	1277	0	0	1245	0	0	1918	0	3574	1637	0	3577
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.1	0.0	0.0	11.2	0.0	0.0	4.4	0.0	3.6	5.7	0.0	3.2
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.8	0.1	0.0	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.6	0.1	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	11.2	0.0	0.0	11.3	0.0	0.0	4.4	0.0	4.5	5.8	0.0	3.7
LnGrp LOS	B			B			A		A	A		A
Approach Vol, veh/h		44			54			625			490	
Approach Delay, s/veh		11.2			11.3			4.5			3.8	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	20.9	7.8	20.9	7.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	56.0	21.0	56.0	21.0
Max Q Clear Time (g_c+I1), s	8.7	2.8	7.9	2.7
Green Ext Time (p_c), s	6.3	0.2	9.0	0.1

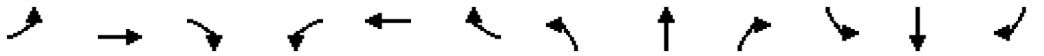
Intersection Summary	
HCM 7th Control Delay, s/veh	4.7
HCM 7th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	4	35	30	5	5	25	450	10	5	400	30
Future Volume (veh/h)	45	4	35	30	5	5	25	450	10	5	400	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1826	1826	1826	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	48	4	38	32	5	5	27	484	11	5	430	32
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	7	7	7	5	5	5	4	4	4	4	4	4
Cap, veh/h	409	238	202	411	111	111	517	808	18	466	790	667
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.03	0.45	0.45	0.01	0.43	0.43
Sat Flow, veh/h	1349	1796	1522	1332	838	838	1753	1792	41	1753	1841	1554
Grp Volume(v), veh/h	48	4	38	32	0	10	27	0	495	5	430	32
Grp Sat Flow(s),veh/h/ln	1349	1796	1522	1332	0	1675	1753	0	1833	1753	1841	1554
Q Serve(g_s), s	1.0	0.1	0.7	0.7	0.0	0.2	0.3	0.0	6.2	0.0	5.3	0.4
Cycle Q Clear(g_c), s	1.1	0.1	0.7	0.7	0.0	0.2	0.3	0.0	6.2	0.0	5.3	0.4
Prop In Lane	1.00		1.00	1.00		0.50	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	409	238	202	411	0	222	517	0	826	466	790	667
V/C Ratio(X)	0.12	0.02	0.19	0.08	0.00	0.05	0.05	0.00	0.60	0.01	0.54	0.05
Avail Cap(c_a), veh/h	1162	1241	1052	1155	0	1157	1105	0	2443	1091	2453	2072
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.0	11.5	11.7	11.8	0.0	11.5	5.0	0.0	6.3	5.4	6.5	5.1
Incr Delay (d2), s/veh	0.1	0.0	0.3	0.1	0.0	0.1	0.0	0.0	1.1	0.0	0.9	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.2	0.2	0.0	0.1	0.0	0.0	1.4	0.0	1.3	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	12.1	11.5	12.1	11.8	0.0	11.6	5.1	0.0	7.4	5.4	7.4	5.1
LnGrp LOS	B	B	B	B		B	A		A	A	A	A
Approach Vol, veh/h		90			42			522			467	
Approach Delay, s/veh		12.0			11.8			7.2			7.2	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.8	17.5		8.0	4.2	18.2		8.0				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	11.0	40.5		21.0	11.0	40.5		21.0				
Max Q Clear Time (g_c+I1), s	2.3	7.3		2.7	2.0	8.2		3.1				
Green Ext Time (p_c), s	0.0	4.8		0.1	0.0	5.5		0.2				

Intersection Summary												
HCM 7th Control Delay, s/veh			7.8									
HCM 7th LOS			A									

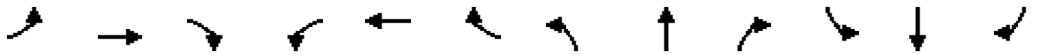


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	10	50	15	5	1	105	490	5	5	345	115
Future Volume (veh/h)	90	10	50	15	5	1	105	490	5	5	345	115
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1900	1900	1900	1826	1826	1826	1841	1841	1841
Adj Flow Rate, veh/h	99	11	55	16	5	1	115	538	5	5	379	126
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	4	4	4	0	0	0	5	5	5	4	4	4
Cap, veh/h	637	80	399	545	383	77	396	1276	12	388	936	307
Arrive On Green	0.07	0.30	0.30	0.02	0.25	0.25	0.36	0.36	0.36	0.36	0.36	0.36
Sat Flow, veh/h	1753	266	1332	1810	1537	307	870	3522	33	847	2583	847
Grp Volume(v), veh/h	99	0	66	16	0	6	115	265	278	5	255	250
Grp Sat Flow(s),veh/h/ln	1753	0	1598	1810	0	1844	870	1735	1820	847	1749	1681
Q Serve(g_s), s	1.7	0.0	1.2	0.3	0.0	0.1	4.6	4.6	4.6	0.2	4.4	4.5
Cycle Q Clear(g_c), s	1.7	0.0	1.2	0.3	0.0	0.1	9.1	4.6	4.6	4.8	4.4	4.5
Prop In Lane	1.00		0.83	1.00		0.17	1.00		0.02	1.00		0.50
Lane Grp Cap(c), veh/h	637	0	479	545	0	460	396	628	659	388	633	609
V/C Ratio(X)	0.16	0.00	0.14	0.03	0.00	0.01	0.29	0.42	0.42	0.01	0.40	0.41
Avail Cap(c_a), veh/h	1432	0	2176	1457	0	2510	641	1116	1171	626	1126	1082
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.0	0.0	10.3	11.0	0.0	11.4	13.1	9.7	9.7	11.5	9.6	9.7
Incr Delay (d2), s/veh	0.1	0.0	0.2	0.0	0.0	0.0	0.3	0.3	0.3	0.0	0.3	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.4	0.1	0.0	0.0	0.8	1.4	1.5	0.0	1.3	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	10.1	0.0	10.5	11.0	0.0	11.4	13.4	10.0	10.0	11.5	9.9	10.0
LnGrp LOS	B		B	B		B	B	B	B	B	A	A
Approach Vol, veh/h		165			22			658			510	
Approach Delay, s/veh		10.3			11.1			10.6			10.0	
Approach LOS		B			B			B			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.7	17.1		18.6	6.7	15.1		18.6				
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	21.0	55.0		26.0	21.0	55.0		26.0				
Max Q Clear Time (g_c+I1), s	2.3	3.2		6.8	3.7	2.1		11.1				
Green Ext Time (p_c), s	0.0	0.6		2.5	0.1	0.0		2.9				

Intersection Summary			
HCM 7th Control Delay, s/veh		10.3	
HCM 7th LOS		B	

Notes
User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	0	65	0	0	0	80	555	0	0	345	45
Future Volume (veh/h)	50	0	65	0	0	0	80	555	0	0	345	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1870	1856	1856	1856	1841	1841	1841
Adj Flow Rate, veh/h	57	0	74	0	0	0	91	631	0	0	392	51
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	1	1	1	2	2	2	3	3	3	4	4	4
Cap, veh/h	441	0	221	192	261	0	116	1623	0	192	897	116
Arrive On Green	0.14	0.00	0.14	0.00	0.00	0.00	0.07	0.46	0.00	0.00	0.29	0.29
Sat Flow, veh/h	1780	0	1586	1326	1870	0	1767	3618	0	783	3110	402
Grp Volume(v), veh/h	57	0	74	0	0	0	91	631	0	0	219	224
Grp Sat Flow(s),veh/h/ln	1780	0	1586	1326	1870	0	1767	1763	0	783	1749	1763
Q Serve(g_s), s	1.1	0.0	1.6	0.0	0.0	0.0	1.9	4.4	0.0	0.0	3.8	3.9
Cycle Q Clear(g_c), s	1.1	0.0	1.6	0.0	0.0	0.0	1.9	4.4	0.0	0.0	3.8	3.9
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		0.23
Lane Grp Cap(c), veh/h	441	0	221	192	261	0	116	1623	0	192	504	508
V/C Ratio(X)	0.13	0.00	0.33	0.00	0.00	0.00	0.79	0.39	0.00	0.00	0.43	0.44
Avail Cap(c_a), veh/h	1283	0	972	820	1147	0	989	4887	0	1114	2564	2585
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	14.3	0.0	14.6	0.0	0.0	0.0	17.3	6.6	0.0	0.0	10.9	10.9
Incr Delay (d2), s/veh	0.1	0.0	0.5	0.0	0.0	0.0	7.0	0.2	0.0	0.0	0.9	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.5	0.0	0.0	0.0	0.9	1.1	0.0	0.0	1.3	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.4	0.0	15.1	0.0	0.0	0.0	24.2	6.9	0.0	0.0	11.8	11.8
LnGrp LOS	B		B				C	A			B	B
Approach Vol, veh/h		131			0			722			443	
Approach Delay, s/veh		14.8			0.0			9.1			11.8	
Approach LOS		B						A			B	

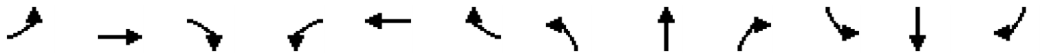
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	6.5	18.8		12.2		25.3		12.2				
Change Period (Y+Rc), s	4.0	* 8		7.0		8.0		7.0				
Max Green Setting (Gmax), s	21.0	* 55		23.0		52.0		23.0				
Max Q Clear Time (g_c+I1), s	3.9	5.9		3.6		6.4		0.0				
Green Ext Time (p_c), s	0.1	4.7		0.4		7.8		0.0				

Intersection Summary												
HCM 7th Control Delay, s/veh			10.6									
HCM 7th LOS			B									

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



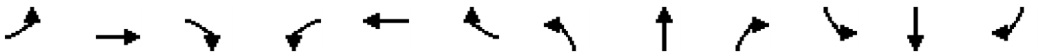
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	235	100	45	450	215	161	310	55	205	175	15
Future Volume (veh/h)	10	235	100	45	450	215	161	310	55	205	175	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1767	1767	1856	1856	1856	1856	1856	1856	1841	1841	1841
Adj Flow Rate, veh/h	10	242	103	46	464	222	166	320	57	211	180	15
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	9	9	9	3	3	3	3	3	3	4	4	4
Cap, veh/h	18	543	423	102	737	518	217	710	125	412	395	33
Arrive On Green	0.01	0.16	0.16	0.06	0.21	0.21	0.12	0.24	0.24	0.12	0.24	0.24
Sat Flow, veh/h	1682	3357	1483	1767	3526	1566	1767	2991	526	3401	1675	140
Grp Volume(v), veh/h	10	242	103	46	464	222	166	187	190	211	0	195
Grp Sat Flow(s),veh/h/ln	1682	1678	1483	1767	1763	1566	1767	1763	1755	1700	0	1814
Q Serve(g_s), s	0.3	3.0	2.5	1.2	5.5	5.1	4.2	4.2	4.3	2.7	0.0	4.3
Cycle Q Clear(g_c), s	0.3	3.0	2.5	1.2	5.5	5.1	4.2	4.2	4.3	2.7	0.0	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.30	1.00		0.08
Lane Grp Cap(c), veh/h	18	543	423	102	737	518	217	418	416	412	0	428
V/C Ratio(X)	0.57	0.45	0.24	0.45	0.63	0.43	0.77	0.45	0.46	0.51	0.00	0.46
Avail Cap(c_a), veh/h	382	1090	665	402	1144	699	765	1144	1140	2208	0	1178
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.8	17.5	12.7	21.1	16.6	12.1	19.6	15.0	15.1	19.0	0.0	15.1
Incr Delay (d2), s/veh	16.5	0.4	0.2	1.9	0.7	0.4	3.5	1.1	1.2	0.6	0.0	1.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	1.0	0.7	0.5	1.9	1.5	1.7	1.6	1.6	1.0	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	39.3	17.9	12.9	22.9	17.3	12.5	23.1	16.2	16.3	19.6	0.0	16.3
LnGrp LOS	D	B	B	C	B	B	C	B	B	B		B
Approach Vol, veh/h		355			732			543			406	
Approach Delay, s/veh		17.1			16.2			18.3			18.0	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.7	15.9	5.0	14.7	10.6	16.0	7.2	12.5
Change Period (Y+Rc), s	5.0	5.0	4.5	5.0	5.0	5.0	4.5	5.0
Max Green Setting (Gmax), s	20.0	30.0	10.5	15.0	30.0	30.0	10.5	15.0
Max Q Clear Time (g_c+I1), s	6.2	6.3	2.3	7.5	4.7	6.3	3.2	5.0
Green Ext Time (p_c), s	0.2	1.6	0.0	1.9	0.5	3.4	0.0	1.0

Intersection Summary	
HCM 7th Control Delay, s/veh	17.3
HCM 7th LOS	B

Notes

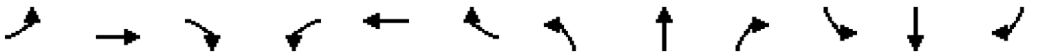
User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	25	45	3	20	15	30	415	10	15	270	30
Future Volume (veh/h)	100	25	45	3	20	15	30	415	10	15	270	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.98		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1826	1826	1826	1841	1841	1841	1826	1826	1826
Adj Flow Rate, veh/h	105	26	47	3	21	16	32	437	11	16	284	32
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	5	5	5	4	4	4	5	5	5
Cap, veh/h	411	78	140	305	55	42	459	594	15	361	512	58
Arrive On Green	0.08	0.13	0.13	0.00	0.06	0.06	0.03	0.33	0.33	0.02	0.32	0.32
Sat Flow, veh/h	1781	595	1075	1739	960	731	1753	1787	45	1739	1610	181
Grp Volume(v), veh/h	105	0	73	3	0	37	32	0	448	16	0	316
Grp Sat Flow(s),veh/h/ln	1781	0	1670	1739	0	1691	1753	0	1832	1739	0	1792
Q Serve(g_s), s	1.7	0.0	1.3	0.1	0.0	0.7	0.4	0.0	6.9	0.2	0.0	4.7
Cycle Q Clear(g_c), s	1.7	0.0	1.3	0.1	0.0	0.7	0.4	0.0	6.9	0.2	0.0	4.7
Prop In Lane	1.00		0.64	1.00		0.43	1.00		0.02	1.00		0.10
Lane Grp Cap(c), veh/h	411	0	218	305	0	98	459	0	609	361	0	570
V/C Ratio(X)	0.26	0.00	0.34	0.01	0.00	0.38	0.07	0.00	0.74	0.04	0.00	0.55
Avail Cap(c_a), veh/h	890	0	1100	627	0	1114	1285	0	2039	1205	0	1994
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.4	0.0	12.6	14.1	0.0	14.5	7.2	0.0	9.4	7.8	0.0	9.0
Incr Delay (d2), s/veh	0.1	0.0	0.3	0.0	0.0	0.9	0.0	0.0	0.7	0.0	0.0	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.4	0.0	0.0	0.2	0.1	0.0	1.9	0.0	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	12.6	0.0	12.9	14.1	0.0	15.4	7.3	0.0	10.1	7.8	0.0	9.3
LnGrp LOS	B		B	B		B	A		B	A		A
Approach Vol, veh/h		178			40			480			332	
Approach Delay, s/veh		12.7			15.3			9.9			9.2	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.0	14.6	6.4	5.8	4.5	15.1	4.1	8.2
Change Period (Y+Rc), s	4.0	4.5	4.0	4.0	4.0	4.5	4.0	4.0
Max Green Setting (Gmax), s	16.0	35.5	11.0	21.0	16.0	35.5	6.0	21.0
Max Q Clear Time (g_c+I1), s	2.4	6.7	3.7	2.7	2.2	8.9	2.1	3.3
Green Ext Time (p_c), s	0.0	0.4	0.0	0.0	0.0	0.6	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	10.4
HCM 7th LOS	B



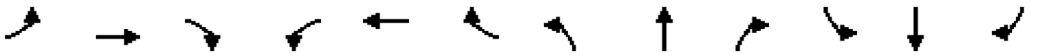
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	35	165	10	30	15	325	955	20	65	575	130
Future Volume (veh/h)	95	35	165	10	30	15	325	955	20	65	575	130
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1722	1722	1722	1811	1811	1811	1781	1781	1781
Adj Flow Rate, veh/h	103	38	179	11	33	16	353	1038	22	71	625	141
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	5	12	12	12	6	6	6	8	8	8
Cap, veh/h	126	218	525	17	98	82	381	2256	1006	90	1652	737
Arrive On Green	0.07	0.12	0.12	0.01	0.06	0.06	0.22	0.66	0.66	0.05	0.49	0.49
Sat Flow, veh/h	1739	1826	1540	1640	1722	1444	1725	3441	1535	1697	3385	1510
Grp Volume(v), veh/h	103	38	179	11	33	16	353	1038	22	71	625	141
Grp Sat Flow(s),veh/h/ln	1739	1826	1540	1640	1722	1444	1725	1721	1535	1697	1692	1510
Q Serve(g_s), s	7.0	2.2	10.4	0.8	2.2	1.3	24.1	17.9	0.6	5.0	13.9	6.3
Cycle Q Clear(g_c), s	7.0	2.2	10.4	0.8	2.2	1.3	24.1	17.9	0.6	5.0	13.9	6.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	126	218	525	17	98	82	381	2256	1006	90	1652	737
V/C Ratio(X)	0.81	0.17	0.34	0.66	0.34	0.19	0.93	0.46	0.02	0.79	0.38	0.19
Avail Cap(c_a), veh/h	203	313	606	164	267	224	489	2256	1006	368	1652	737
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.8	47.5	29.6	59.2	54.4	54.0	45.8	10.2	7.2	56.1	19.3	17.3
Incr Delay (d2), s/veh	5.5	0.1	0.1	23.4	1.2	0.7	19.6	0.7	0.0	8.9	0.7	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	1.0	3.8	0.4	1.0	0.5	11.8	5.8	0.2	2.3	5.2	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	60.4	47.7	29.7	82.6	55.6	54.7	65.4	10.9	7.3	65.1	19.9	17.9
LnGrp LOS	E	D	C	F	E	D	E	B	A	E	B	B
Approach Vol, veh/h		320			60			1413			837	
Approach Delay, s/veh		41.7			60.3			24.4			23.4	
Approach LOS		D			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	30.5	64.6	12.7	12.2	10.4	84.7	5.2	19.7
Change Period (Y+Rc), s	4.0	6.0	4.0	5.4	4.0	6.0	4.0	5.4
Max Green Setting (Gmax), s	34.0	34.0	14.0	18.6	26.0	42.0	12.0	20.6
Max Q Clear Time (g_c+I1), s	26.1	15.9	9.0	4.2	7.0	19.9	2.8	12.4
Green Ext Time (p_c), s	0.4	6.3	0.0	0.1	0.1	10.7	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	27.0
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.



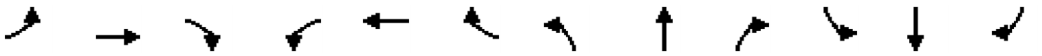
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	480	3	45	815	0	5	0	40	0	0	0
Future Volume (veh/h)	0	480	3	45	815	0	5	0	40	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1737	1737	1737	1856	1856	1856	1900	1900	1900	1870	1870	1870
Adj Flow Rate, veh/h	0	527	3	49	896	0	5	0	44	0	0	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	11	11	11	3	3	3	0	0	0	2	2	2
Cap, veh/h	507	1437	8	652	2244	0	336	0	73	255	85	0
Arrive On Green	0.00	0.43	0.43	0.07	0.64	0.00	0.05	0.00	0.05	0.00	0.00	0.00
Sat Flow, veh/h	1654	3364	19	1767	3618	0	1810	0	1610	1362	1870	0
Grp Volume(v), veh/h	0	258	272	49	896	0	5	0	44	0	0	0
Grp Sat Flow(s),veh/h/ln	1654	1650	1733	1767	1763	0	1810	0	1610	1362	1870	0
Q Serve(g_s), s	0.0	3.0	3.0	0.4	3.5	0.0	0.1	0.0	0.8	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	3.0	3.0	0.4	3.5	0.0	0.1	0.0	0.8	0.0	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	507	705	741	652	2244	0	336	0	73	255	85	0
V/C Ratio(X)	0.00	0.37	0.37	0.08	0.40	0.00	0.01	0.00	0.60	0.00	0.00	0.00
Avail Cap(c_a), veh/h	1145	1780	1870	1220	3803	0	1567	0	1167	458	364	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	5.5	5.5	3.2	2.5	0.0	12.9	0.0	13.3	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.5	0.5	0.0	0.2	0.0	0.0	0.0	5.9	0.0	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.5	0.5	0.0	0.1	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	6.0	6.0	3.2	2.7	0.0	12.9	0.0	19.1	0.0	0.0	0.0
LnGrp LOS		A	A	A	A		B		B			
Approach Vol, veh/h		530			945			49			0	
Approach Delay, s/veh		6.0			2.7			18.5			0.0	
Approach LOS		A			A			B				

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.9	16.6		5.8	0.0	22.5		5.8				
Change Period (Y+Rc), s	4.0	4.5		4.5	4.0	4.5		4.5				
Max Green Setting (Gmax), s	11.0	30.5		5.5	11.0	30.5		20.5				
Max Q Clear Time (g_c+I1), s	2.4	5.0		0.0	0.0	5.5		2.8				
Green Ext Time (p_c), s	0.0	4.9		0.0	0.0	9.7		0.1				

Intersection Summary	
HCM 7th Control Delay, s/veh	4.4
HCM 7th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	320	310	25	115	400	715	40	960	110	385	615	595
Future Volume (veh/h)	320	310	25	115	400	715	40	960	110	385	615	595
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1752	1752	1752	1841	1841	1841	1811	1811	1811	1826	1826	1826
Adj Flow Rate, veh/h	333	323	26	120	417	0	42	1000	0	401	641	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	10	10	10	4	4	4	6	6	6	5	5	5
Cap, veh/h	418	675	54	185	494		52	1149		488	1555	
Arrive On Green	0.13	0.22	0.22	0.05	0.14	0.00	0.03	0.33	0.00	0.14	0.45	0.00
Sat Flow, veh/h	3237	3121	250	3401	3497	1560	1725	3441	1535	3374	3469	1547
Grp Volume(v), veh/h	333	171	178	120	417	0	42	1000	0	401	641	0
Grp Sat Flow(s),veh/h/ln	1618	1664	1707	1700	1749	1560	1725	1721	1535	1687	1735	1547
Q Serve(g_s), s	9.4	8.4	8.5	3.2	10.9	0.0	2.3	25.6	0.0	10.8	11.7	0.0
Cycle Q Clear(g_c), s	9.4	8.4	8.5	3.2	10.9	0.0	2.3	25.6	0.0	10.8	11.7	0.0
Prop In Lane	1.00		0.15	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	418	360	369	185	494		52	1149		488	1555	
V/C Ratio(X)	0.80	0.48	0.48	0.65	0.84		0.80	0.87		0.82	0.41	
Avail Cap(c_a), veh/h	1123	435	446	345	541		175	1212		954	1555	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	39.6	32.1	32.1	43.4	39.2	0.0	45.1	29.3	0.0	38.9	17.5	0.0
Incr Delay (d2), s/veh	2.2	0.6	0.6	2.4	10.3	0.0	15.6	7.4	0.0	2.2	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	3.4	3.5	1.4	5.3	0.0	1.1	10.6	0.0	4.3	4.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	41.8	32.7	32.7	45.8	49.5	0.0	60.7	36.7	0.0	41.1	17.8	0.0
LnGrp LOS	D	C	C	D	D		E	D		D	B	
Approach Vol, veh/h		682			537			1042			1042	
Approach Delay, s/veh		37.1			48.7			37.6			26.8	
Approach LOS		D			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.1	38.3	10.6	25.7	8.3	49.0	17.6	18.7
Change Period (Y+Rc), s	5.5	7.0	5.5	5.5	5.5	7.0	5.5	5.5
Max Green Setting (Gmax), s	26.5	33.0	9.5	24.5	9.5	33.0	32.5	14.5
Max Q Clear Time (g_c+I1), s	12.8	27.6	5.2	10.5	4.3	13.7	11.4	12.9
Green Ext Time (p_c), s	0.8	3.7	0.1	1.2	0.0	6.1	0.7	0.4

Intersection Summary	
HCM 7th Control Delay, s/veh	35.9
HCM 7th LOS	D

Notes

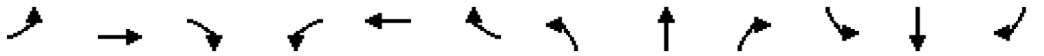
User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	5	15	65	10	25	10	630	20	2	735	10
Future Volume (veh/h)	10	5	15	65	10	25	10	630	20	2	735	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1885	1885	1885	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	11	5	16	68	11	26	11	663	21	2	774	11
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	1	1	1	2	2	2	1	1	1
Cap, veh/h	173	66	108	276	38	51	468	1170	37	533	1203	17
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.65	0.65	0.65	0.65	0.65	0.65
Sat Flow, veh/h	316	487	802	859	280	375	688	1801	57	762	1853	26
Grp Volume(v), veh/h	32	0	0	105	0	0	11	0	684	2	0	785
Grp Sat Flow(s),veh/h/ln	1605	0	0	1514	0	0	688	0	1858	762	0	1880
Q Serve(g_s), s	0.0	0.0	0.0	1.7	0.0	0.0	0.4	0.0	7.6	0.1	0.0	9.3
Cycle Q Clear(g_c), s	0.6	0.0	0.0	2.3	0.0	0.0	9.7	0.0	7.6	7.6	0.0	9.3
Prop In Lane	0.34		0.50	0.65		0.25	1.00		0.03	1.00		0.01
Lane Grp Cap(c), veh/h	347	0	0	364	0	0	468	0	1207	533	0	1221
V/C Ratio(X)	0.09	0.00	0.00	0.29	0.00	0.00	0.02	0.00	0.57	0.00	0.00	0.64
Avail Cap(c_a), veh/h	999	0	0	999	0	0	1059	0	2802	1187	0	2835
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.2	0.0	0.0	14.8	0.0	0.0	6.8	0.0	3.6	5.7	0.0	3.9
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.7	0.0	0.0	1.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.7	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.2	0.0	0.0	15.2	0.0	0.0	6.9	0.0	4.3	5.7	0.0	4.9
LnGrp LOS	B			B			A		A	A		A
Approach Vol, veh/h		32			105			695			787	
Approach Delay, s/veh		14.2			15.2			4.4			4.9	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	28.1	9.0	28.1	9.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	56.0	21.0	56.0	21.0
Max Q Clear Time (g_c+I1), s	11.3	4.3	11.7	2.6
Green Ext Time (p_c), s	12.8	0.4	10.4	0.1

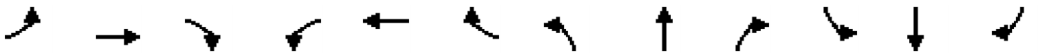
Intersection Summary	
HCM 7th Control Delay, s/veh	5.5
HCM 7th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	20	80	35	10	10	75	555	20	5	680	70
Future Volume (veh/h)	85	20	80	35	10	10	75	555	20	5	680	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.97	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1870	1870	1870	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	92	22	87	38	11	11	82	603	22	5	739	76
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	2	2	2	2	2	2	1	1	1
Cap, veh/h	324	249	209	314	115	115	418	1055	38	472	1015	829
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.06	0.59	0.59	0.01	0.54	0.54
Sat Flow, veh/h	1369	1856	1561	1276	854	854	1781	1791	65	1795	1885	1540
Grp Volume(v), veh/h	92	22	87	38	0	22	82	0	625	5	739	76
Grp Sat Flow(s),veh/h/ln	1369	1856	1561	1276	0	1709	1781	0	1856	1795	1885	1540
Q Serve(g_s), s	2.9	0.5	2.4	1.2	0.0	0.5	0.9	0.0	9.6	0.1	13.7	1.1
Cycle Q Clear(g_c), s	3.4	0.5	2.4	1.7	0.0	0.5	0.9	0.0	9.6	0.1	13.7	1.1
Prop In Lane	1.00		1.00	1.00		0.50	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	324	249	209	314	0	229	418	0	1093	472	1015	829
V/C Ratio(X)	0.28	0.09	0.42	0.12	0.00	0.10	0.20	0.00	0.57	0.01	0.73	0.09
Avail Cap(c_a), veh/h	765	846	711	725	0	779	742	0	1631	891	1657	1354
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.0	17.5	18.3	18.2	0.0	17.5	6.3	0.0	5.9	5.4	8.1	5.2
Incr Delay (d2), s/veh	0.4	0.1	1.0	0.1	0.0	0.1	0.1	0.0	0.7	0.0	1.6	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.2	0.8	0.3	0.0	0.2	0.2	0.0	2.5	0.0	4.1	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	19.4	17.6	19.3	18.4	0.0	17.6	6.4	0.0	6.6	5.4	9.6	5.2
LnGrp LOS	B	B	B	B		B	A		A	A	A	A
Approach Vol, veh/h		201			60			707			820	
Approach Delay, s/veh		19.1			18.1			6.6			9.2	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.6	29.3		10.2	4.2	31.6		10.2				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	11.0	40.5		21.0	11.0	40.5		21.0				
Max Q Clear Time (g_c+I1), s	2.9	15.7		3.7	2.1	11.6		5.4				
Green Ext Time (p_c), s	0.1	9.1		0.1	0.0	7.2		0.4				

Intersection Summary			
HCM 7th Control Delay, s/veh		9.6	
HCM 7th LOS		A	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	10	125	20	10	3	135	540	10	15	705	115
Future Volume (veh/h)	140	10	125	20	10	3	135	540	10	15	705	115
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1811	1811	1811	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	147	11	132	21	11	3	142	568	11	16	742	121
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	6	6	6	2	2	2	2	2	2
Cap, veh/h	574	33	395	412	270	74	321	1627	31	435	1390	227
Arrive On Green	0.09	0.27	0.27	0.02	0.20	0.20	0.46	0.46	0.46	0.46	0.46	0.46
Sat Flow, veh/h	1795	123	1473	1725	1370	374	640	3563	69	832	3045	496
Grp Volume(v), veh/h	147	0	143	21	0	14	142	283	296	16	433	430
Grp Sat Flow(s),veh/h/ln	1795	0	1596	1725	0	1743	640	1777	1856	832	1777	1764
Q Serve(g_s), s	3.1	0.0	3.7	0.5	0.0	0.3	10.5	5.3	5.3	0.6	8.9	8.9
Cycle Q Clear(g_c), s	3.1	0.0	3.7	0.5	0.0	0.3	19.4	5.3	5.3	5.9	8.9	8.9
Prop In Lane	1.00		0.92	1.00		0.21	1.00		0.04	1.00		0.28
Lane Grp Cap(c), veh/h	574	0	428	412	0	343	321	811	847	435	811	806
V/C Ratio(X)	0.26	0.00	0.33	0.05	0.00	0.04	0.44	0.35	0.35	0.04	0.53	0.53
Avail Cap(c_a), veh/h	1149	0	1720	1088	0	1880	355	906	946	480	906	899
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.9	0.0	15.0	15.8	0.0	16.6	16.9	9.0	9.0	10.9	10.0	10.0
Incr Delay (d2), s/veh	0.2	0.0	0.7	0.0	0.0	0.1	0.7	0.2	0.2	0.0	0.4	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	1.3	0.2	0.0	0.1	1.4	1.7	1.7	0.1	2.9	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	13.0	0.0	15.7	15.9	0.0	16.7	17.6	9.1	9.1	10.9	10.4	10.4
LnGrp LOS	B		B	B		B	B	A	A	B	B	B
Approach Vol, veh/h		290			35			721			879	
Approach Delay, s/veh		14.3			16.2			10.8			10.4	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.0	18.7		27.3	8.7	15.1		27.3				
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	21.0	55.0		26.0	21.0	55.0		26.0				
Max Q Clear Time (g_c+I1), s	2.5	5.7		10.9	5.1	2.3		21.4				
Green Ext Time (p_c), s	0.0	1.5		4.2	0.2	0.1		1.7				

Intersection Summary			
HCM 7th Control Delay, s/veh		11.2	
HCM 7th LOS		B	

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	0	140	0	0	0	130	645	0	0	775	70
Future Volume (veh/h)	40	0	140	0	0	0	130	645	0	0	775	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.98		0.98	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1870	1870	1870	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	41	0	144	0	0	0	134	665	0	0	799	72
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	2	2	2	1	1	1	2	2	2
Cap, veh/h	411	0	255	125	301	0	175	2072	0	125	1355	122
Arrive On Green	0.16	0.00	0.16	0.00	0.00	0.00	0.10	0.58	0.00	0.00	0.41	0.41
Sat Flow, veh/h	1779	0	1583	1244	1870	0	1795	3676	0	771	3293	297
Grp Volume(v), veh/h	41	0	144	0	0	0	134	665	0	0	431	440
Grp Sat Flow(s),veh/h/ln	1779	0	1583	1244	1870	0	1795	1791	0	771	1777	1813
Q Serve(g_s), s	1.1	0.0	4.8	0.0	0.0	0.0	4.2	5.5	0.0	0.0	10.9	10.9
Cycle Q Clear(g_c), s	1.1	0.0	4.8	0.0	0.0	0.0	4.2	5.5	0.0	0.0	10.9	10.9
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		0.16
Lane Grp Cap(c), veh/h	411	0	255	125	301	0	175	2072	0	125	731	746
V/C Ratio(X)	0.10	0.00	0.57	0.00	0.00	0.00	0.76	0.32	0.00	0.00	0.59	0.59
Avail Cap(c_a), veh/h	836	0	633	422	747	0	655	3236	0	545	1698	1732
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	20.7	0.0	22.3	0.0	0.0	0.0	25.3	6.3	0.0	0.0	13.2	13.2
Incr Delay (d2), s/veh	0.1	0.0	1.2	0.0	0.0	0.0	4.2	0.1	0.0	0.0	1.2	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	1.8	0.0	0.0	0.0	1.9	1.6	0.0	0.0	3.9	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	20.8	0.0	23.5	0.0	0.0	0.0	29.6	6.4	0.0	0.0	14.3	14.3
LnGrp LOS	C		C				C	A			B	B
Approach Vol, veh/h		185			0			799			871	
Approach Delay, s/veh		22.9			0.0			10.3			14.3	
Approach LOS		C						B			B	

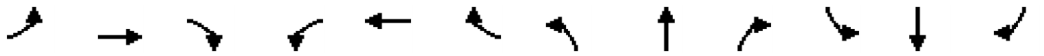
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	9.6	31.7		16.3		41.3		16.3				
Change Period (Y+Rc), s	4.0	* 8		7.0		8.0		7.0				
Max Green Setting (Gmax), s	21.0	* 55		23.0		52.0		23.0				
Max Q Clear Time (g_c+I1), s	6.2	12.9		6.8		7.5		0.0				
Green Ext Time (p_c), s	0.2	10.8		0.6		8.3		0.0				

Intersection Summary												
HCM 7th Control Delay, s/veh			13.4									
HCM 7th LOS			B									

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



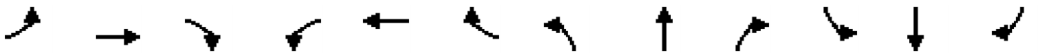
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	455	200	110	335	240	160	400	55	470	455	15
Future Volume (veh/h)	35	455	200	110	335	240	160	400	55	470	455	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1885	1885	1885	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	36	469	206	113	345	247	165	412	57	485	469	15
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	1	1	1	2	2	2	1	1	1
Cap, veh/h	52	639	467	146	830	655	209	836	115	625	598	19
Arrive On Green	0.03	0.18	0.18	0.08	0.23	0.23	0.12	0.27	0.27	0.18	0.33	0.33
Sat Flow, veh/h	1781	3554	1563	1795	3582	1587	1781	3127	429	3483	1815	58
Grp Volume(v), veh/h	36	469	206	113	345	247	165	233	236	485	0	484
Grp Sat Flow(s),veh/h/ln	1781	1777	1563	1795	1791	1587	1781	1777	1780	1742	0	1873
Q Serve(g_s), s	1.3	8.3	7.1	4.1	5.5	7.2	6.0	7.4	7.5	8.9	0.0	15.6
Cycle Q Clear(g_c), s	1.3	8.3	7.1	4.1	5.5	7.2	6.0	7.4	7.5	8.9	0.0	15.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.24	1.00		0.03
Lane Grp Cap(c), veh/h	52	639	467	146	830	655	209	475	476	625	0	617
V/C Ratio(X)	0.69	0.73	0.44	0.78	0.42	0.38	0.79	0.49	0.50	0.78	0.00	0.78
Avail Cap(c_a), veh/h	280	799	538	283	830	655	534	799	800	1566	0	842
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.1	25.9	19.0	30.1	21.8	13.7	28.6	20.6	20.6	26.1	0.0	20.2
Incr Delay (d2), s/veh	9.6	2.3	0.5	5.3	0.2	0.3	4.1	1.2	1.2	1.3	0.0	4.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	3.5	2.4	1.9	2.2	2.3	2.7	3.0	3.1	3.6	0.0	7.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	41.7	28.2	19.5	35.4	22.0	14.0	32.7	21.8	21.9	27.4	0.0	24.6
LnGrp LOS	D	C	B	D	C	B	C	C	C	C		C
Approach Vol, veh/h		711			705			634			969	
Approach Delay, s/veh		26.4			21.4			24.7			26.0	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.8	27.0	6.4	20.5	17.0	22.8	9.9	17.0
Change Period (Y+Rc), s	5.0	5.0	4.5	5.0	5.0	5.0	4.5	5.0
Max Green Setting (Gmax), s	20.0	30.0	10.5	15.0	30.0	30.0	10.5	15.0
Max Q Clear Time (g_c+I1), s	8.0	17.6	3.3	9.2	10.9	9.5	6.1	10.3
Green Ext Time (p_c), s	0.2	3.5	0.0	1.3	1.1	4.1	0.1	1.4

Intersection Summary	
HCM 7th Control Delay, s/veh	24.7
HCM 7th LOS	C

Notes

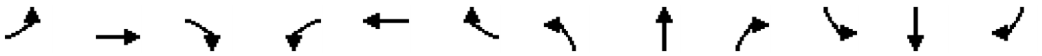
User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	40	40	20	40	40	40	440	20	20	525	140
Future Volume (veh/h)	105	40	40	20	40	40	40	440	20	20	525	140
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.96	0.97		0.98	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1900	1900	1900	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	108	41	41	21	41	41	41	454	21	21	541	144
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	0	0	0	3	3	3	3	3	3
Cap, veh/h	361	128	128	326	87	87	273	780	36	422	600	160
Arrive On Green	0.07	0.15	0.15	0.02	0.10	0.10	0.04	0.44	0.44	0.02	0.43	0.43
Sat Flow, veh/h	1795	843	843	1810	864	864	1767	1759	81	1767	1403	373
Grp Volume(v), veh/h	108	0	82	21	0	82	41	0	475	21	0	685
Grp Sat Flow(s),veh/h/ln	1795	0	1687	1810	0	1728	1767	0	1840	1767	0	1776
Q Serve(g_s), s	2.4	0.0	2.0	0.5	0.0	2.0	0.6	0.0	8.8	0.3	0.0	16.3
Cycle Q Clear(g_c), s	2.4	0.0	2.0	0.5	0.0	2.0	0.6	0.0	8.8	0.3	0.0	16.3
Prop In Lane	1.00		0.50	1.00		0.50	1.00		0.04	1.00		0.21
Lane Grp Cap(c), veh/h	361	0	257	326	0	174	273	0	816	422	0	760
V/C Ratio(X)	0.30	0.00	0.32	0.06	0.00	0.47	0.15	0.00	0.58	0.05	0.00	0.90
Avail Cap(c_a), veh/h	667	0	780	528	0	799	833	0	1439	1008	0	1389
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.3	0.0	17.1	17.7	0.0	19.3	9.8	0.0	9.5	7.7	0.0	12.1
Incr Delay (d2), s/veh	0.2	0.0	0.3	0.0	0.0	0.7	0.1	0.0	0.2	0.0	0.0	1.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.7	0.2	0.0	0.8	0.2	0.0	2.7	0.1	0.0	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	16.5	0.0	17.4	17.8	0.0	20.0	9.9	0.0	9.7	7.7	0.0	13.7
LnGrp LOS	B		B	B		B	A		A	A		B
Approach Vol, veh/h		190			103			516			706	
Approach Delay, s/veh		16.9			19.5			9.7			13.6	
Approach LOS		B			B			A			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.6	23.9	7.3	8.6	4.9	24.6	4.9	10.9
Change Period (Y+Rc), s	4.0	4.5	4.0	4.0	4.0	4.5	4.0	4.0
Max Green Setting (Gmax), s	16.0	35.5	11.0	21.0	16.0	35.5	6.0	21.0
Max Q Clear Time (g_c+I1), s	2.6	18.3	4.4	4.0	2.3	10.8	2.5	4.0
Green Ext Time (p_c), s	0.0	1.1	0.0	0.1	0.0	0.7	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	13.1
HCM 7th LOS	B



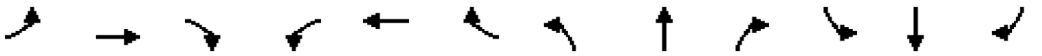
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	40	450	10	35	50	265	700	15	35	1045	165
Future Volume (veh/h)	140	40	450	10	35	50	265	700	15	35	1045	165
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1752	1752	1752	1856	1856	1856	1870	1870	1870
Adj Flow Rate, veh/h	143	41	459	10	36	51	270	714	15	36	1066	168
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	10	10	10	3	3	3	2	2	2
Cap, veh/h	167	304	520	16	137	112	297	2301	1026	46	1815	809
Arrive On Green	0.09	0.16	0.16	0.01	0.08	0.08	0.17	0.65	0.65	0.03	0.51	0.51
Sat Flow, veh/h	1781	1870	1562	1668	1752	1439	1767	3526	1571	1781	3554	1583
Grp Volume(v), veh/h	143	41	459	10	36	51	270	714	15	36	1066	168
Grp Sat Flow(s),veh/h/ln	1781	1870	1562	1668	1752	1439	1767	1763	1571	1781	1777	1583
Q Serve(g_s), s	10.3	2.4	21.2	0.8	2.5	4.4	19.5	11.5	0.4	2.6	27.3	7.5
Cycle Q Clear(g_c), s	10.3	2.4	21.2	0.8	2.5	4.4	19.5	11.5	0.4	2.6	27.3	7.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	167	304	520	16	137	112	297	2301	1026	46	1815	809
V/C Ratio(X)	0.85	0.13	0.88	0.64	0.26	0.45	0.91	0.31	0.01	0.78	0.59	0.21
Avail Cap(c_a), veh/h	219	304	520	205	278	228	421	2301	1026	288	1815	809
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.0	46.6	41.2	64.2	56.4	57.3	53.1	9.8	7.9	62.9	22.2	17.4
Incr Delay (d2), s/veh	17.8	0.1	15.7	23.9	0.6	1.7	16.4	0.4	0.0	15.6	1.4	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	1.1	15.9	0.4	1.1	1.6	9.7	3.9	0.1	1.3	10.7	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	75.8	46.7	56.9	88.1	57.0	59.0	69.5	10.2	7.9	78.6	23.6	18.0
LnGrp LOS	E	D	E	F	E	E	E	B	A	E	C	B
Approach Vol, veh/h		643			97			999			1270	
Approach Delay, s/veh		60.4			61.3			26.2			24.4	
Approach LOS		E			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.8	72.4	16.2	15.5	7.4	90.9	5.2	26.6
Change Period (Y+Rc), s	4.0	6.0	4.0	5.4	4.0	6.0	4.0	5.4
Max Green Setting (Gmax), s	31.0	43.0	16.0	20.6	21.0	53.0	16.0	20.6
Max Q Clear Time (g_c+I1), s	21.5	29.3	12.3	6.4	4.6	13.5	2.8	23.2
Green Ext Time (p_c), s	0.3	8.7	0.0	0.2	0.0	8.5	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	33.9
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	950	50	120	750	0	25	0	60	0	0	1
Future Volume (veh/h)	1	950	50	120	750	0	25	0	60	0	0	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	0.98		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1870	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	1	1022	54	129	806	0	27	0	65	0	0	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	2	2	2	0	0	0	0	0	0
Cap, veh/h	496	1690	89	505	2119	0	308	0	158	167	0	158
Arrive On Green	0.00	0.49	0.49	0.11	0.60	0.00	0.10	0.00	0.10	0.00	0.00	0.10
Sat Flow, veh/h	1795	3459	183	1781	3647	0	1405	0	1572	1358	0	1572
Grp Volume(v), veh/h	1	529	547	129	806	0	27	0	65	0	0	1
Grp Sat Flow(s),veh/h/ln	1795	1791	1851	1781	1777	0	1405	0	1572	1358	0	1572
Q Serve(g_s), s	0.0	9.3	9.3	1.2	5.1	0.0	0.8	0.0	1.7	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	9.3	9.3	1.2	5.1	0.0	0.8	0.0	1.7	0.0	0.0	0.0
Prop In Lane	1.00		0.10	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	496	875	904	505	2119	0	308	0	158	167	0	158
V/C Ratio(X)	0.00	0.60	0.60	0.26	0.38	0.00	0.09	0.00	0.41	0.00	0.00	0.01
Avail Cap(c_a), veh/h	949	1266	1308	764	2512	0	833	0	747	203	0	200
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	5.6	8.0	8.0	4.9	4.5	0.0	17.8	0.0	18.2	0.0	0.0	17.5
Incr Delay (d2), s/veh	0.0	1.0	1.0	0.2	0.2	0.0	0.1	0.0	1.3	0.0	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.5	2.6	0.2	1.0	0.0	0.2	0.0	0.6	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	5.6	9.0	9.0	5.1	4.7	0.0	17.9	0.0	19.5	0.0	0.0	17.5
LnGrp LOS	A	A	A	A	A		B		B			B
Approach Vol, veh/h		1077			935			92			1	
Approach Delay, s/veh		9.0			4.8			19.0			17.5	
Approach LOS		A			A			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.7	25.6		8.8	4.1	30.2		8.8				
Change Period (Y+Rc), s	4.0	4.5		4.5	4.0	4.5		4.5				
Max Green Setting (Gmax), s	11.0	30.5		5.5	11.0	30.5		20.5				
Max Q Clear Time (g_c+I1), s	3.2	11.3		2.0	2.0	7.1		3.7				
Green Ext Time (p_c), s	0.1	9.8		0.0	0.0	8.3		0.3				

Intersection Summary	
HCM 7th Control Delay, s/veh	7.6
HCM 7th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	630	725	90	130	455	450	50	675	160	705	960	590
Future Volume (veh/h)	630	725	90	130	455	450	50	675	160	705	960	590
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1856	1856	1856	1870	1870	1870
Adj Flow Rate, veh/h	643	740	92	133	464	0	51	689	0	719	980	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	3	3	3	2	2	2
Cap, veh/h	723	892	111	191	450		66	844		772	1513	
Arrive On Green	0.21	0.28	0.28	0.05	0.13	0.00	0.04	0.24	0.00	0.22	0.43	0.00
Sat Flow, veh/h	3483	3200	398	3483	3582	1598	1767	3526	1572	3456	3554	1585
Grp Volume(v), veh/h	643	414	418	133	464	0	51	689	0	719	980	0
Grp Sat Flow(s),veh/h/ln	1742	1791	1807	1742	1791	1598	1767	1763	1572	1728	1777	1585
Q Serve(g_s), s	20.7	25.0	25.0	4.3	14.5	0.0	3.3	21.3	0.0	23.5	25.2	0.0
Cycle Q Clear(g_c), s	20.7	25.0	25.0	4.3	14.5	0.0	3.3	21.3	0.0	23.5	25.2	0.0
Prop In Lane	1.00		0.22	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	723	499	503	191	450		66	844		772	1513	
V/C Ratio(X)	0.89	0.83	0.83	0.70	1.03		0.78	0.82		0.93	0.65	
Avail Cap(c_a), veh/h	982	499	503	287	450		146	1009		794	1513	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	44.4	39.0	39.0	53.6	50.4	0.0	55.1	41.5	0.0	43.9	26.3	0.0
Incr Delay (d2), s/veh	7.0	10.8	10.8	2.8	50.4	0.0	11.4	5.5	0.0	17.0	1.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.5	12.3	12.4	2.0	9.6	0.0	1.6	9.4	0.0	11.3	10.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	51.4	49.9	49.8	56.4	100.8	0.0	66.5	47.0	0.0	60.9	27.5	0.0
LnGrp LOS	D	D	D	E	F		E	D		E	C	
Approach Vol, veh/h		1475			597			740			1699	
Approach Delay, s/veh		50.5			90.9			48.3			41.6	
Approach LOS		D			F			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	31.3	34.6	11.8	37.6	9.8	56.1	29.4	20.0
Change Period (Y+Rc), s	5.5	7.0	5.5	5.5	5.5	7.0	5.5	5.5
Max Green Setting (Gmax), s	26.5	33.0	9.5	24.5	9.5	33.0	32.5	14.5
Max Q Clear Time (g_c+I1), s	25.5	23.3	6.3	27.0	5.3	27.2	22.7	16.5
Green Ext Time (p_c), s	0.2	4.3	0.1	0.0	0.0	3.9	1.3	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	52.2
HCM 7th LOS	D

Notes

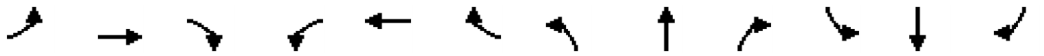
User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	10	10	40	10	5	10	625	15	35	465	10
Future Volume (veh/h)	20	10	10	40	10	5	10	625	15	35	465	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1811	1811	1781	1781	1781	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	22	11	11	43	11	5	11	679	16	38	505	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	8	8	8	4	4	4	4	4	4
Cap, veh/h	238	79	50	305	60	16	636	1116	26	512	1119	24
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.62	0.62	0.62	0.62	0.62	0.62
Sat Flow, veh/h	547	609	385	868	461	123	870	1790	42	737	1794	39
Grp Volume(v), veh/h	44	0	0	59	0	0	11	0	695	38	0	516
Grp Sat Flow(s),veh/h/ln	1542	0	0	1452	0	0	870	0	1832	737	0	1834
Q Serve(g_s), s	0.0	0.0	0.0	0.3	0.0	0.0	0.2	0.0	7.5	1.1	0.0	4.8
Cycle Q Clear(g_c), s	0.7	0.0	0.0	1.1	0.0	0.0	5.0	0.0	7.5	8.5	0.0	4.8
Prop In Lane	0.50		0.25	0.73		0.08	1.00		0.02	1.00		0.02
Lane Grp Cap(c), veh/h	367	0	0	381	0	0	636	0	1142	512	0	1143
V/C Ratio(X)	0.12	0.00	0.00	0.15	0.00	0.00	0.02	0.00	0.61	0.07	0.00	0.45
Avail Cap(c_a), veh/h	1131	0	0	1099	0	0	1595	0	3162	1325	0	3165
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.6	0.0	0.0	12.7	0.0	0.0	4.5	0.0	3.7	6.3	0.0	3.2
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.9	0.1	0.0	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.9	0.1	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	12.7	0.0	0.0	12.9	0.0	0.0	4.5	0.0	4.6	6.4	0.0	3.7
LnGrp LOS	B			B			A		A	A		A
Approach Vol, veh/h		44			59			706			554	
Approach Delay, s/veh		12.7			12.9			4.6			3.9	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	24.2	8.2	24.2	8.2
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	56.0	21.0	56.0	21.0
Max Q Clear Time (g_c+I1), s	10.5	3.1	9.5	2.7
Green Ext Time (p_c), s	7.4	0.2	10.8	0.1

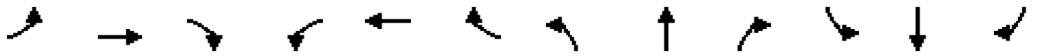
Intersection Summary	
HCM 7th Control Delay, s/veh	4.9
HCM 7th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	4	40	35	5	5	30	510	10	5	455	35
Future Volume (veh/h)	50	4	40	35	5	5	30	510	10	5	455	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1826	1826	1826	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	54	4	43	38	5	5	32	548	11	5	489	38
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	7	7	7	5	5	5	4	4	4	4	4	4
Cap, veh/h	393	243	206	395	113	113	495	865	17	439	839	708
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.03	0.48	0.48	0.01	0.46	0.46
Sat Flow, veh/h	1349	1796	1522	1326	838	838	1753	1798	36	1753	1841	1555
Grp Volume(v), veh/h	54	4	43	38	0	10	32	0	559	5	489	38
Grp Sat Flow(s),veh/h/ln	1349	1796	1522	1326	0	1675	1753	0	1834	1753	1841	1555
Q Serve(g_s), s	1.2	0.1	0.8	0.8	0.0	0.2	0.3	0.0	7.5	0.1	6.5	0.5
Cycle Q Clear(g_c), s	1.4	0.1	0.8	0.9	0.0	0.2	0.3	0.0	7.5	0.1	6.5	0.5
Prop In Lane	1.00		1.00	1.00		0.50	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	393	243	206	395	0	227	495	0	882	439	839	708
V/C Ratio(X)	0.14	0.02	0.21	0.10	0.00	0.04	0.06	0.00	0.63	0.01	0.58	0.05
Avail Cap(c_a), veh/h	1068	1141	967	1058	0	1065	1024	0	2248	1013	2256	1905
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.0	12.4	12.7	12.8	0.0	12.4	5.1	0.0	6.4	5.5	6.7	5.0
Incr Delay (d2), s/veh	0.1	0.0	0.4	0.1	0.0	0.1	0.0	0.0	1.2	0.0	1.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.3	0.2	0.0	0.1	0.1	0.0	1.8	0.0	1.6	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	13.1	12.4	13.1	12.9	0.0	12.5	5.1	0.0	7.6	5.5	7.7	5.1
LnGrp LOS	B	B	B	B		B	A		A	A	A	A
Approach Vol, veh/h		101			48			591			532	
Approach Delay, s/veh		13.1			12.8			7.4			7.4	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.0	19.6		8.5	4.2	20.4		8.5				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	11.0	40.5		21.0	11.0	40.5		21.0				
Max Q Clear Time (g_c+I1), s	2.3	8.5		2.9	2.1	9.5		3.4				
Green Ext Time (p_c), s	0.0	5.6		0.1	0.0	6.4		0.2				

Intersection Summary												
HCM 7th Control Delay, s/veh			8.1									
HCM 7th LOS			A									



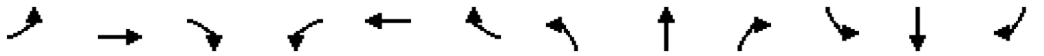
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	10	65	15	5	1	120	555	5	5	395	125
Future Volume (veh/h)	105	10	65	15	5	1	120	555	5	5	395	125
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1900	1900	1900	1826	1826	1826	1841	1841	1841
Adj Flow Rate, veh/h	115	11	71	16	5	1	132	610	5	5	434	137
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	4	4	4	0	0	0	5	5	5	4	4	4
Cap, veh/h	614	62	400	506	358	72	389	1387	11	377	1030	322
Arrive On Green	0.07	0.29	0.29	0.02	0.23	0.23	0.39	0.39	0.39	0.39	0.39	0.39
Sat Flow, veh/h	1753	213	1376	1810	1536	307	819	3526	29	793	2618	818
Grp Volume(v), veh/h	115	0	82	16	0	6	132	300	315	5	289	282
Grp Sat Flow(s),veh/h/ln	1753	0	1590	1810	0	1844	819	1735	1820	793	1749	1687
Q Serve(g_s), s	2.1	0.0	1.7	0.3	0.0	0.1	6.1	5.5	5.5	0.2	5.2	5.3
Cycle Q Clear(g_c), s	2.1	0.0	1.7	0.3	0.0	0.1	11.3	5.5	5.5	5.7	5.2	5.3
Prop In Lane	1.00		0.87	1.00		0.17	1.00		0.02	1.00		0.49
Lane Grp Cap(c), veh/h	614	0	461	506	0	429	389	682	716	377	688	664
V/C Ratio(X)	0.19	0.00	0.18	0.03	0.00	0.01	0.34	0.44	0.44	0.01	0.42	0.43
Avail Cap(c_a), veh/h	1335	0	2019	1354	0	2342	558	1041	1093	542	1050	1013
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.8	0.0	11.5	12.3	0.0	12.8	13.7	9.6	9.6	11.7	9.5	9.6
Incr Delay (d2), s/veh	0.1	0.0	0.3	0.0	0.0	0.0	0.4	0.3	0.3	0.0	0.3	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.5	0.1	0.0	0.0	1.0	1.7	1.7	0.0	1.6	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	10.9	0.0	11.8	12.3	0.0	12.8	14.1	10.0	10.0	11.7	9.8	9.9
LnGrp LOS	B		B	B		B	B	A	A	B	A	A
Approach Vol, veh/h		197			22			747			576	
Approach Delay, s/veh		11.3			12.5			10.7			9.9	
Approach LOS		B			B			B			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.7	17.6		21.0	7.2	15.1		21.0				
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	21.0	55.0		26.0	21.0	55.0		26.0				
Max Q Clear Time (g_c+I1), s	2.3	3.7		7.7	4.1	2.1		13.3				
Green Ext Time (p_c), s	0.0	0.8		2.8	0.2	0.0		3.2				

Intersection Summary		
HCM 7th Control Delay, s/veh	10.5	
HCM 7th LOS	B	

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	0	70	0	0	0	90	625	0	0	400	50
Future Volume (veh/h)	55	0	70	0	0	0	90	625	0	0	400	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1870	1856	1856	1856	1841	1841	1841
Adj Flow Rate, veh/h	63	0	80	0	0	0	102	710	0	0	455	57
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	1	1	1	2	2	2	3	3	3	4	4	4
Cap, veh/h	428	0	221	180	261	0	132	1714	0	180	974	121
Arrive On Green	0.14	0.00	0.14	0.00	0.00	0.00	0.07	0.49	0.00	0.00	0.31	0.31
Sat Flow, veh/h	1780	0	1585	1319	1870	0	1767	3618	0	728	3125	390
Grp Volume(v), veh/h	63	0	80	0	0	0	102	710	0	0	254	258
Grp Sat Flow(s),veh/h/ln	1780	0	1585	1319	1870	0	1767	1763	0	728	1749	1766
Q Serve(g_s), s	1.3	0.0	1.8	0.0	0.0	0.0	2.3	5.2	0.0	0.0	4.7	4.7
Cycle Q Clear(g_c), s	1.3	0.0	1.8	0.0	0.0	0.0	2.3	5.2	0.0	0.0	4.7	4.7
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		0.22
Lane Grp Cap(c), veh/h	428	0	221	180	261	0	132	1714	0	180	545	550
V/C Ratio(X)	0.15	0.00	0.36	0.00	0.00	0.00	0.77	0.41	0.00	0.00	0.47	0.47
Avail Cap(c_a), veh/h	1202	0	910	753	1074	0	926	4576	0	952	2401	2425
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	15.4	0.0	15.6	0.0	0.0	0.0	18.2	6.6	0.0	0.0	11.1	11.1
Incr Delay (d2), s/veh	0.1	0.0	0.6	0.0	0.0	0.0	5.8	0.2	0.0	0.0	0.9	1.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.6	0.0	0.0	0.0	1.0	1.3	0.0	0.0	1.6	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	15.5	0.0	16.2	0.0	0.0	0.0	24.0	6.9	0.0	0.0	12.0	12.1
LnGrp LOS	B		B				C	A			B	B
Approach Vol, veh/h		143			0			812			512	
Approach Delay, s/veh		15.9			0.0			9.0			12.1	
Approach LOS		B						A			B	

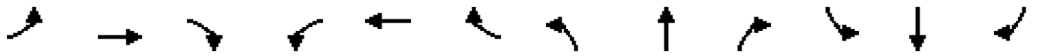
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	7.0	20.5		12.6		27.5		12.6				
Change Period (Y+Rc), s	4.0	* 8		7.0		8.0		7.0				
Max Green Setting (Gmax), s	21.0	* 55		23.0		52.0		23.0				
Max Q Clear Time (g_c+I1), s	4.3	6.7		3.8		7.2		0.0				
Green Ext Time (p_c), s	0.1	5.6		0.4		9.1		0.0				

Intersection Summary												
HCM 7th Control Delay, s/veh			10.8									
HCM 7th LOS			B									

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



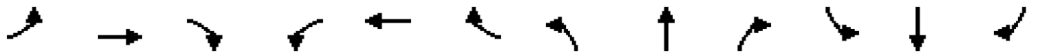
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	260	110	50	495	250	176	345	60	240	200	15
Future Volume (veh/h)	10	260	110	50	495	250	176	345	60	240	200	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1767	1767	1856	1856	1856	1856	1856	1856	1841	1841	1841
Adj Flow Rate, veh/h	10	268	113	52	510	258	181	356	62	247	206	15
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	9	9	9	3	3	3	3	3	3	4	4	4
Cap, veh/h	18	561	447	111	774	533	235	727	125	410	390	28
Arrive On Green	0.01	0.17	0.17	0.06	0.22	0.22	0.13	0.24	0.24	0.12	0.23	0.23
Sat Flow, veh/h	1682	3357	1484	1767	3526	1566	1767	3002	518	3401	1694	123
Grp Volume(v), veh/h	10	268	113	52	510	258	181	208	210	247	0	221
Grp Sat Flow(s),veh/h/ln	1682	1678	1484	1767	1763	1566	1767	1763	1757	1700	0	1817
Q Serve(g_s), s	0.3	3.5	2.8	1.4	6.3	6.2	4.7	4.8	4.9	3.3	0.0	5.1
Cycle Q Clear(g_c), s	0.3	3.5	2.8	1.4	6.3	6.2	4.7	4.8	4.9	3.3	0.0	5.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.29	1.00		0.07
Lane Grp Cap(c), veh/h	18	561	447	111	774	533	235	427	426	410	0	418
V/C Ratio(X)	0.57	0.48	0.25	0.47	0.66	0.48	0.77	0.49	0.49	0.60	0.00	0.53
Avail Cap(c_a), veh/h	369	1052	664	388	1105	680	738	1105	1101	2131	0	1139
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.6	18.0	12.7	21.7	17.1	12.5	20.1	15.6	15.6	20.0	0.0	16.2
Incr Delay (d2), s/veh	16.6	0.5	0.2	1.9	0.7	0.5	3.3	1.3	1.4	0.9	0.0	1.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	1.2	0.8	0.6	2.2	1.8	2.0	1.8	1.9	1.2	0.0	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	40.2	18.5	12.9	23.6	17.8	13.0	23.4	16.9	17.0	20.8	0.0	17.7
LnGrp LOS	D	B	B	C	B	B	C	B	B	C		B
Approach Vol, veh/h		391			820			599			468	
Approach Delay, s/veh		17.4			16.6			18.9			19.4	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.4	16.0	5.0	15.5	10.8	16.6	7.5	13.0
Change Period (Y+Rc), s	5.0	5.0	4.5	5.0	5.0	5.0	4.5	5.0
Max Green Setting (Gmax), s	20.0	30.0	10.5	15.0	30.0	30.0	10.5	15.0
Max Q Clear Time (g_c+I1), s	6.7	7.1	2.3	8.3	5.3	6.9	3.4	5.5
Green Ext Time (p_c), s	0.3	1.9	0.0	2.0	0.6	3.8	0.0	1.1

Intersection Summary	
HCM 7th Control Delay, s/veh	17.9
HCM 7th LOS	B

Notes

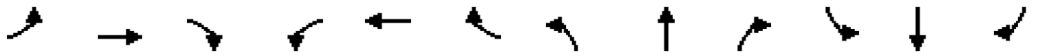
User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	30	50	3	20	15	35	460	10	15	305	35
Future Volume (veh/h)	110	30	50	3	20	15	35	460	10	15	305	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.98		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1826	1826	1826	1841	1841	1841	1826	1826	1826
Adj Flow Rate, veh/h	116	32	53	3	21	16	37	484	11	16	321	37
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	5	5	5	4	4	4	5	5	5
Cap, veh/h	415	85	140	301	55	42	432	602	14	331	510	59
Arrive On Green	0.08	0.13	0.13	0.00	0.06	0.06	0.03	0.34	0.34	0.02	0.32	0.32
Sat Flow, veh/h	1781	631	1045	1739	960	731	1753	1792	41	1739	1606	185
Grp Volume(v), veh/h	116	0	85	3	0	37	37	0	495	16	0	358
Grp Sat Flow(s),veh/h/ln	1781	0	1676	1739	0	1691	1753	0	1833	1739	0	1791
Q Serve(g_s), s	1.9	0.0	1.5	0.1	0.0	0.7	0.5	0.0	8.0	0.2	0.0	5.5
Cycle Q Clear(g_c), s	1.9	0.0	1.5	0.1	0.0	0.7	0.5	0.0	8.0	0.2	0.0	5.5
Prop In Lane	1.00		0.62	1.00		0.43	1.00		0.02	1.00		0.10
Lane Grp Cap(c), veh/h	415	0	225	301	0	97	432	0	616	331	0	569
V/C Ratio(X)	0.28	0.00	0.38	0.01	0.00	0.38	0.09	0.00	0.80	0.05	0.00	0.63
Avail Cap(c_a), veh/h	877	0	1087	617	0	1097	1237	0	2010	1161	0	1964
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.5	0.0	12.8	14.3	0.0	14.7	7.4	0.0	9.8	8.1	0.0	9.4
Incr Delay (d2), s/veh	0.1	0.0	0.4	0.0	0.0	0.9	0.0	0.0	0.9	0.0	0.0	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.5	0.0	0.0	0.2	0.1	0.0	2.3	0.1	0.0	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	12.6	0.0	13.2	14.3	0.0	15.6	7.4	0.0	10.7	8.1	0.0	9.8
LnGrp LOS	B		B	B		B	A		B	A		A
Approach Vol, veh/h		201			40			532			374	
Approach Delay, s/veh		12.8			15.5			10.5			9.8	
Approach LOS		B			B			B			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.1	14.8	6.6	5.9	4.5	15.4	4.1	8.3
Change Period (Y+Rc), s	4.0	4.5	4.0	4.0	4.0	4.5	4.0	4.0
Max Green Setting (Gmax), s	16.0	35.5	11.0	21.0	16.0	35.5	6.0	21.0
Max Q Clear Time (g_c+I1), s	2.5	7.5	3.9	2.7	2.2	10.0	2.1	3.5
Green Ext Time (p_c), s	0.0	0.5	0.0	0.0	0.0	0.7	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	10.8
HCM 7th LOS	B



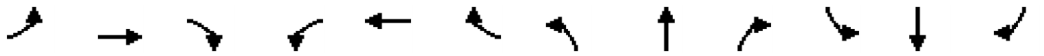
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	45	185	10	35	15	360	1075	20	70	680	145
Future Volume (veh/h)	105	45	185	10	35	15	360	1075	20	70	680	145
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1722	1722	1722	1811	1811	1811	1781	1781	1781
Adj Flow Rate, veh/h	114	49	201	11	38	16	391	1168	22	76	739	158
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	5	12	12	12	6	6	6	8	8	8
Cap, veh/h	138	230	569	17	98	82	417	2220	990	96	1557	694
Arrive On Green	0.08	0.13	0.13	0.01	0.06	0.06	0.24	0.65	0.65	0.06	0.46	0.46
Sat Flow, veh/h	1739	1826	1540	1640	1722	1444	1725	3441	1535	1697	3385	1510
Grp Volume(v), veh/h	114	49	201	11	38	16	391	1168	22	76	739	158
Grp Sat Flow(s),veh/h/ln	1739	1826	1540	1640	1722	1444	1725	1721	1535	1697	1692	1510
Q Serve(g_s), s	7.7	2.9	11.4	0.8	2.6	1.3	26.7	21.9	0.6	5.3	18.1	7.6
Cycle Q Clear(g_c), s	7.7	2.9	11.4	0.8	2.6	1.3	26.7	21.9	0.6	5.3	18.1	7.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	138	230	569	17	98	82	417	2220	990	96	1557	694
V/C Ratio(X)	0.82	0.21	0.35	0.66	0.39	0.19	0.94	0.53	0.02	0.79	0.47	0.23
Avail Cap(c_a), veh/h	203	313	639	164	267	224	489	2220	990	368	1557	694
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.4	47.1	27.5	59.2	54.6	54.0	44.6	11.4	7.7	55.9	22.4	19.5
Incr Delay (d2), s/veh	10.5	0.2	0.1	23.4	1.5	0.7	23.0	0.9	0.0	8.5	1.0	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.8	2.4	7.5	0.8	2.1	0.9	19.4	11.6	0.4	4.3	11.1	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	64.9	47.2	27.7	82.6	56.1	54.7	67.6	12.3	7.7	64.4	23.4	20.3
LnGrp LOS	E	D	C	F	E	D	E	B	A	E	C	C
Approach Vol, veh/h		364			65			1581			973	
Approach Delay, s/veh		42.0			60.2			25.9			26.1	
Approach LOS		D			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	33.0	61.2	13.5	12.2	10.8	83.4	5.2	20.5
Change Period (Y+Rc), s	4.0	6.0	4.0	5.4	4.0	6.0	4.0	5.4
Max Green Setting (Gmax), s	34.0	34.0	14.0	18.6	26.0	42.0	12.0	20.6
Max Q Clear Time (g_c+I1), s	28.7	20.1	9.7	4.6	7.3	23.9	2.8	13.4
Green Ext Time (p_c), s	0.4	6.4	0.0	0.1	0.1	10.7	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	28.7
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	545	3	65	910	0	5	0	50	0	0	0
Future Volume (veh/h)	0	545	3	65	910	0	5	0	50	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1737	1737	1737	1856	1856	1856	1900	1900	1900	1870	1870	1870
Adj Flow Rate, veh/h	0	599	3	71	1000	0	5	0	55	0	0	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	11	11	11	3	3	3	0	0	0	2	2	2
Cap, veh/h	468	1391	7	637	2255	0	342	0	85	246	99	0
Arrive On Green	0.00	0.41	0.41	0.09	0.64	0.00	0.05	0.00	0.05	0.00	0.00	0.00
Sat Flow, veh/h	1654	3367	17	1767	3618	0	1810	0	1610	1349	1870	0
Grp Volume(v), veh/h	0	294	308	71	1000	0	5	0	55	0	0	0
Grp Sat Flow(s),veh/h/ln	1654	1650	1734	1767	1763	0	1810	0	1610	1349	1870	0
Q Serve(g_s), s	0.0	3.7	3.7	0.5	4.2	0.0	0.1	0.0	1.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	3.7	3.7	0.5	4.2	0.0	0.1	0.0	1.0	0.0	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	468	681	716	637	2255	0	342	0	85	246	99	0
V/C Ratio(X)	0.00	0.43	0.43	0.11	0.44	0.00	0.01	0.00	0.65	0.00	0.00	0.00
Avail Cap(c_a), veh/h	1084	1720	1808	1142	3675	0	1514	0	1128	428	352	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	6.1	6.1	3.4	2.7	0.0	13.2	0.0	13.6	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.7	0.6	0.0	0.2	0.0	0.0	0.0	6.0	0.0	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.7	0.7	0.0	0.1	0.0	0.0	0.0	0.4	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	6.8	6.8	3.5	2.9	0.0	13.2	0.0	19.6	0.0	0.0	0.0
LnGrp LOS		A	A	A	A		B		B			
Approach Vol, veh/h		602			1071			60			0	
Approach Delay, s/veh		6.8			2.9			19.1			0.0	
Approach LOS		A			A			B				

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.6	16.6		6.0	0.0	23.2		6.0				
Change Period (Y+Rc), s	4.0	4.5		4.5	4.0	4.5		4.5				
Max Green Setting (Gmax), s	11.0	30.5		5.5	11.0	30.5		20.5				
Max Q Clear Time (g_c+I1), s	2.5	5.7		0.0	0.0	6.2		3.0				
Green Ext Time (p_c), s	0.0	5.6		0.0	0.0	10.9		0.2				

Intersection Summary	
HCM 7th Control Delay, s/veh	4.8
HCM 7th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	365	350	30	130	450	800	45	1080	125	430	720	675
Future Volume (veh/h)	365	350	30	130	450	800	45	1080	125	430	720	675
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1752	1752	1752	1841	1841	1841	1811	1811	1811	1826	1826	1826
Adj Flow Rate, veh/h	380	365	31	135	469	0	47	1125	0	448	750	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	10	10	10	4	4	4	6	6	6	5	5	5
Cap, veh/h	460	706	60	198	501		59	1121		529	1555	
Arrive On Green	0.14	0.23	0.23	0.06	0.14	0.00	0.03	0.33	0.00	0.16	0.45	0.00
Sat Flow, veh/h	3237	3106	262	3401	3497	1560	1725	3441	1535	3374	3469	1547
Grp Volume(v), veh/h	380	195	201	135	469	0	47	1125	0	448	750	0
Grp Sat Flow(s),veh/h/ln	1618	1664	1705	1700	1749	1560	1725	1721	1535	1687	1735	1547
Q Serve(g_s), s	11.6	10.4	10.5	3.9	13.4	0.0	2.7	33.0	0.0	13.1	15.4	0.0
Cycle Q Clear(g_c), s	11.6	10.4	10.5	3.9	13.4	0.0	2.7	33.0	0.0	13.1	15.4	0.0
Prop In Lane	1.00		0.15	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	460	378	387	198	501		59	1121		529	1555	
V/C Ratio(X)	0.83	0.51	0.52	0.68	0.94		0.79	1.00		0.85	0.48	
Avail Cap(c_a), veh/h	1039	403	412	319	501		162	1121		883	1555	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	42.2	34.3	34.3	46.8	42.9	0.0	48.5	34.1	0.0	41.5	19.7	0.0
Incr Delay (d2), s/veh	2.4	0.7	0.7	2.5	25.2	0.0	13.3	27.7	0.0	2.6	0.4	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.2	7.5	7.7	3.1	11.9	0.0	2.4	23.5	0.0	9.1	9.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	44.6	34.9	35.0	49.3	68.1	0.0	61.8	61.9	0.0	44.1	20.1	0.0
LnGrp LOS	D	C	C	D	E		E	F		D	C	
Approach Vol, veh/h		776			604			1172			1198	
Approach Delay, s/veh		39.7			63.9			61.9			29.1	
Approach LOS		D			E			E			C	

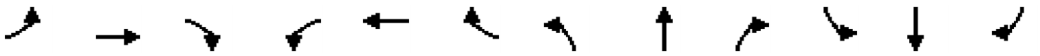
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.4	40.0	11.4	28.5	9.0	52.4	19.9	20.0
Change Period (Y+Rc), s	5.5	7.0	5.5	5.5	5.5	7.0	5.5	5.5
Max Green Setting (Gmax), s	26.5	33.0	9.5	24.5	9.5	33.0	32.5	14.5
Max Q Clear Time (g_c+I1), s	15.1	35.0	5.9	12.5	4.7	17.4	13.6	15.4
Green Ext Time (p_c), s	0.8	0.0	0.1	1.3	0.0	6.4	0.8	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	47.1
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

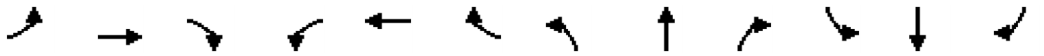
Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	5	15	70	10	30	10	710	20	2	825	10
Future Volume (veh/h)	10	5	15	70	10	30	10	710	20	2	825	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1885	1885	1885	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	11	5	16	74	11	32	11	747	21	2	868	11
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	1	1	1	2	2	2	1	1	1
Cap, veh/h	154	65	105	249	32	54	424	1235	35	493	1268	16
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.68	0.68	0.68	0.68	0.68	0.68
Sat Flow, veh/h	312	501	813	856	245	414	631	1809	51	705	1857	24
Grp Volume(v), veh/h	32	0	0	117	0	0	11	0	768	2	0	879
Grp Sat Flow(s),veh/h/ln	1627	0	0	1515	0	0	631	0	1860	705	0	1880
Q Serve(g_s), s	0.0	0.0	0.0	2.3	0.0	0.0	0.5	0.0	9.5	0.1	0.0	11.9
Cycle Q Clear(g_c), s	0.7	0.0	0.0	3.0	0.0	0.0	12.3	0.0	9.5	9.6	0.0	11.9
Prop In Lane	0.34		0.50	0.63		0.27	1.00		0.03	1.00		0.01
Lane Grp Cap(c), veh/h	324	0	0	334	0	0	424	0	1270	493	0	1284
V/C Ratio(X)	0.10	0.00	0.00	0.35	0.00	0.00	0.03	0.00	0.60	0.00	0.00	0.68
Avail Cap(c_a), veh/h	874	0	0	870	0	0	823	0	2446	939	0	2473
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.5	0.0	0.0	17.4	0.0	0.0	7.7	0.0	3.6	6.2	0.0	4.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.8	0.0	0.0	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.0	1.0	0.0	0.0	0.1	0.0	1.4	0.0	0.0	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	16.5	0.0	0.0	17.9	0.0	0.0	7.7	0.0	4.4	6.2	0.0	5.1
LnGrp LOS	B			B			A		A	A		A
Approach Vol, veh/h		32			117			779			881	
Approach Delay, s/veh		16.5			17.9			4.5			5.1	
Approach LOS		B			B			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		33.1		9.5		33.1		9.5				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		56.0		21.0		56.0		21.0				
Max Q Clear Time (g_c+I1), s		13.9		5.0		14.3		2.7				
Green Ext Time (p_c), s		15.2		0.4		12.3		0.1				

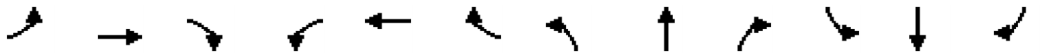
Intersection Summary												
HCM 7th Control Delay, s/veh			5.9									
HCM 7th LOS			A									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	20	90	40	10	10	85	625	20	5	765	75
Future Volume (veh/h)	95	20	90	40	10	10	85	625	20	5	765	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.97	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1870	1870	1870	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	103	22	98	43	11	11	92	679	22	5	832	82
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	2	2	2	2	2	2	1	1	1
Cap, veh/h	308	250	210	296	115	115	378	1114	36	439	1070	875
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.06	0.62	0.62	0.01	0.57	0.57
Sat Flow, veh/h	1369	1856	1561	1264	854	854	1781	1799	58	1795	1885	1542
Grp Volume(v), veh/h	103	22	98	43	0	22	92	0	701	5	832	82
Grp Sat Flow(s),veh/h/ln	1369	1856	1561	1264	0	1709	1781	0	1857	1795	1885	1542
Q Serve(g_s), s	3.7	0.5	3.0	1.6	0.0	0.6	1.0	0.0	12.0	0.1	17.7	1.3
Cycle Q Clear(g_c), s	4.3	0.5	3.0	2.1	0.0	0.6	1.0	0.0	12.0	0.1	17.7	1.3
Prop In Lane	1.00		1.00	1.00		0.50	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	308	250	210	296	0	230	378	0	1150	439	1070	875
V/C Ratio(X)	0.33	0.09	0.47	0.15	0.00	0.10	0.24	0.00	0.61	0.01	0.78	0.09
Avail Cap(c_a), veh/h	678	752	632	638	0	693	655	0	1452	811	1473	1205
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.5	19.6	20.7	20.6	0.0	19.7	7.4	0.0	6.0	5.6	8.7	5.1
Incr Delay (d2), s/veh	0.5	0.1	1.2	0.2	0.0	0.1	0.2	0.0	0.8	0.0	2.4	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.2	1.1	0.5	0.0	0.2	0.3	0.0	3.2	0.0	5.7	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	22.0	19.8	21.9	20.7	0.0	19.8	7.6	0.0	6.8	5.6	11.1	5.2
LnGrp LOS	C	B	C	C		B	A		A	A	B	A
Approach Vol, veh/h		223			65			793			919	
Approach Delay, s/veh		21.7			20.4			6.9			10.5	
Approach LOS		C			C			A			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.9	33.9		11.0	4.3	36.6		11.0				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	11.0	40.5		21.0	11.0	40.5		21.0				
Max Q Clear Time (g_c+I1), s	3.0	19.7		4.1	2.1	14.0		6.3				
Green Ext Time (p_c), s	0.1	9.7		0.1	0.0	8.2		0.5				

Intersection Summary												
HCM 7th Control Delay, s/veh			10.7									
HCM 7th LOS			B									

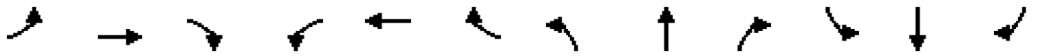


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	10	145	20	10	3	155	605	10	15	790	130
Future Volume (veh/h)	160	10	145	20	10	3	155	605	10	15	790	130
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1811	1811	1811	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	168	11	153	21	11	3	163	637	11	16	832	137
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	6	6	6	2	2	2	2	2	2
Cap, veh/h	566	28	396	382	252	69	293	1699	29	414	1445	238
Arrive On Green	0.10	0.27	0.27	0.02	0.18	0.18	0.48	0.48	0.48	0.48	0.48	0.48
Sat Flow, veh/h	1795	107	1486	1725	1370	374	579	3572	62	781	3040	501
Grp Volume(v), veh/h	168	0	164	21	0	14	163	317	331	16	486	483
Grp Sat Flow(s),veh/h/ln	1795	0	1593	1725	0	1743	579	1777	1857	781	1777	1763
Q Serve(g_s), s	3.8	0.0	4.6	0.5	0.0	0.4	15.2	6.2	6.2	0.7	10.8	10.8
Cycle Q Clear(g_c), s	3.8	0.0	4.6	0.5	0.0	0.4	26.0	6.2	6.2	7.0	10.8	10.8
Prop In Lane	1.00		0.93	1.00		0.21	1.00		0.03	1.00		0.28
Lane Grp Cap(c), veh/h	566	0	425	382	0	321	293	845	883	414	845	839
V/C Ratio(X)	0.30	0.00	0.39	0.05	0.00	0.04	0.56	0.37	0.38	0.04	0.58	0.58
Avail Cap(c_a), veh/h	1071	0	1602	1010	0	1753	293	845	883	414	845	839
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.9	0.0	16.4	17.5	0.0	18.4	19.8	9.2	9.2	11.4	10.4	10.4
Incr Delay (d2), s/veh	0.2	0.0	0.9	0.0	0.0	0.1	2.0	0.2	0.2	0.0	0.8	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	1.6	0.2	0.0	0.1	2.0	2.0	2.1	0.1	3.6	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.1	0.0	17.3	17.6	0.0	18.4	21.8	9.4	9.3	11.4	11.2	11.2
LnGrp LOS	B		B	B		B	C	A	A	B	B	B
Approach Vol, veh/h		332			35			811			985	
Approach Delay, s/veh		15.7			17.9			11.9			11.2	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.1	19.6		30.0	9.6	15.1		30.0				
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	21.0	55.0		26.0	21.0	55.0		26.0				
Max Q Clear Time (g_c+I1), s	2.5	6.6		12.8	5.8	2.4		28.0				
Green Ext Time (p_c), s	0.0	1.8		4.6	0.3	0.1		0.0				

Intersection Summary			
HCM 7th Control Delay, s/veh		12.2	
HCM 7th LOS		B	

Notes
User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	0	155	0	0	0	145	730	0	0	875	75
Future Volume (veh/h)	45	0	155	0	0	0	145	730	0	0	875	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.98		0.98	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1870	1870	1870	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	46	0	160	0	0	0	149	753	0	0	902	77
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	2	2	2	1	1	1	2	2	2
Cap, veh/h	406	0	263	111	310	0	192	2161	0	111	1440	123
Arrive On Green	0.17	0.00	0.17	0.00	0.00	0.00	0.11	0.60	0.00	0.00	0.43	0.43
Sat Flow, veh/h	1780	0	1584	1226	1870	0	1795	3676	0	710	3310	283
Grp Volume(v), veh/h	46	0	160	0	0	0	149	753	0	0	484	495
Grp Sat Flow(s),veh/h/ln	1780	0	1584	1226	1870	0	1795	1791	0	710	1777	1816
Q Serve(g_s), s	1.4	0.0	6.1	0.0	0.0	0.0	5.3	6.9	0.0	0.0	13.8	13.8
Cycle Q Clear(g_c), s	1.4	0.0	6.1	0.0	0.0	0.0	5.3	6.9	0.0	0.0	13.8	13.8
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		0.16
Lane Grp Cap(c), veh/h	406	0	263	111	310	0	192	2161	0	111	773	790
V/C Ratio(X)	0.11	0.00	0.61	0.00	0.00	0.00	0.78	0.35	0.00	0.00	0.63	0.63
Avail Cap(c_a), veh/h	740	0	560	341	662	0	580	2865	0	403	1503	1536
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	23.2	0.0	25.2	0.0	0.0	0.0	28.3	6.5	0.0	0.0	14.3	14.3
Incr Delay (d2), s/veh	0.1	0.0	1.4	0.0	0.0	0.0	4.1	0.1	0.0	0.0	1.3	1.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	2.3	0.0	0.0	0.0	2.4	2.1	0.0	0.0	5.1	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	23.3	0.0	26.5	0.0	0.0	0.0	32.4	6.6	0.0	0.0	15.5	15.5
LnGrp LOS	C		C				C	A			B	B
Approach Vol, veh/h		206			0			902			979	
Approach Delay, s/veh		25.8			0.0			10.9			15.5	
Approach LOS		C						B			B	

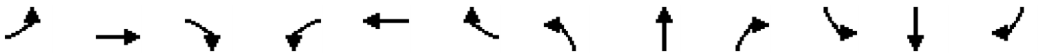
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	10.9	36.3		17.8		47.2		17.8				
Change Period (Y+Rc), s	4.0	* 8		7.0		8.0		7.0				
Max Green Setting (Gmax), s	21.0	* 55		23.0		52.0		23.0				
Max Q Clear Time (g_c+I1), s	7.3	15.8		8.1		8.9		0.0				
Green Ext Time (p_c), s	0.2	12.5		0.7		9.7		0.0				

Intersection Summary												
HCM 7th Control Delay, s/veh			14.5									
HCM 7th LOS			B									

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



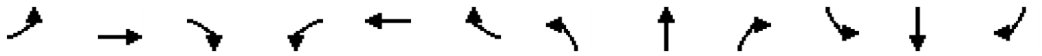
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	500	220	120	370	280	175	445	60	535	505	15
Future Volume (veh/h)	40	500	220	120	370	280	175	445	60	535	505	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1885	1885	1885	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	41	515	227	124	381	289	180	459	62	552	521	15
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	1	1	1	2	2	2	1	1	1
Cap, veh/h	55	646	483	158	856	692	223	848	114	682	621	18
Arrive On Green	0.03	0.18	0.18	0.09	0.24	0.24	0.13	0.27	0.27	0.20	0.34	0.34
Sat Flow, veh/h	1781	3554	1563	1795	3582	1588	1781	3137	421	3483	1822	52
Grp Volume(v), veh/h	41	515	227	124	381	289	180	259	262	552	0	536
Grp Sat Flow(s),veh/h/ln	1781	1777	1563	1795	1791	1588	1781	1777	1782	1742	0	1874
Q Serve(g_s), s	1.7	10.2	8.7	5.0	6.7	9.3	7.3	9.2	9.3	11.2	0.0	19.5
Cycle Q Clear(g_c), s	1.7	10.2	8.7	5.0	6.7	9.3	7.3	9.2	9.3	11.2	0.0	19.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.24	1.00		0.03
Lane Grp Cap(c), veh/h	55	646	483	158	856	692	223	480	482	682	0	639
V/C Ratio(X)	0.75	0.80	0.47	0.78	0.45	0.42	0.81	0.54	0.54	0.81	0.00	0.84
Avail Cap(c_a), veh/h	253	722	516	255	856	692	483	722	724	1416	0	762
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.5	28.9	20.7	33.0	23.9	14.4	31.4	23.0	23.0	28.4	0.0	22.5
Incr Delay (d2), s/veh	11.6	5.4	0.5	5.2	0.3	0.3	4.2	1.4	1.5	1.5	0.0	8.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	4.6	3.0	2.3	2.7	3.0	3.3	3.9	3.9	4.6	0.0	9.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	47.1	34.3	21.3	38.2	24.2	14.7	35.6	24.4	24.5	29.8	0.0	30.4
LnGrp LOS	D	C	C	D	C	B	D	C	C	C		C
Approach Vol, veh/h		783			794			701			1088	
Approach Delay, s/veh		31.2			22.9			27.3			30.1	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.2	30.1	6.8	22.6	19.4	24.9	11.0	18.4
Change Period (Y+Rc), s	5.0	5.0	4.5	5.0	5.0	5.0	4.5	5.0
Max Green Setting (Gmax), s	20.0	30.0	10.5	15.0	30.0	30.0	10.5	15.0
Max Q Clear Time (g_c+I1), s	9.3	21.5	3.7	11.3	13.2	11.3	7.0	12.2
Green Ext Time (p_c), s	0.2	3.1	0.0	1.1	1.3	4.4	0.1	1.0

Intersection Summary	
HCM 7th Control Delay, s/veh	28.1
HCM 7th LOS	C

Notes

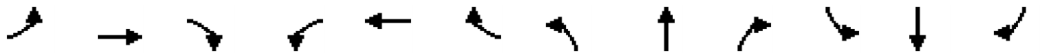
User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	45	45	20	45	45	45	490	20	20	585	155
Future Volume (veh/h)	115	45	45	20	45	45	45	490	20	20	585	155
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.96	0.97		0.98	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1900	1900	1900	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	119	46	46	21	46	46	46	505	21	21	603	160
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	0	0	0	3	3	3	3	3	3
Cap, veh/h	344	134	134	304	86	86	249	853	35	414	653	173
Arrive On Green	0.08	0.16	0.16	0.02	0.10	0.10	0.04	0.48	0.48	0.02	0.47	0.47
Sat Flow, veh/h	1795	844	844	1810	863	863	1767	1768	74	1767	1404	373
Grp Volume(v), veh/h	119	0	92	21	0	92	46	0	526	21	0	763
Grp Sat Flow(s),veh/h/ln	1795	0	1688	1810	0	1726	1767	0	1842	1767	0	1776
Q Serve(g_s), s	2.9	0.0	2.5	0.5	0.0	2.6	0.7	0.0	10.7	0.3	0.0	20.8
Cycle Q Clear(g_c), s	2.9	0.0	2.5	0.5	0.0	2.6	0.7	0.0	10.7	0.3	0.0	20.8
Prop In Lane	1.00		0.50	1.00		0.50	1.00		0.04	1.00		0.21
Lane Grp Cap(c), veh/h	344	0	267	304	0	173	249	0	889	414	0	826
V/C Ratio(X)	0.35	0.00	0.34	0.07	0.00	0.53	0.18	0.00	0.59	0.05	0.00	0.92
Avail Cap(c_a), veh/h	585	0	685	477	0	700	729	0	1263	925	0	1218
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.0	0.0	19.4	20.3	0.0	22.1	11.1	0.0	9.7	7.9	0.0	13.0
Incr Delay (d2), s/veh	0.2	0.0	0.3	0.0	0.0	0.9	0.1	0.0	0.2	0.0	0.0	6.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.9	0.2	0.0	1.0	0.2	0.0	3.4	0.1	0.0	8.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	18.2	0.0	19.7	20.3	0.0	23.1	11.2	0.0	9.9	7.9	0.0	19.8
LnGrp LOS	B		B	C		C	B		A	A		B
Approach Vol, veh/h		211			113			572			784	
Approach Delay, s/veh		18.8			22.6			10.0			19.5	
Approach LOS		B			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.9	28.6	8.1	9.2	5.0	29.5	5.0	12.2
Change Period (Y+Rc), s	4.0	4.5	4.0	4.0	4.0	4.5	4.0	4.0
Max Green Setting (Gmax), s	16.0	35.5	11.0	21.0	16.0	35.5	6.0	21.0
Max Q Clear Time (g_c+I1), s	2.7	22.8	4.9	4.6	2.3	12.7	2.5	4.5
Green Ext Time (p_c), s	0.0	1.2	0.0	0.1	0.0	0.8	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	16.4
HCM 7th LOS	B



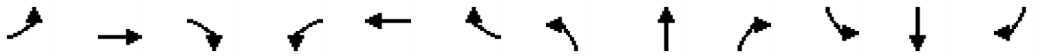
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	155	45	500	10	40	55	295	835	15	40	1210	180
Future Volume (veh/h)	155	45	500	10	40	55	295	835	15	40	1210	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1752	1752	1752	1856	1856	1856	1870	1870	1870
Adj Flow Rate, veh/h	158	46	510	10	41	56	301	852	15	41	1235	184
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	10	10	10	3	3	3	2	2	2
Cap, veh/h	183	325	565	16	141	116	327	2249	1002	53	1715	764
Arrive On Green	0.10	0.17	0.17	0.01	0.08	0.08	0.19	0.64	0.64	0.03	0.48	0.48
Sat Flow, veh/h	1781	1870	1563	1668	1752	1440	1767	3526	1571	1781	3554	1583
Grp Volume(v), veh/h	158	46	510	10	41	56	301	852	15	41	1235	184
Grp Sat Flow(s),veh/h/ln	1781	1870	1563	1668	1752	1440	1767	1763	1571	1781	1777	1583
Q Serve(g_s), s	11.4	2.7	22.6	0.8	2.9	4.8	21.7	15.0	0.5	3.0	35.8	8.8
Cycle Q Clear(g_c), s	11.4	2.7	22.6	0.8	2.9	4.8	21.7	15.0	0.5	3.0	35.8	8.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	183	325	565	16	141	116	327	2249	1002	53	1715	764
V/C Ratio(X)	0.87	0.14	0.90	0.64	0.29	0.48	0.92	0.38	0.01	0.77	0.72	0.24
Avail Cap(c_a), veh/h	219	325	565	205	278	228	421	2249	1002	288	1715	764
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.5	45.5	39.6	64.2	56.3	57.2	52.0	11.2	8.6	62.6	26.7	19.7
Incr Delay (d2), s/veh	22.5	0.1	17.3	23.9	0.7	1.9	20.4	0.5	0.0	13.6	2.6	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	10.3	2.3	24.8	0.8	2.4	3.3	16.5	9.0	0.3	2.7	20.8	6.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	79.9	45.6	56.9	88.1	56.9	59.0	72.4	11.7	8.6	76.2	29.3	20.4
LnGrp LOS	E	D	E	F	E	E	E	B	A	E	C	C
Approach Vol, veh/h		714			107			1168			1460	
Approach Delay, s/veh		61.3			60.9			27.3			29.5	
Approach LOS		E			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	28.1	68.7	17.3	15.9	7.9	88.9	5.2	28.0
Change Period (Y+Rc), s	4.0	6.0	4.0	5.4	4.0	6.0	4.0	5.4
Max Green Setting (Gmax), s	31.0	43.0	16.0	20.6	21.0	53.0	16.0	20.6
Max Q Clear Time (g_c+I1), s	23.7	37.8	13.4	6.8	5.0	17.0	2.8	24.6
Green Ext Time (p_c), s	0.3	4.2	0.0	0.2	0.0	10.3	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	36.3
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	1065	55	140	840	0	30	0	80	0	0	1
Future Volume (veh/h)	1	1065	55	140	840	0	30	0	80	0	0	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	0.98		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1870	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	1	1145	59	151	903	0	32	0	86	0	0	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	2	2	2	0	0	0	0	0	0
Cap, veh/h	450	1735	89	464	2162	0	314	0	183	152	0	183
Arrive On Green	0.00	0.50	0.50	0.11	0.61	0.00	0.12	0.00	0.12	0.00	0.00	0.12
Sat Flow, veh/h	1795	3464	178	1781	3647	0	1409	0	1577	1332	0	1577
Grp Volume(v), veh/h	1	592	612	151	903	0	32	0	86	0	0	1
Grp Sat Flow(s),veh/h/ln	1795	1791	1851	1781	1777	0	1409	0	1577	1332	0	1577
Q Serve(g_s), s	0.0	11.7	11.7	1.5	6.3	0.0	1.0	0.0	2.4	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	11.7	11.7	1.5	6.3	0.0	1.0	0.0	2.4	0.0	0.0	0.0
Prop In Lane	1.00		0.10	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	450	897	928	464	2162	0	314	0	183	152	0	183
V/C Ratio(X)	0.00	0.66	0.66	0.33	0.42	0.00	0.10	0.00	0.47	0.00	0.00	0.01
Avail Cap(c_a), veh/h	863	1151	1190	683	2284	0	760	0	681	152	0	183
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	5.9	8.8	8.8	6.1	4.9	0.0	19.0	0.0	19.6	0.0	0.0	18.6
Incr Delay (d2), s/veh	0.0	1.3	1.3	0.2	0.2	0.0	0.1	0.0	1.4	0.0	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.4	3.5	0.3	1.3	0.0	0.3	0.0	0.9	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	5.9	10.2	10.1	6.3	5.1	0.0	19.1	0.0	21.0	0.0	0.0	18.6
LnGrp LOS	A	B	B	A	A		B		C			B
Approach Vol, veh/h		1205			1054			118			1	
Approach Delay, s/veh		10.1			5.3			20.5			18.6	
Approach LOS		B			A			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.2	28.3		10.0	4.1	33.4		10.0				
Change Period (Y+Rc), s	4.0	4.5		4.5	4.0	4.5		4.5				
Max Green Setting (Gmax), s	11.0	30.5		5.5	11.0	30.5		20.5				
Max Q Clear Time (g_c+I1), s	3.5	13.7		2.0	2.0	8.3		4.4				
Green Ext Time (p_c), s	0.1	10.1		0.0	0.0	9.2		0.4				

Intersection Summary	
HCM 7th Control Delay, s/veh	8.5
HCM 7th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	715	810	100	145	510	505	55	805	180	790	1115	665
Future Volume (veh/h)	715	810	100	145	510	505	55	805	180	790	1115	665
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1856	1856	1856	1870	1870	1870
Adj Flow Rate, veh/h	730	827	102	148	520	0	56	821	0	806	1138	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	3	3	3	2	2	2
Cap, veh/h	796	918	113	202	415		72	902		732	1517	
Arrive On Green	0.23	0.29	0.29	0.06	0.12	0.00	0.04	0.26	0.00	0.21	0.43	0.00
Sat Flow, veh/h	3483	3203	395	3483	3582	1598	1767	3526	1572	3456	3554	1585
Grp Volume(v), veh/h	730	462	467	148	520	0	56	821	0	806	1138	0
Grp Sat Flow(s),veh/h/ln	1742	1791	1808	1742	1791	1598	1767	1763	1572	1728	1777	1585
Q Serve(g_s), s	25.6	31.1	31.1	5.2	14.5	0.0	3.9	28.3	0.0	26.5	33.8	0.0
Cycle Q Clear(g_c), s	25.6	31.1	31.1	5.2	14.5	0.0	3.9	28.3	0.0	26.5	33.8	0.0
Prop In Lane	1.00		0.22	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	796	513	518	202	415		72	902		732	1517	
V/C Ratio(X)	0.92	0.90	0.90	0.73	1.25		0.78	0.91		1.10	0.75	
Avail Cap(c_a), veh/h	905	513	518	265	415		134	930		732	1517	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	47.1	42.9	42.9	58.0	55.3	0.0	59.4	45.2	0.0	49.3	30.2	0.0
Incr Delay (d2), s/veh	12.4	18.6	18.5	5.5	132.0	0.0	10.5	13.2	0.0	64.3	2.4	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	18.1	22.8	22.9	4.4	22.1	0.0	3.4	19.3	0.0	25.5	19.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	59.5	61.5	61.4	63.5	187.3	0.0	69.9	58.3	0.0	113.6	32.7	0.0
LnGrp LOS	E	E	E	E	F		E	E		F	C	
Approach Vol, veh/h		1659			668			877			1944	
Approach Delay, s/veh		60.6			159.9			59.1			66.2	
Approach LOS		E			F			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	32.0	39.0	12.7	41.3	10.6	60.4	34.1	20.0
Change Period (Y+Rc), s	5.5	7.0	5.5	5.5	5.5	7.0	5.5	5.5
Max Green Setting (Gmax), s	26.5	33.0	9.5	24.5	9.5	33.0	32.5	14.5
Max Q Clear Time (g_c+I1), s	28.5	30.3	7.2	33.1	5.9	35.8	27.6	16.5
Green Ext Time (p_c), s	0.0	1.7	0.1	0.0	0.0	0.0	1.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	75.4
HCM 7th LOS	E

Notes

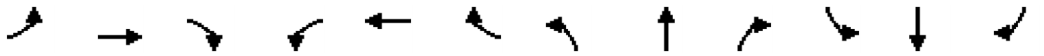
User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	10	13	43	10	5	13	668	18	35	496	10
Future Volume (veh/h)	20	10	13	43	10	5	13	668	18	35	496	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1811	1811	1781	1781	1781	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	22	11	14	47	11	5	14	726	20	38	539	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	8	8	8	4	4	4	4	4	4
Cap, veh/h	214	77	60	295	57	15	618	1146	32	484	1156	24
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.64	0.64	0.64	0.64	0.64	0.64
Sat Flow, veh/h	495	590	460	895	439	115	843	1781	49	703	1797	37
Grp Volume(v), veh/h	47	0	0	63	0	0	14	0	746	38	0	550
Grp Sat Flow(s),veh/h/ln	1545	0	0	1449	0	0	843	0	1831	703	0	1834
Q Serve(g_s), s	0.0	0.0	0.0	0.4	0.0	0.0	0.3	0.0	8.7	1.2	0.0	5.4
Cycle Q Clear(g_c), s	0.9	0.0	0.0	1.2	0.0	0.0	5.7	0.0	8.7	9.9	0.0	5.4
Prop In Lane	0.47		0.30	0.75		0.08	1.00		0.03	1.00		0.02
Lane Grp Cap(c), veh/h	351	0	0	367	0	0	618	0	1177	484	0	1180
V/C Ratio(X)	0.13	0.00	0.00	0.17	0.00	0.00	0.02	0.00	0.63	0.08	0.00	0.47
Avail Cap(c_a), veh/h	1039	0	0	1009	0	0	1414	0	2906	1148	0	2912
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.7	0.0	0.0	13.9	0.0	0.0	4.7	0.0	3.8	6.8	0.0	3.2
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.0	1.0	0.1	0.0	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.0	0.4	0.0	0.0	0.0	0.0	1.1	0.1	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	13.9	0.0	0.0	14.0	0.0	0.0	4.7	0.0	4.8	6.9	0.0	3.7
LnGrp LOS	B			B			A		A	A		A
Approach Vol, veh/h		47			63			760			588	
Approach Delay, s/veh		13.9			14.0			4.8			3.9	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	26.7	8.6	26.7	8.6
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	56.0	21.0	56.0	21.0
Max Q Clear Time (g_c+I1), s	11.9	3.2	10.7	2.9
Green Ext Time (p_c), s	8.1	0.2	12.0	0.1

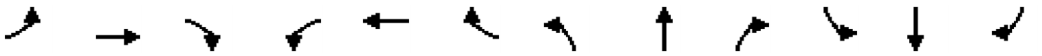
Intersection Summary	
HCM 7th Control Delay, s/veh	5.1
HCM 7th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	4	46	35	5	5	37	559	10	5	492	35
Future Volume (veh/h)	50	4	46	35	5	5	37	559	10	5	492	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1826	1826	1826	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	54	4	49	38	5	5	40	601	11	5	529	38
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	7	7	7	5	5	5	4	4	4	4	4	4
Cap, veh/h	377	239	203	378	111	111	487	912	17	420	874	738
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.04	0.51	0.51	0.01	0.47	0.47
Sat Flow, veh/h	1349	1796	1522	1319	838	838	1753	1802	33	1753	1841	1555
Grp Volume(v), veh/h	54	4	49	38	0	10	40	0	612	5	529	38
Grp Sat Flow(s),veh/h/ln	1349	1796	1522	1319	0	1675	1753	0	1835	1753	1841	1555
Q Serve(g_s), s	1.3	0.1	1.0	0.9	0.0	0.2	0.4	0.0	8.7	0.1	7.5	0.5
Cycle Q Clear(g_c), s	1.5	0.1	1.0	1.0	0.0	0.2	0.4	0.0	8.7	0.1	7.5	0.5
Prop In Lane	1.00		1.00	1.00		0.50	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	377	239	203	378	0	223	487	0	929	420	874	738
V/C Ratio(X)	0.14	0.02	0.24	0.10	0.00	0.04	0.08	0.00	0.66	0.01	0.61	0.05
Avail Cap(c_a), veh/h	1003	1072	909	990	0	1000	971	0	2112	959	2119	1790
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.9	13.2	13.7	13.7	0.0	13.3	5.1	0.0	6.4	5.6	6.8	5.0
Incr Delay (d2), s/veh	0.1	0.0	0.5	0.1	0.0	0.1	0.0	0.0	1.2	0.0	1.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.3	0.2	0.0	0.1	0.1	0.0	2.1	0.0	1.9	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.1	13.3	14.1	13.8	0.0	13.4	5.2	0.0	7.7	5.6	7.8	5.0
LnGrp LOS	B	B	B	B		B	A		A	A	A	A
Approach Vol, veh/h		107			48			652			572	
Approach Delay, s/veh		14.1			13.7			7.5			7.6	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.3	21.2		8.7	4.2	22.3		8.7				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	11.0	40.5		21.0	11.0	40.5		21.0				
Max Q Clear Time (g_c+I1), s	2.4	9.5		3.0	2.1	10.7		3.5				
Green Ext Time (p_c), s	0.0	6.2		0.1	0.0	7.1		0.2				

Intersection Summary												
HCM 7th Control Delay, s/veh			8.3									
HCM 7th LOS			A									



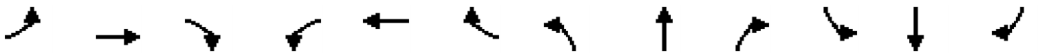
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	10	71	15	5	1	127	611	5	5	438	125
Future Volume (veh/h)	105	10	71	15	5	1	127	611	5	5	438	125
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1900	1900	1900	1826	1826	1826	1841	1841	1841
Adj Flow Rate, veh/h	115	11	78	16	5	1	140	671	5	5	481	137
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	4	4	4	0	0	0	5	5	5	4	4	4
Cap, veh/h	596	55	392	487	345	69	383	1457	11	366	1109	314
Arrive On Green	0.07	0.28	0.28	0.02	0.22	0.22	0.41	0.41	0.41	0.41	0.41	0.41
Sat Flow, veh/h	1753	196	1391	1810	1536	307	784	3529	26	749	2687	760
Grp Volume(v), veh/h	115	0	89	16	0	6	140	330	346	5	312	306
Grp Sat Flow(s),veh/h/ln	1753	0	1587	1810	0	1844	784	1735	1821	749	1749	1698
Q Serve(g_s), s	2.2	0.0	1.9	0.3	0.0	0.1	7.0	6.2	6.2	0.2	5.7	5.8
Cycle Q Clear(g_c), s	2.2	0.0	1.9	0.3	0.0	0.1	12.8	6.2	6.2	6.4	5.7	5.8
Prop In Lane	1.00		0.88	1.00		0.17	1.00		0.01	1.00		0.45
Lane Grp Cap(c), veh/h	596	0	447	487	0	414	383	716	752	366	722	701
V/C Ratio(X)	0.19	0.00	0.20	0.03	0.00	0.01	0.37	0.46	0.46	0.01	0.43	0.44
Avail Cap(c_a), veh/h	1286	0	1940	1302	0	2255	512	1003	1053	490	1011	982
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.4	0.0	12.3	13.1	0.0	13.6	14.0	9.6	9.6	11.9	9.4	9.5
Incr Delay (d2), s/veh	0.1	0.0	0.3	0.0	0.0	0.0	0.4	0.3	0.3	0.0	0.3	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.6	0.1	0.0	0.0	1.1	1.9	2.0	0.0	1.8	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	11.5	0.0	12.6	13.1	0.0	13.6	14.5	9.9	9.9	11.9	9.7	9.8
LnGrp LOS	B		B	B		B	B	A	A	B	A	A
Approach Vol, veh/h		204			22			816			623	
Approach Delay, s/veh		12.0			13.2			10.7			9.8	
Approach LOS		B			B			B			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.7	17.7		22.6	7.3	15.1		22.6				
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	21.0	55.0		26.0	21.0	55.0		26.0				
Max Q Clear Time (g_c+I1), s	2.3	3.9		8.4	4.2	2.1		14.8				
Green Ext Time (p_c), s	0.0	0.9		3.0	0.2	0.0		3.3				

Intersection Summary												
HCM 7th Control Delay, s/veh			10.5									
HCM 7th LOS			B									

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	0	70	23	0	83	90	605	25	68	381	50
Future Volume (veh/h)	55	0	70	23	0	83	90	605	25	68	381	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1870	1856	1856	1856	1841	1841	1841
Adj Flow Rate, veh/h	63	0	80	26	0	94	102	688	28	77	433	57
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	1	1	1	2	2	2	3	3	3	4	4	4
Cap, veh/h	316	0	263	328	0	261	132	1665	68	395	974	128
Arrive On Green	0.17	0.00	0.17	0.17	0.00	0.17	0.07	0.48	0.48	0.31	0.31	0.31
Sat Flow, veh/h	1305	0	1586	1311	0	1574	1767	3452	140	721	3105	406
Grp Volume(v), veh/h	63	0	80	26	0	94	102	351	365	77	243	247
Grp Sat Flow(s),veh/h/ln	1305	0	1586	1311	0	1574	1767	1763	1829	721	1749	1763
Q Serve(g_s), s	1.9	0.0	1.9	0.8	0.0	2.3	2.4	5.5	5.5	3.5	4.7	4.8
Cycle Q Clear(g_c), s	4.2	0.0	1.9	2.6	0.0	2.3	2.4	5.5	5.5	3.5	4.7	4.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.08	1.00		0.23
Lane Grp Cap(c), veh/h	316	0	263	328	0	261	132	850	882	395	549	553
V/C Ratio(X)	0.20	0.00	0.30	0.08	0.00	0.36	0.77	0.41	0.41	0.19	0.44	0.45
Avail Cap(c_a), veh/h	804	0	855	818	0	849	870	2149	2230	1098	2255	2273
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.6	0.0	15.6	16.8	0.0	15.8	19.4	7.1	7.1	11.2	11.7	11.7
Incr Delay (d2), s/veh	0.2	0.0	0.4	0.1	0.0	0.5	5.8	0.5	0.5	0.4	0.9	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.0	0.0	1.1	0.4	0.0	1.4	2.0	2.8	2.9	0.9	2.9	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	17.8	0.0	16.0	16.8	0.0	16.3	25.1	7.6	7.6	11.6	12.5	12.5
LnGrp LOS	B		B	B		B	C	A	A	B	B	B
Approach Vol, veh/h		143			120			818			567	
Approach Delay, s/veh		16.8			16.4			9.8			12.4	
Approach LOS		B			B			A			B	

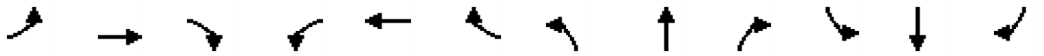
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	7.2	21.4		14.1		28.6		14.1				
Change Period (Y+Rc), s	4.0	* 8		7.0		8.0		7.0				
Max Green Setting (Gmax), s	21.0	* 55		23.0		52.0		23.0				
Max Q Clear Time (g_c+I1), s	4.4	6.8		6.2		7.5		4.6				
Green Ext Time (p_c), s	0.1	6.4		0.4		8.3		0.4				

Intersection Summary	
HCM 7th Control Delay, s/veh	11.8
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



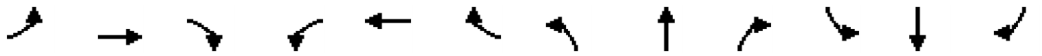
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	260	110	50	495	244	176	356	60	230	214	15
Future Volume (veh/h)	10	260	110	50	495	244	176	356	60	230	214	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1767	1767	1856	1856	1856	1856	1856	1856	1841	1841	1841
Adj Flow Rate, veh/h	10	268	113	52	510	252	181	367	62	237	221	15
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	9	9	9	3	3	3	3	3	3	4	4	4
Cap, veh/h	17	559	446	110	771	530	235	742	124	406	396	27
Arrive On Green	0.01	0.17	0.17	0.06	0.22	0.22	0.13	0.25	0.25	0.12	0.23	0.23
Sat Flow, veh/h	1682	3357	1484	1767	3526	1566	1767	3017	505	3401	1703	116
Grp Volume(v), veh/h	10	268	113	52	510	252	181	213	216	237	0	236
Grp Sat Flow(s),veh/h/ln	1682	1678	1484	1767	1763	1566	1767	1763	1760	1700	0	1819
Q Serve(g_s), s	0.3	3.5	2.8	1.4	6.4	6.1	4.8	5.0	5.1	3.2	0.0	5.5
Cycle Q Clear(g_c), s	0.3	3.5	2.8	1.4	6.4	6.1	4.8	5.0	5.1	3.2	0.0	5.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.29	1.00		0.06
Lane Grp Cap(c), veh/h	17	559	446	110	771	530	235	434	433	406	0	423
V/C Ratio(X)	0.57	0.48	0.25	0.47	0.66	0.48	0.77	0.49	0.50	0.58	0.00	0.56
Avail Cap(c_a), veh/h	367	1047	661	386	1099	676	735	1099	1097	2121	0	1134
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.7	18.2	12.8	21.8	17.2	12.6	20.2	15.6	15.6	20.0	0.0	16.3
Incr Delay (d2), s/veh	16.7	0.5	0.2	1.9	0.7	0.5	3.3	1.3	1.4	0.8	0.0	1.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	2.2	1.4	1.0	4.1	3.2	3.5	3.4	3.5	2.1	0.0	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	40.4	18.6	13.0	23.7	17.9	13.0	23.5	16.9	16.9	20.9	0.0	18.0
LnGrp LOS	D	B	B	C	B	B	C	B	B	C		B
Approach Vol, veh/h		391			814			610			473	
Approach Delay, s/veh		17.6			16.8			18.9			19.4	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.4	16.2	5.0	15.5	10.7	16.8	7.5	13.0
Change Period (Y+Rc), s	5.0	5.0	4.5	5.0	5.0	5.0	4.5	5.0
Max Green Setting (Gmax), s	20.0	30.0	10.5	15.0	30.0	30.0	10.5	15.0
Max Q Clear Time (g_c+I1), s	6.8	7.5	2.3	8.4	5.2	7.1	3.4	5.5
Green Ext Time (p_c), s	0.3	2.0	0.0	2.0	0.5	3.9	0.0	1.1

Intersection Summary	
HCM 7th Control Delay, s/veh	18.0
HCM 7th LOS	B

Notes

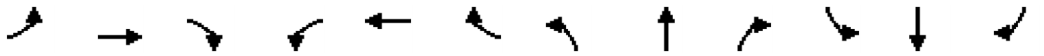
User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	113	30	50	3	20	15	35	468	10	15	316	38
Future Volume (veh/h)	113	30	50	3	20	15	35	468	10	15	316	38
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.98		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1826	1826	1826	1841	1841	1841	1826	1826	1826
Adj Flow Rate, veh/h	119	32	53	3	21	16	37	493	11	16	333	40
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	5	5	5	4	4	4	5	5	5
Cap, veh/h	414	85	141	299	55	42	424	610	14	328	514	62
Arrive On Green	0.08	0.14	0.14	0.00	0.06	0.06	0.03	0.34	0.34	0.02	0.32	0.32
Sat Flow, veh/h	1781	631	1045	1739	960	731	1753	1793	40	1739	1598	192
Grp Volume(v), veh/h	119	0	85	3	0	37	37	0	504	16	0	373
Grp Sat Flow(s),veh/h/ln	1781	0	1676	1739	0	1691	1753	0	1833	1739	0	1790
Q Serve(g_s), s	2.0	0.0	1.5	0.1	0.0	0.7	0.5	0.0	8.2	0.2	0.0	5.8
Cycle Q Clear(g_c), s	2.0	0.0	1.5	0.1	0.0	0.7	0.5	0.0	8.2	0.2	0.0	5.8
Prop In Lane	1.00		0.62	1.00		0.43	1.00		0.02	1.00		0.11
Lane Grp Cap(c), veh/h	414	0	226	299	0	97	424	0	624	328	0	576
V/C Ratio(X)	0.29	0.00	0.38	0.01	0.00	0.38	0.09	0.00	0.81	0.05	0.00	0.65
Avail Cap(c_a), veh/h	870	0	1077	612	0	1087	1221	0	1991	1150	0	1944
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.5	0.0	12.9	14.4	0.0	14.8	7.4	0.0	9.8	8.1	0.0	9.5
Incr Delay (d2), s/veh	0.1	0.0	0.4	0.0	0.0	0.9	0.0	0.0	1.0	0.0	0.0	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.5	0.0	0.0	0.2	0.1	0.0	2.3	0.1	0.0	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	12.7	0.0	13.3	14.4	0.0	15.7	7.5	0.0	10.8	8.1	0.0	10.0
LnGrp LOS	B		B	B		B	A		B	A		A
Approach Vol, veh/h		204			40			541			389	
Approach Delay, s/veh		12.9			15.6			10.5			9.9	
Approach LOS		B			B			B			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.1	15.0	6.6	5.9	4.5	15.6	4.1	8.4
Change Period (Y+Rc), s	4.0	4.5	4.0	4.0	4.0	4.5	4.0	4.0
Max Green Setting (Gmax), s	16.0	35.5	11.0	21.0	16.0	35.5	6.0	21.0
Max Q Clear Time (g_c+I1), s	2.5	7.8	4.0	2.7	2.2	10.2	2.1	3.5
Green Ext Time (p_c), s	0.0	0.5	0.0	0.0	0.0	0.7	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	10.9
HCM 7th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	50	191	10	39	15	364	1075	20	70	680	145
Future Volume (veh/h)	105	50	191	10	39	15	364	1075	20	70	680	145
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1722	1722	1722	1811	1811	1811	1781	1781	1781
Adj Flow Rate, veh/h	114	54	208	11	42	16	396	1168	22	76	739	158
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	5	12	12	12	6	6	6	8	8	8
Cap, veh/h	138	230	573	17	98	82	422	2220	990	96	1547	690
Arrive On Green	0.08	0.13	0.13	0.01	0.06	0.06	0.24	0.65	0.65	0.06	0.46	0.46
Sat Flow, veh/h	1739	1826	1540	1640	1722	1444	1725	3441	1535	1697	3385	1510
Grp Volume(v), veh/h	114	54	208	11	42	16	396	1168	22	76	739	158
Grp Sat Flow(s),veh/h/ln	1739	1826	1540	1640	1722	1444	1725	1721	1535	1697	1692	1510
Q Serve(g_s), s	7.7	3.2	11.8	0.8	2.8	1.3	27.0	21.9	0.6	5.3	18.2	7.6
Cycle Q Clear(g_c), s	7.7	3.2	11.8	0.8	2.8	1.3	27.0	21.9	0.6	5.3	18.2	7.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	138	230	573	17	98	82	422	2220	990	96	1547	690
V/C Ratio(X)	0.82	0.23	0.36	0.66	0.43	0.19	0.94	0.53	0.02	0.79	0.48	0.23
Avail Cap(c_a), veh/h	203	313	643	164	267	224	489	2220	990	368	1547	690
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.4	47.2	27.4	59.2	54.7	54.0	44.4	11.4	7.7	55.9	22.6	19.8
Incr Delay (d2), s/veh	10.5	0.2	0.1	23.4	1.8	0.7	23.5	0.9	0.0	8.5	1.1	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.8	2.6	7.7	0.8	2.3	0.9	19.7	11.6	0.4	4.3	11.2	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	64.9	47.4	27.6	82.6	56.5	54.7	67.9	12.3	7.7	64.4	23.7	20.5
LnGrp LOS	E	D	C	F	E	D	E	B	A	E	C	C
Approach Vol, veh/h		376			69			1586			973	
Approach Delay, s/veh		41.7			60.2			26.1			26.3	
Approach LOS		D			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	33.4	60.9	13.5	12.2	10.8	83.4	5.2	20.5
Change Period (Y+Rc), s	4.0	6.0	4.0	5.4	4.0	6.0	4.0	5.4
Max Green Setting (Gmax), s	34.0	34.0	14.0	18.6	26.0	42.0	12.0	20.6
Max Q Clear Time (g_c+I1), s	29.0	20.2	9.7	4.8	7.3	23.9	2.8	13.8
Green Ext Time (p_c), s	0.4	6.4	0.0	0.1	0.1	10.7	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	28.9
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	532	3	65	886	45	5	0	50	48	0	23
Future Volume (veh/h)	14	532	3	65	886	45	5	0	50	48	0	23
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1737	1737	1737	1856	1856	1856	1900	1900	1900	1870	1870	1870
Adj Flow Rate, veh/h	15	585	3	71	974	49	5	0	55	53	0	25
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	11	11	11	3	3	3	0	0	0	2	2	2
Cap, veh/h	407	1550	8	634	1780	90	312	0	152	284	0	150
Arrive On Green	0.02	0.46	0.46	0.08	0.52	0.52	0.09	0.00	0.09	0.09	0.00	0.09
Sat Flow, veh/h	1654	3367	17	1767	3411	172	1408	0	1610	1349	0	1585
Grp Volume(v), veh/h	15	287	301	71	503	520	5	0	55	53	0	25
Grp Sat Flow(s),veh/h/ln	1654	1650	1734	1767	1763	1820	1408	0	1610	1349	0	1585
Q Serve(g_s), s	0.2	4.1	4.1	0.7	6.9	6.9	0.1	0.0	1.2	1.4	0.0	0.5
Cycle Q Clear(g_c), s	0.2	4.1	4.1	0.7	6.9	6.9	0.6	0.0	1.2	2.5	0.0	0.5
Prop In Lane	1.00		0.01	1.00		0.09	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	407	759	798	634	920	950	312	0	152	284	0	150
V/C Ratio(X)	0.04	0.38	0.38	0.11	0.55	0.55	0.02	0.00	0.36	0.19	0.00	0.17
Avail Cap(c_a), veh/h	874	1396	1467	1023	1491	1539	980	0	915	362	0	242
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.2	6.4	6.4	4.1	5.8	5.8	15.3	0.0	15.3	16.5	0.0	15.0
Incr Delay (d2), s/veh	0.0	0.5	0.5	0.0	0.8	0.8	0.0	0.0	1.1	0.2	0.0	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.1	1.6	1.7	0.2	2.5	2.6	0.1	0.0	0.7	0.7	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	5.2	6.8	6.8	4.1	6.6	6.5	15.3	0.0	16.4	16.7	0.0	15.4
LnGrp LOS	A	A	A	A	A	A	B		B	B		B
Approach Vol, veh/h		603			1094			60			78	
Approach Delay, s/veh		6.8			6.4			16.3			16.3	
Approach LOS		A			A			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.1	21.1		7.9	4.8	23.3		7.9				
Change Period (Y+Rc), s	4.0	4.5		4.5	4.0	4.5		4.5				
Max Green Setting (Gmax), s	11.0	30.5		5.5	11.0	30.5		20.5				
Max Q Clear Time (g_c+I1), s	2.7	6.1		4.5	2.2	8.9		3.2				
Green Ext Time (p_c), s	0.0	5.4		0.0	0.0	9.9		0.2				

Intersection Summary	
HCM 7th Control Delay, s/veh	7.3
HCM 7th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	387	363	30	130	459	800	45	1080	125	430	720	687
Future Volume (veh/h)	387	363	30	130	459	800	45	1080	125	430	720	687
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1752	1752	1752	1841	1841	1841	1811	1811	1811	1826	1826	1826
Adj Flow Rate, veh/h	403	378	31	135	478	0	47	1125	0	448	750	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	10	10	10	4	4	4	6	6	6	5	5	5
Cap, veh/h	483	726	59	197	496		59	1110		528	1543	
Arrive On Green	0.15	0.23	0.23	0.06	0.14	0.00	0.03	0.32	0.00	0.16	0.44	0.00
Sat Flow, veh/h	3237	3116	254	3401	3497	1560	1725	3441	1535	3374	3469	1547
Grp Volume(v), veh/h	403	201	208	135	478	0	47	1125	0	448	750	0
Grp Sat Flow(s),veh/h/ln	1618	1664	1706	1700	1749	1560	1725	1721	1535	1687	1735	1547
Q Serve(g_s), s	12.4	10.8	10.9	4.0	13.9	0.0	2.8	33.0	0.0	13.2	15.7	0.0
Cycle Q Clear(g_c), s	12.4	10.8	10.9	4.0	13.9	0.0	2.8	33.0	0.0	13.2	15.7	0.0
Prop In Lane	1.00		0.15	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	483	388	398	197	496		59	1110		528	1543	
V/C Ratio(X)	0.83	0.52	0.52	0.68	0.96		0.79	1.01		0.85	0.49	
Avail Cap(c_a), veh/h	1028	399	409	316	496		160	1110		874	1543	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	42.3	34.2	34.3	47.3	43.6	0.0	49.0	34.6	0.0	42.0	20.1	0.0
Incr Delay (d2), s/veh	2.4	0.7	0.7	2.6	31.2	0.0	13.3	30.4	0.0	2.8	0.4	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.7	7.8	8.0	3.1	12.7	0.0	2.4	24.2	0.0	9.2	9.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	44.7	34.9	35.0	49.8	74.8	0.0	62.3	65.0	0.0	44.8	20.6	0.0
LnGrp LOS	D	C	C	D	E		E	F		D	C	
Approach Vol, veh/h		812			613			1172			1198	
Approach Delay, s/veh		39.8			69.3			64.9			29.6	
Approach LOS		D			E			E			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.5	40.0	11.4	29.3	9.0	52.5	20.8	20.0
Change Period (Y+Rc), s	5.5	7.0	5.5	5.5	5.5	7.0	5.5	5.5
Max Green Setting (Gmax), s	26.5	33.0	9.5	24.5	9.5	33.0	32.5	14.5
Max Q Clear Time (g_c+I1), s	15.2	35.0	6.0	12.9	4.8	17.7	14.4	15.9
Green Ext Time (p_c), s	0.8	0.0	0.1	1.4	0.0	6.3	0.9	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	49.1
HCM 7th LOS	D

Notes

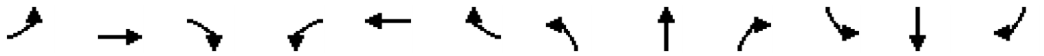
User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	5	19	74	10	30	13	740	23	2	865	10
Future Volume (veh/h)	10	5	19	74	10	30	13	740	23	2	865	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1885	1885	1885	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	11	5	20	78	11	32	14	779	24	2	911	11
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	1	1	1	2	2	2	1	1	1
Cap, veh/h	139	57	115	243	29	51	405	1256	39	477	1295	16
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.70	0.70	0.70	0.70	0.70	0.70
Sat Flow, veh/h	278	447	906	887	229	401	606	1803	56	683	1858	22
Grp Volume(v), veh/h	36	0	0	121	0	0	14	0	803	2	0	922
Grp Sat Flow(s),veh/h/ln	1631	0	0	1517	0	0	606	0	1859	683	0	1880
Q Serve(g_s), s	0.0	0.0	0.0	2.5	0.0	0.0	0.6	0.0	10.4	0.1	0.0	13.2
Cycle Q Clear(g_c), s	0.9	0.0	0.0	3.3	0.0	0.0	13.8	0.0	10.4	10.5	0.0	13.2
Prop In Lane	0.31		0.56	0.64		0.26	1.00		0.03	1.00		0.01
Lane Grp Cap(c), veh/h	310	0	0	323	0	0	405	0	1295	477	0	1310
V/C Ratio(X)	0.12	0.00	0.00	0.37	0.00	0.00	0.03	0.00	0.62	0.00	0.00	0.70
Avail Cap(c_a), veh/h	822	0	0	817	0	0	732	0	2299	846	0	2326
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.6	0.0	0.0	18.7	0.0	0.0	8.2	0.0	3.7	6.5	0.0	4.1
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.5	0.0	0.0	0.1	0.0	0.8	0.0	0.0	1.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.0	1.1	0.0	0.0	0.1	0.0	1.6	0.0	0.0	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	17.8	0.0	0.0	19.2	0.0	0.0	8.3	0.0	4.5	6.5	0.0	5.3
LnGrp LOS	B			B			A		A	A		A
Approach Vol, veh/h		36			121			817			924	
Approach Delay, s/veh		17.8			19.2			4.6			5.3	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	35.5	9.7	35.5	9.7
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	56.0	21.0	56.0	21.0
Max Q Clear Time (g_c+I1), s	15.2	5.3	15.8	2.9
Green Ext Time (p_c), s	16.3	0.4	13.2	0.1

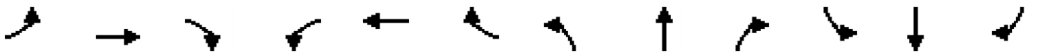
Intersection Summary	
HCM 7th Control Delay, s/veh	6.1
HCM 7th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	20	98	40	10	10	92	661	20	5	813	75
Future Volume (veh/h)	95	20	98	40	10	10	92	661	20	5	813	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1870	1870	1870	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	103	22	107	43	11	11	100	718	22	5	884	82
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	2	2	2	2	2	2	1	1	1
Cap, veh/h	298	247	207	285	114	114	357	1143	35	424	1097	898
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.06	0.63	0.63	0.01	0.58	0.58
Sat Flow, veh/h	1369	1856	1561	1254	854	854	1781	1803	55	1795	1885	1542
Grp Volume(v), veh/h	103	22	107	43	0	22	100	0	740	5	884	82
Grp Sat Flow(s),veh/h/ln	1369	1856	1561	1254	0	1709	1781	0	1858	1795	1885	1542
Q Serve(g_s), s	3.9	0.6	3.5	1.7	0.0	0.6	1.1	0.0	13.3	0.1	20.2	1.3
Cycle Q Clear(g_c), s	4.5	0.6	3.5	2.3	0.0	0.6	1.1	0.0	13.3	0.1	20.2	1.3
Prop In Lane	1.00		1.00	1.00		0.50	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	298	247	207	285	0	227	357	0	1178	424	1097	898
V/C Ratio(X)	0.35	0.09	0.52	0.15	0.00	0.10	0.28	0.00	0.63	0.01	0.81	0.09
Avail Cap(c_a), veh/h	640	711	598	599	0	655	613	0	1373	775	1393	1139
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.9	20.9	22.1	21.9	0.0	20.9	8.4	0.0	6.1	5.7	9.0	5.1
Incr Delay (d2), s/veh	0.5	0.1	1.5	0.2	0.0	0.1	0.3	0.0	1.0	0.0	3.3	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.2	1.3	0.5	0.0	0.2	0.4	0.0	3.6	0.0	6.8	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	23.4	21.0	23.6	22.0	0.0	21.0	8.6	0.0	7.1	5.7	12.4	5.1
LnGrp LOS	C	C	C	C		C	A		A	A	B	A
Approach Vol, veh/h		232			65			840			971	
Approach Delay, s/veh		23.3			21.7			7.3			11.7	
Approach LOS		C			C			A			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.1	36.4		11.3	4.3	39.2		11.3				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	11.0	40.5		21.0	11.0	40.5		21.0				
Max Q Clear Time (g_c+I1), s	3.1	22.2		4.3	2.1	15.3		6.5				
Green Ext Time (p_c), s	0.1	9.7		0.1	0.0	8.7		0.5				

Intersection Summary												
HCM 7th Control Delay, s/veh			11.5									
HCM 7th LOS			B									

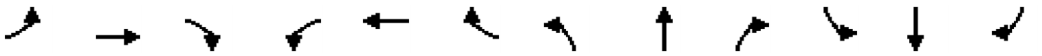


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	10	153	20	10	3	162	648	10	15	846	130
Future Volume (veh/h)	160	10	153	20	10	3	162	648	10	15	846	130
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1811	1811	1811	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	168	11	161	21	11	3	171	682	11	16	891	137
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	6	6	6	2	2	2	2	2	2
Cap, veh/h	566	27	397	375	252	69	275	1701	27	395	1462	225
Arrive On Green	0.10	0.27	0.27	0.02	0.18	0.18	0.48	0.48	0.48	0.48	0.48	0.48
Sat Flow, veh/h	1795	102	1490	1725	1370	374	548	3577	58	749	3074	473
Grp Volume(v), veh/h	168	0	172	21	0	14	171	339	354	16	515	513
Grp Sat Flow(s),veh/h/ln	1795	0	1592	1725	0	1743	548	1777	1858	749	1777	1769
Q Serve(g_s), s	3.8	0.0	4.9	0.5	0.0	0.4	14.3	6.8	6.8	0.8	11.7	11.7
Cycle Q Clear(g_c), s	3.8	0.0	4.9	0.5	0.0	0.4	26.0	6.8	6.8	7.5	11.7	11.7
Prop In Lane	1.00		0.94	1.00		0.21	1.00		0.03	1.00		0.27
Lane Grp Cap(c), veh/h	566	0	425	375	0	321	275	845	884	395	845	841
V/C Ratio(X)	0.30	0.00	0.41	0.06	0.00	0.04	0.62	0.40	0.40	0.04	0.61	0.61
Avail Cap(c_a), veh/h	1071	0	1602	1003	0	1753	275	845	884	395	845	841
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.9	0.0	16.5	17.5	0.0	18.4	21.4	9.3	9.3	11.7	10.6	10.6
Incr Delay (d2), s/veh	0.2	0.0	1.0	0.0	0.0	0.1	3.8	0.2	0.2	0.0	1.1	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	1.7	0.2	0.0	0.1	2.4	2.2	2.3	0.1	3.9	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.1	0.0	17.4	17.6	0.0	18.4	25.2	9.5	9.5	11.8	11.7	11.7
LnGrp LOS	B		B	B		B	C	A	A	B	B	B
Approach Vol, veh/h		340			35			864			1044	
Approach Delay, s/veh		15.8			17.9			12.6			11.7	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.1	19.6		30.0	9.6	15.1		30.0				
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	21.0	55.0		26.0	21.0	55.0		26.0				
Max Q Clear Time (g_c+I1), s	2.5	6.9		13.7	5.8	2.4		28.0				
Green Ext Time (p_c), s	0.0	1.9		4.7	0.3	0.1		0.0				

Intersection Summary			
HCM 7th Control Delay, s/veh		12.8	
HCM 7th LOS		B	

Notes
User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	0	155	24	0	70	145	710	25	83	856	75
Future Volume (veh/h)	45	0	155	24	0	70	145	710	25	83	856	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.98	0.99		0.98	1.00		0.97	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1870	1870	1870	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	46	0	160	25	0	72	149	732	26	86	882	77
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	2	2	2	1	1	1	2	2	2
Cap, veh/h	287	0	278	207	0	274	191	2123	75	414	1443	126
Arrive On Green	0.18	0.00	0.18	0.18	0.00	0.18	0.11	0.60	0.60	0.44	0.44	0.44
Sat Flow, veh/h	1333	0	1585	1215	0	1561	1795	3524	125	704	3303	288
Grp Volume(v), veh/h	46	0	160	25	0	72	149	372	386	86	474	485
Grp Sat Flow(s),veh/h/ln	1333	0	1585	1215	0	1561	1795	1791	1858	704	1777	1815
Q Serve(g_s), s	2.1	0.0	6.3	1.3	0.0	2.7	5.5	7.0	7.0	5.3	13.9	13.9
Cycle Q Clear(g_c), s	4.8	0.0	6.3	7.6	0.0	2.7	5.5	7.0	7.0	5.3	13.9	13.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.07	1.00		0.16
Lane Grp Cap(c), veh/h	287	0	278	207	0	274	191	1079	1120	414	776	793
V/C Ratio(X)	0.16	0.00	0.57	0.12	0.00	0.26	0.78	0.34	0.34	0.21	0.61	0.61
Avail Cap(c_a), veh/h	507	0	539	407	0	531	558	1377	1429	679	1445	1476
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.2	0.0	25.6	29.0	0.0	24.1	29.4	6.7	6.7	12.2	14.6	14.6
Incr Delay (d2), s/veh	0.2	0.0	1.1	0.2	0.0	0.3	4.2	0.3	0.3	0.4	1.2	1.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.2	0.0	4.3	0.7	0.0	1.8	4.5	4.0	4.2	1.4	9.0	9.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	26.3	0.0	26.7	29.2	0.0	24.4	33.7	7.0	7.0	12.6	15.8	15.8
LnGrp LOS	C		C	C		C	C	A	A	B	B	B
Approach Vol, veh/h		206			97			907			1045	
Approach Delay, s/veh		26.6			25.6			11.4			15.5	
Approach LOS		C			C			B			B	

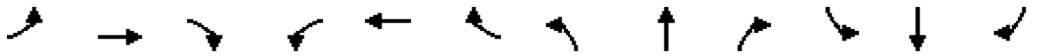
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	11.2	37.5		18.9		48.7		18.9				
Change Period (Y+Rc), s	4.0	* 8		7.0		8.0		7.0				
Max Green Setting (Gmax), s	21.0	* 55		23.0		52.0		23.0				
Max Q Clear Time (g_c+I1), s	7.5	15.9		8.3		9.0		9.6				
Green Ext Time (p_c), s	0.2	13.7		0.7		8.9		0.3				

Intersection Summary			
HCM 7th Control Delay, s/veh		15.3	
HCM 7th LOS		B	

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



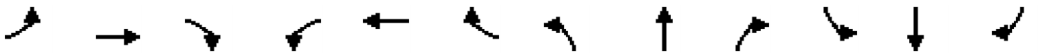
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	500	220	120	370	270	175	460	60	528	517	15
Future Volume (veh/h)	40	500	220	120	370	270	175	460	60	528	517	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1885	1885	1885	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	41	515	227	124	381	278	180	474	62	544	533	15
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	1	1	1	2	2	2	1	1	1
Cap, veh/h	55	643	481	158	853	686	223	872	113	672	628	18
Arrive On Green	0.03	0.18	0.18	0.09	0.24	0.24	0.13	0.28	0.28	0.19	0.34	0.34
Sat Flow, veh/h	1781	3554	1563	1795	3582	1588	1781	3151	410	3483	1823	51
Grp Volume(v), veh/h	41	515	227	124	381	278	180	266	270	544	0	548
Grp Sat Flow(s),veh/h/ln	1781	1777	1563	1795	1791	1588	1781	1777	1784	1742	0	1875
Q Serve(g_s), s	1.7	10.3	8.8	5.0	6.8	9.0	7.3	9.5	9.6	11.1	0.0	20.2
Cycle Q Clear(g_c), s	1.7	10.3	8.8	5.0	6.8	9.0	7.3	9.5	9.6	11.1	0.0	20.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.23	1.00		0.03
Lane Grp Cap(c), veh/h	55	643	481	158	853	686	223	491	494	672	0	646
V/C Ratio(X)	0.75	0.80	0.47	0.79	0.45	0.41	0.81	0.54	0.55	0.81	0.00	0.85
Avail Cap(c_a), veh/h	251	715	513	253	853	686	478	715	718	1402	0	755
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.8	29.2	21.0	33.3	24.2	14.6	31.7	22.9	23.0	28.8	0.0	22.6
Incr Delay (d2), s/veh	11.8	5.6	0.5	5.2	0.3	0.3	4.3	1.4	1.4	1.5	0.0	8.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.6	8.2	5.5	4.2	4.9	5.3	6.0	7.2	7.3	8.1	0.0	15.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	47.6	34.9	21.5	38.5	24.5	14.9	36.0	24.4	24.4	30.2	0.0	31.4
LnGrp LOS	D	C	C	D	C	B	D	C	C	C		C
Approach Vol, veh/h		783			783			716			1092	
Approach Delay, s/veh		31.7			23.3			27.3			30.8	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.3	30.7	6.8	22.7	19.4	25.6	11.1	18.5
Change Period (Y+Rc), s	5.0	5.0	4.5	5.0	5.0	5.0	4.5	5.0
Max Green Setting (Gmax), s	20.0	30.0	10.5	15.0	30.0	30.0	10.5	15.0
Max Q Clear Time (g_c+I1), s	9.3	22.2	3.7	11.0	13.1	11.6	7.0	12.3
Green Ext Time (p_c), s	0.2	3.0	0.0	1.1	1.2	4.5	0.1	1.0

Intersection Summary	
HCM 7th Control Delay, s/veh	28.5
HCM 7th LOS	C

Notes

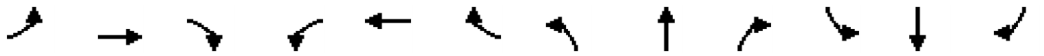
User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	119	45	45	20	45	45	45	501	20	20	594	158
Future Volume (veh/h)	119	45	45	20	45	45	45	501	20	20	594	158
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.96	0.97		0.98	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1900	1900	1900	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	123	46	46	21	46	46	46	516	21	21	612	163
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	0	0	0	3	3	3	3	3	3
Cap, veh/h	344	135	135	300	86	86	244	864	35	410	661	176
Arrive On Green	0.08	0.16	0.16	0.02	0.10	0.10	0.04	0.49	0.49	0.02	0.47	0.47
Sat Flow, veh/h	1795	844	844	1810	863	863	1767	1770	72	1767	1403	374
Grp Volume(v), veh/h	123	0	92	21	0	92	46	0	537	21	0	775
Grp Sat Flow(s),veh/h/ln	1795	0	1688	1810	0	1726	1767	0	1842	1767	0	1776
Q Serve(g_s), s	3.1	0.0	2.6	0.5	0.0	2.7	0.7	0.0	11.1	0.3	0.0	21.7
Cycle Q Clear(g_c), s	3.1	0.0	2.6	0.5	0.0	2.7	0.7	0.0	11.1	0.3	0.0	21.7
Prop In Lane	1.00		0.50	1.00		0.50	1.00		0.04	1.00		0.21
Lane Grp Cap(c), veh/h	344	0	270	300	0	171	244	0	899	410	0	836
V/C Ratio(X)	0.36	0.00	0.34	0.07	0.00	0.54	0.19	0.00	0.60	0.05	0.00	0.93
Avail Cap(c_a), veh/h	572	0	670	469	0	685	713	0	1236	909	0	1192
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.2	0.0	19.7	20.8	0.0	22.7	11.3	0.0	9.8	7.9	0.0	13.1
Incr Delay (d2), s/veh	0.2	0.0	0.3	0.0	0.0	1.0	0.1	0.0	0.2	0.0	0.0	7.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	1.0	0.2	0.0	1.1	0.2	0.0	3.6	0.1	0.0	8.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	18.4	0.0	20.0	20.8	0.0	23.6	11.5	0.0	10.0	8.0	0.0	20.9
LnGrp LOS	B		C	C		C	B		B	A		C
Approach Vol, veh/h		215			113			583			796	
Approach Delay, s/veh		19.1			23.1			10.1			20.6	
Approach LOS		B			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.0	29.4	8.3	9.2	5.1	30.3	5.1	12.5
Change Period (Y+Rc), s	4.0	4.5	4.0	4.0	4.0	4.5	4.0	4.0
Max Green Setting (Gmax), s	16.0	35.5	11.0	21.0	16.0	35.5	6.0	21.0
Max Q Clear Time (g_c+I1), s	2.7	23.7	5.1	4.7	2.3	13.1	2.5	4.6
Green Ext Time (p_c), s	0.0	1.2	0.0	0.1	0.0	0.8	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	17.0
HCM 7th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	155	49	505	10	45	55	301	835	15	40	1210	180
Future Volume (veh/h)	155	49	505	10	45	55	301	835	15	40	1210	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1752	1752	1752	1856	1856	1856	1870	1870	1870
Adj Flow Rate, veh/h	158	50	515	10	46	56	307	852	15	41	1235	184
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	10	10	10	3	3	3	2	2	2
Cap, veh/h	183	325	571	16	141	116	333	2249	1002	53	1702	759
Arrive On Green	0.10	0.17	0.17	0.01	0.08	0.08	0.19	0.64	0.64	0.03	0.48	0.48
Sat Flow, veh/h	1781	1870	1563	1668	1752	1440	1767	3526	1571	1781	3554	1583
Grp Volume(v), veh/h	158	50	515	10	46	56	307	852	15	41	1235	184
Grp Sat Flow(s),veh/h/ln	1781	1870	1563	1668	1752	1440	1767	1763	1571	1781	1777	1583
Q Serve(g_s), s	11.4	2.9	22.6	0.8	3.2	4.8	22.2	15.0	0.5	3.0	36.1	8.9
Cycle Q Clear(g_c), s	11.4	2.9	22.6	0.8	3.2	4.8	22.2	15.0	0.5	3.0	36.1	8.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	183	325	571	16	141	116	333	2249	1002	53	1702	759
V/C Ratio(X)	0.87	0.15	0.90	0.64	0.33	0.48	0.92	0.38	0.01	0.77	0.73	0.24
Avail Cap(c_a), veh/h	219	325	571	205	278	228	421	2249	1002	288	1702	759
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.5	45.6	39.4	64.2	56.4	57.1	51.8	11.2	8.6	62.6	27.0	20.0
Incr Delay (d2), s/veh	22.5	0.1	17.2	23.9	0.8	1.9	21.1	0.5	0.0	13.6	2.7	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	10.3	2.5	24.9	0.8	2.7	3.3	16.9	9.0	0.3	2.7	21.0	6.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	79.9	45.7	56.6	88.1	57.2	59.0	72.9	11.7	8.6	76.2	29.8	20.7
LnGrp LOS	E	D	E	F	E	E	E	B	A	E	C	C
Approach Vol, veh/h		723			112			1174			1460	
Approach Delay, s/veh		60.9			60.9			27.7			29.9	
Approach LOS		E			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	28.5	68.3	17.3	15.9	7.9	88.9	5.2	28.0
Change Period (Y+Rc), s	4.0	6.0	4.0	5.4	4.0	6.0	4.0	5.4
Max Green Setting (Gmax), s	31.0	43.0	16.0	20.6	21.0	53.0	16.0	20.6
Max Q Clear Time (g_c+I1), s	24.2	38.1	13.4	6.8	5.0	17.0	2.8	24.6
Green Ext Time (p_c), s	0.3	4.0	0.0	0.2	0.0	10.3	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	36.6
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	1048	55	140	826	46	30	0	80	40	0	16
Future Volume (veh/h)	17	1048	55	140	826	46	30	0	80	40	0	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	0.98		0.98	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1870	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	18	1127	59	151	888	49	32	0	86	43	0	17
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	2	2	2	0	0	0	0	0	0
Cap, veh/h	455	1710	89	462	1968	109	312	0	198	249	0	198
Arrive On Green	0.03	0.49	0.49	0.11	0.58	0.58	0.13	0.00	0.13	0.13	0.00	0.13
Sat Flow, veh/h	1795	3461	181	1781	3418	189	1393	0	1579	1314	0	1579
Grp Volume(v), veh/h	18	583	603	151	462	475	32	0	86	43	0	17
Grp Sat Flow(s),veh/h/ln	1795	1791	1851	1781	1777	1830	1393	0	1579	1314	0	1579
Q Serve(g_s), s	0.2	11.7	11.7	1.6	7.1	7.1	1.0	0.0	2.4	1.5	0.0	0.5
Cycle Q Clear(g_c), s	0.2	11.7	11.7	1.6	7.1	7.1	1.4	0.0	2.4	3.9	0.0	0.5
Prop In Lane	1.00		0.10	1.00		0.10	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	455	885	914	462	1023	1054	312	0	198	249	0	198
V/C Ratio(X)	0.04	0.66	0.66	0.33	0.45	0.45	0.10	0.00	0.43	0.17	0.00	0.09
Avail Cap(c_a), veh/h	821	1143	1181	678	1134	1167	735	0	677	249	0	198
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.7	9.1	9.1	6.2	5.8	5.8	19.1	0.0	19.3	21.1	0.0	18.5
Incr Delay (d2), s/veh	0.0	1.3	1.3	0.2	0.5	0.5	0.1	0.0	1.1	0.2	0.0	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.1	6.2	6.4	0.5	3.1	3.1	0.6	0.0	1.6	0.8	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	5.7	10.4	10.4	6.4	6.3	6.3	19.2	0.0	20.4	21.4	0.0	18.6
LnGrp LOS	A	B	B	A	A	A	B		C	C		B
Approach Vol, veh/h		1204			1088			118			60	
Approach Delay, s/veh		10.3			6.3			20.1			20.6	
Approach LOS		B			A			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.2	28.1		10.5	5.3	32.0		10.5				
Change Period (Y+Rc), s	4.0	4.5		4.5	4.0	4.5		4.5				
Max Green Setting (Gmax), s	11.0	30.5		5.5	11.0	30.5		20.5				
Max Q Clear Time (g_c+I1), s	3.6	13.7		5.9	2.2	9.1		4.4				
Green Ext Time (p_c), s	0.1	9.9		0.0	0.0	8.9		0.4				

Intersection Summary	
HCM 7th Control Delay, s/veh	9.3
HCM 7th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	729	819	100	145	523	505	55	805	180	790	1115	684
Future Volume (veh/h)	729	819	100	145	523	505	55	805	180	790	1115	684
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1856	1856	1856	1870	1870	1870
Adj Flow Rate, veh/h	744	836	102	148	534	0	56	821	0	806	1138	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	3	3	3	2	2	2
Cap, veh/h	808	928	113	202	413		72	899		728	1511	
Arrive On Green	0.23	0.29	0.29	0.06	0.12	0.00	0.04	0.26	0.00	0.21	0.43	0.00
Sat Flow, veh/h	3483	3208	391	3483	3582	1598	1767	3526	1572	3456	3554	1585
Grp Volume(v), veh/h	744	467	471	148	534	0	56	821	0	806	1138	0
Grp Sat Flow(s),veh/h/ln	1742	1791	1808	1742	1791	1598	1767	1763	1572	1728	1777	1585
Q Serve(g_s), s	26.2	31.5	31.5	5.3	14.5	0.0	3.9	28.4	0.0	26.5	34.1	0.0
Cycle Q Clear(g_c), s	26.2	31.5	31.5	5.3	14.5	0.0	3.9	28.4	0.0	26.5	34.1	0.0
Prop In Lane	1.00		0.22	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	808	518	523	202	413		72	899		728	1511	
V/C Ratio(X)	0.92	0.90	0.90	0.73	1.29		0.78	0.91		1.11	0.75	
Avail Cap(c_a), veh/h	900	518	523	263	413		134	925		728	1511	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	47.2	42.9	42.9	58.3	55.6	0.0	59.7	45.5	0.0	49.6	30.6	0.0
Incr Delay (d2), s/veh	13.2	18.4	18.3	5.7	148.7	0.0	10.5	13.5	0.0	66.5	2.5	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	18.5	23.0	23.2	4.4	23.6	0.0	3.4	19.5	0.0	25.8	20.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	60.4	61.3	61.2	63.9	204.4	0.0	70.2	59.0	0.0	116.1	33.1	0.0
LnGrp LOS	E	E	E	E	F		E	E		F	C	
Approach Vol, veh/h		1682			682			877			1944	
Approach Delay, s/veh		60.9			173.9			59.7			67.5	
Approach LOS		E			F			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	32.0	39.1	12.8	41.9	10.6	60.4	34.7	20.0
Change Period (Y+Rc), s	5.5	7.0	5.5	5.5	5.5	7.0	5.5	5.5
Max Green Setting (Gmax), s	26.5	33.0	9.5	24.5	9.5	33.0	32.5	14.5
Max Q Clear Time (g_c+I1), s	28.5	30.4	7.3	33.5	5.9	36.1	28.2	16.5
Green Ext Time (p_c), s	0.0	1.6	0.1	0.0	0.0	0.0	0.9	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	78.0
HCM 7th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Appendix C: Detailed Trip Generation

OR City

UNCAPPED CAPPED 20%

Proposed Use

Land Use	Setting	Size	Units	Model	Equation	Rate	In %	Gross Trips Inbound	Gross Trips Outbound	Gross Trips Subtotal	Land Use Type	Internal Trips In	Internal Trips Out	Internal Trips Total	Internal Trips %	External Trips In	External Trips Out	External Trips Total	Internal Trips In	Internal Trips Out	Internal Trips Total	Internal Trips %	External Trips In	External Trips Out	External Trips Total	Pass-By Trips %	Pass-By Trips In	Pass-By Trips Out	Pass-By Trips Total	Primary Trips In	Primary Trips Out	Primary Trips Total
Multifamily (Mid-Rise) (LU 221)		**210**	du								Residential																					
Daily	General Urban/Suburban			Equation (lin)	T = 4.77(X) - 46.46	-	50%	478	478	956		149	149	298	31%	329	329	658	81	81	162	17%	397	397	794					397	397	794
AM Peak Hour	General Urban/Suburban			Equation (lin)	T = 0.44(X) - 11.61	-	23%	19	62	81		1	13	14	17%	18	49	67	1	13	14	17%	18	49	67					18	49	67
PM Peak Hour	General Urban/Suburban			Equation (lin)	T = 0.39(X) + 0.34	-	61%	50	32	82		24	13	37	45%	26	19	45	10	6	16	20%	40	26	66					40	26	66
Grocery (850)		**13,500**	sf								Retail																					
Daily	General Urban/Suburban			Rate	-	93.84	50%	633	633	1,266		224	224	448	35%	409	409	818	122	122	244	19%	511	511	1022	24%	123	123	246	388	388	776
AM Peak Hour	General Urban/Suburban			Rate	-	2.86	59%	23	16	39		3	2	5	13%	20	14	34	3	2	5	13%	20	14	34	24%	4	4	8	16	10	26
PM Peak Hour	General Urban/Suburban			Rate	-	8.95	50%	61	60	121		37	33	70	58%	24	27	51	16	14	30	25%	45	46	91	24%	11	11	22	34	35	69
Fast-Food Restaurant with Drive-Through Window (934)		**4,915**	sf								Restaurant																					
Daily	General Urban/Suburban			Rate	-	467.48	50%	1,149	1,149	2,298		268	268	536	23%	881	881	1762	146	146	292	13%	1003	1003	2006	53%	527	527	1054	476	476	952
AM Peak Hour	General Urban/Suburban			Rate	-	44.61	51%	112	107	219		14	3	17	8%	98	104	202	14	3	17	8%	98	104	202	50%	51	51	102	47	53	100
PM Peak Hour	General Urban/Suburban			Rate	-	33.03	52%	84	78	162		24	39	63	39%	60	39	99	10	17	27	17%	74	61	135	55%	37	37	74	37	24	61
Subtotal																																
Daily								2,260	2,260	4,520		641	641	1,282	28%	1,619	1,619	3,238	349	349	698	15%	1,911	1,911	3,822		650	650	1,300	1,261	1,261	2,522
AM Peak Hour								154	185	339		18	18	36	11%	136	167	303	18	18	36	11%	136	167	303		55	55	110	81	112	193
PM Peak Hour								195	170	365		85	85	170	47%	110	85	195	37	37	74	20%	159	133	291		48	48	96	111	85	195

Notes:

1. Trip rates based on Institute of Transportation Engineers' (ITE) *Trip Generation Manual (*11th Edition) equation and average trip rates as shown above.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Oregon City Mixed Use	**Organization:**	
Project Location:		**Performed By:**	
Scenario Description:		**Date:**	
Analysis Year:		**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0	0	0
Retail				39	23	16
Restaurant				219	112	107
Cinema/Entertainment				0	0	0
Residential				81	19	62
Hotel				0	0	0
All Other Land Uses[2]				0	0	0
Total				339	154	185

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		2	0	0	0
Restaurant	0	2		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	12	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	339	154	185
Internal Capture Percentage	11%	12%	10%
External Vehicle-Trips[3]	303	136	167
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	13%	13%
Restaurant	13%	3%
Cinema/Entertainment	N/A	N/A
Residential	5%	21%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	Oregon City Mixed Use
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	23	23	1.00	16	16
Restaurant	1.00	112	112	1.00	107	107
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	19	19	1.00	62	62
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	5		2	0	2	0
Restaurant	33	15		0	4	3
Cinema/Entertainment	0	0	0		0	0
Residential	1	1	12	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		7	26	0	0	0
Retail	0		56	0	0	0
Restaurant	0	2		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	4	22	0		0
Hotel	0	1	7	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	3	20	23	20	0	0
Restaurant	14	98	112	98	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	18	19	18	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	2	14	16	14	0	0
Restaurant	3	104	107	104	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	13	49	62	49	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Oregon City Mixed Use	**Organization:**	
Project Location:		**Performed By:**	
Scenario Description:		**Date:**	
Analysis Year:		**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0	0	0
Retail				121	61	60
Restaurant				162	84	78
Cinema/Entertainment				0	0	0
Residential				82	50	32
Hotel				0	0	0
All Other Land Uses[2]				0	0	0
Total				365	195	170

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		17	0	16	0
Restaurant	0	31		0	8	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	6	7	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	365	195	170
Internal Capture Percentage	47%	44%	50%
External Vehicle-Trips[3]	195	110	85
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	61%	55%
Restaurant	29%	50%
Cinema/Entertainment	N/A	N/A
Residential	48%	41%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	Oregon City Mixed Use
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	61	61	1.00	60	60
Restaurant	1.00	84	84	1.00	78	78
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	50	50	1.00	32	32
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	1		17	2	16	3
Restaurant	2	32		6	14	5
Cinema/Entertainment	0	0	0		0	0
Residential	1	13	7	0		1
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		5	2	0	2	0
Retail	0		24	0	23	0
Restaurant	0	31		0	8	0
Cinema/Entertainment	0	2	3		2	0
Residential	0	6	12	0		0
Hotel	0	1	4	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	37	24	61	24	0	0
Restaurant	24	60	84	60	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	24	26	50	26	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	33	27	60	27	0	0
Restaurant	39	39	78	39	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	13	19	32	19	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

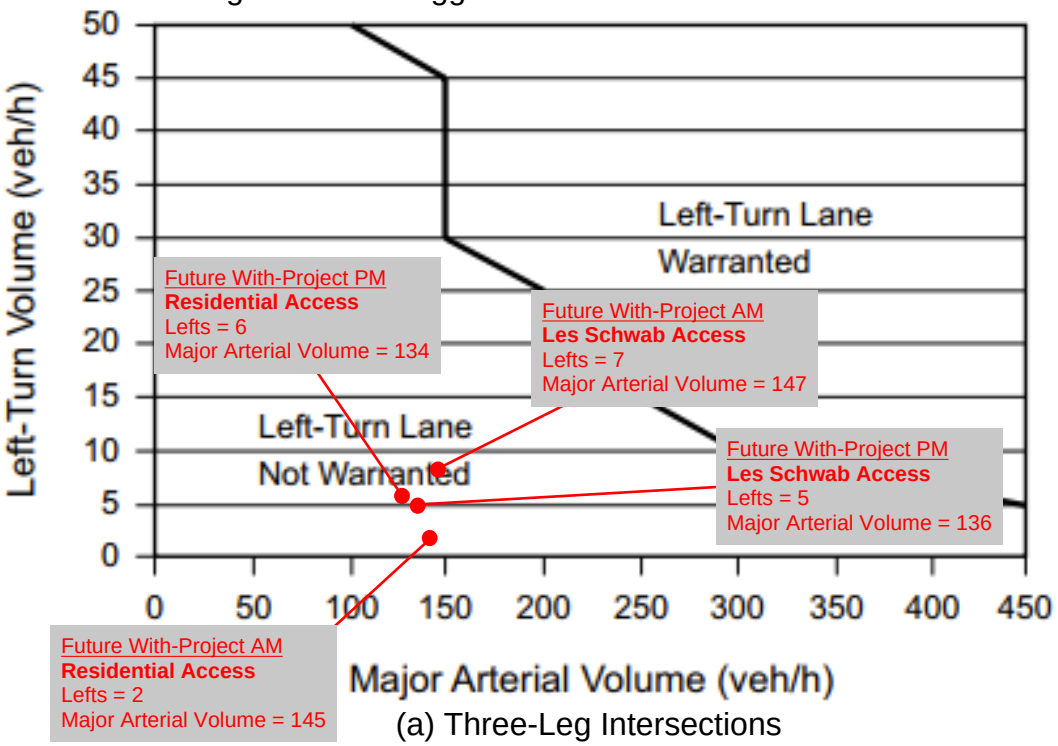
[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

Appendix D: Left Turn Lane Warrant

AASHTO Policy on Geometric Design of Highways and Streets

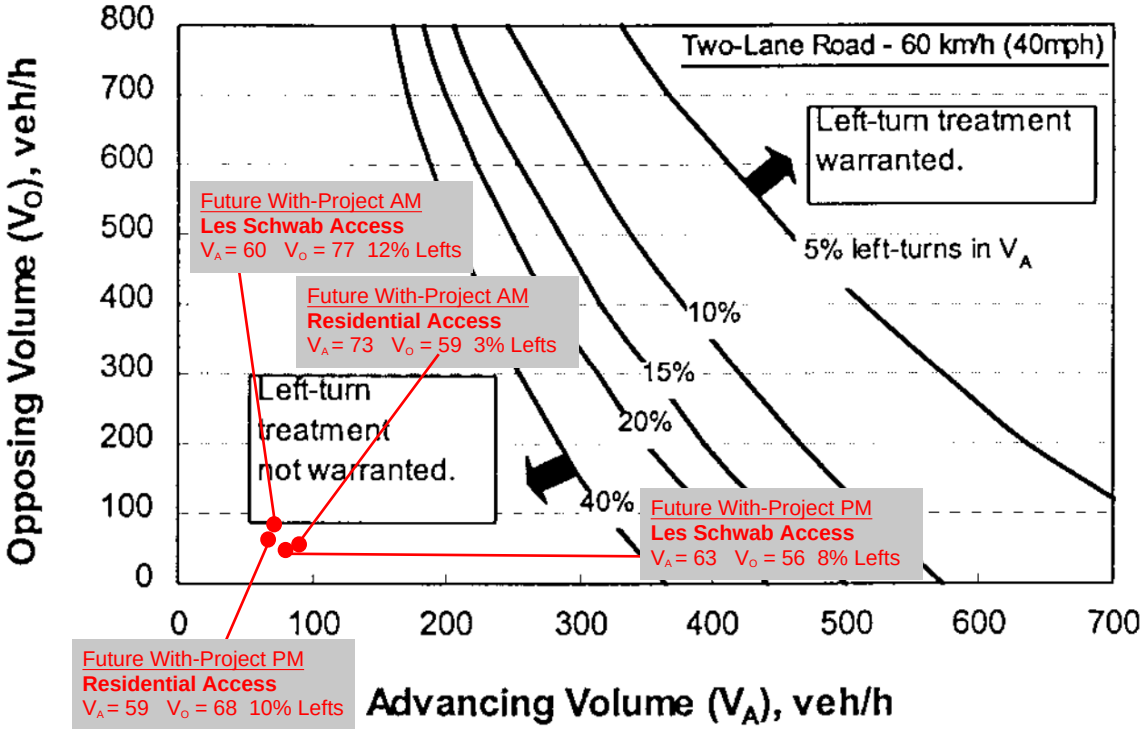
Figure 9-35 - Suggested Left-Turn Lane Warrants



(a) Three-Leg Intersections

NCHRP Report 457 *Evaluating Intersection Improvements*

Figure 2-5



(a)

Appendix E: Queueing Analysis

Queuing Analysis

Weekday AM Peak Hour (Average)

Number of Lanes	2	
Hourly Flow Rate (vph)	49	per Lane
Total Hourly Flow Rate	98	vehicles per hour
Average Stopped Time / Service Time	4:05	(mm:ss)
Average Service Rate (Total)	29.4	vehicles per hour
Average Vehicle Length	25	feet

Total Queues		Queues per Lane	
50th Percentile Queue		**50th Percentile Queue**	
Number of Vehicles	Length (ft)	Number of Vehicles	Length (ft)
7	175	3.5	87.5
85th Percentile Queue		**85th Percentile Queue**	
Number of Vehicles	Length (ft)	Number of Vehicles	Length (ft)
10	250	5	125
95th Percentile Queue		**95th Percentile Queue**	
Number of Vehicles	Length (ft)	Number of Vehicles	Length (ft)
12	300	6	150

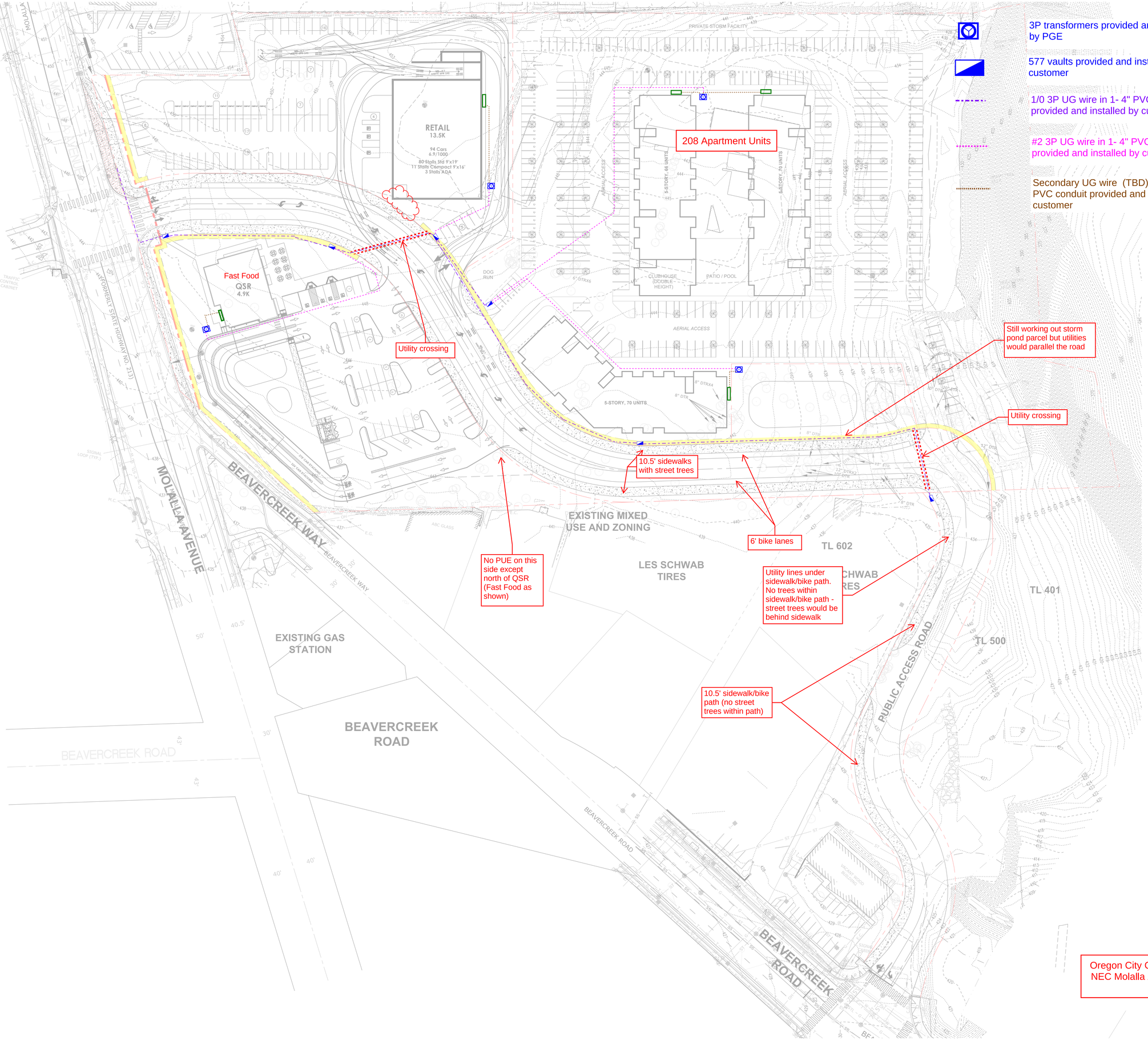
Queuing Analysis

Weekday PM Peak Hour (Average)

Number of Lanes	2	
Hourly Flow Rate (vph)	37	per Lane
Total Hourly Flow Rate	74	vehicles per hour
Average Stopped Time / Service Time	4:25	(mm:ss)
Average Service Rate (Total)	27.2	vehicles per hour
Average Vehicle Length	25	feet

Total Queues		Queues per Lane	
50th Percentile Queue		**50th Percentile Queue**	
Number of Vehicles	Length (ft)	Number of Vehicles	Length (ft)
6	150	3	75
85th Percentile Queue		**85th Percentile Queue**	
Number of Vehicles	Length (ft)	Number of Vehicles	Length (ft)
9	225	4.5	112.5
95th Percentile Queue		**95th Percentile Queue**	
Number of Vehicles	Length (ft)	Number of Vehicles	Length (ft)
11	275	5.5	137.5

APPENDIX I
PGE Coordination/Prelim Layout


3P transformers provided and installed by PGE
577 vaults provided and installed by customer
1/0 3P UG wire in 1- 4" PVC conduit provided and installed by customer
#2 3P UG wire in 1- 4" PVC conduit provided and installed by customer
Secondary UG wire (TBD) in (TBD)" PVC conduit provided and installed by customer
208 Apartment Units
RETAIL
13.5K
94 Cars
6.9/1000
80 Stalls Std 9'x19'
11 Stalls Compact 9'x16'
3 Stalls ADA
Fast Food
QSR
4.9K
Utility crossing
Still working out storm pond parcel but utilities would parallel the road
Utility crossing
10.5' sidewalks with street trees
6' bike lanes
No PUE on this side except north of QSR (Fast Food as shown)
Utility lines under sidewalk/bike path. No trees within sidewalk/bike path - street trees would be behind sidewalk
10.5' sidewalk/bike path (no street trees within path)
EXISTING MIXED USE AND ZONING
LES SCHWAB TIRES
EXISTING GAS STATION
BEAVERCREEK ROAD
MOLALLA AVENUE
BEAVERCREEK WAY
PUBLIC ACCESS ROAD
TL 602
TL 401
TL 500
5-STORY, 70 UNITS
CLUBHOUSE (DOUBLE HEIGHT)
PATIO / POOL
AERIAL ACCESS
DOG RUN
PRIVATE STORM FACILITY
Oregon City Commercial Masterplan
NEC Molalla Ave & Beavercreek Rd
10/8/25
1" = 40'

Scott Franklin

From: Ron Snodgrass <Ron.Snodgrass@pgn.com>
Sent: Wednesday, November 5, 2025 2:53 PM
To: Scott Franklin
Subject: RE: M5913944 - PUE questions re: new 208 apt unit construction - NE corner of Molalla Ave & Beavercreek Rd

Scott, we'll work through this as well. Moving a pole will be part of the street improvement portion.

Thanks,

Ron Snodgrass
Lead, Service & Design, Oregon City
Portland General Electric
209 Warner Milne Rd
Oregon City, Oregon 97045

☎: 503.908.4394 Mobile
✉: Ron.Snodgrass@pgn.com

From: Scott Franklin <sfranklin@langan.com>
Sent: Wednesday, November 5, 2025 8:59 AM
To: Ron Snodgrass <Ron.Snodgrass@pgn.com>
Subject: RE: M5913944 - PUE questions re: new 208 apt unit construction - NE corner of Molalla Ave & Beavercreek Rd

This email is from someone outside PGE.
Please take care when opening links, attachments or responding to this email.

Thanks, Ron. As an FYI, we will need to move at least one pole due to the bus turnout north of the signal. We don't have to solve that now but it's coming – just wanted to keep you in the loop since the city is requiring the turnout and more ROW dedication.

Scott Franklin
Senior Associate

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From: Ron Snodgrass <Ron.Snodgrass@pgn.com>
Sent: Wednesday, November 5, 2025 6:41 AM
To: Scott Franklin <sfranklin@langan.com>
Subject: RE: M5913944 - PUE questions re: new 208 apt unit construction - NE corner of Molalla Ave & Beavercreek Rd

I assume the poles on Molalla, stay as is. A couple of years ago we did a pole relocation on Molalla further to the south. They did not require them to be undergrounded.

Thanks,

Ron Snodgrass
Lead, Service & Design, Oregon City
Portland General Electric
209 Warner Milne Rd
Oregon City, Oregon 97045

☎: 503.908.4394 Mobile
✉: Ron.Snodgrass@pgn.com

From: Scott Franklin <sfranklin@langan.com>
Sent: Tuesday, November 4, 2025 5:19 PM
To: Ron Snodgrass <Ron.Snodgrass@pgn.com>
Subject: RE: M5913944 - PUE questions re: new 208 apt unit construction - NE corner of Molalla Ave & Beavercreek Rd

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Please take care when opening links, attachments or responding to this email.

The city has a requirement to put all utility service underground. Obviously, we'll do that for all of the interior of the site but there are some significant lines along Molalla Ave. Does PGE have any plans to place these lines underground or are there barriers against doing so? Seems like a bigger picture issue beyond the scope of our project.

Scott Franklin
Senior Associate

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From: Scott Franklin
Sent: Monday, October 27, 2025 5:08 PM
To: Ron Snodgrass <Ron.Snodgrass@pgn.com>
Subject: RE: M5913944 - PUE questions re: new 208 apt unit construction - NE corner of Molalla Ave & Beavercreek Rd

Sounds good, and thanks again for the quick turnaround!

Scott Franklin
Senior Associate

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From: Ron Snodgrass <Ron.Snodgrass@pgn.com>
Sent: Monday, October 27, 2025 4:11 PM
To: Scott Franklin <sfranklin@langan.com>
Subject: RE: M5913944 - PUE questions re: new 208 apt unit construction - NE corner of Molalla Ave & Beavercreek Rd

Scott,

I put together a preliminary concept. We can move and adjust vaults, transformers, service points as there is clarity as to where the meter gear equipment will be located on each building. This was just a fist stab.

As this moves forward additional work orders will need to be created. I see the need for at least the following:

- A PGE Work Order TDSWDCUST for the road improvement portion,
  - This will cover the vault and conduit for the main road,
- Work Orders for each building/Service.
  - The apartments may/could be broken up into individual work orders,
    - RSMUT
  - CMDEV for the restaurant and or other commercial buildings.

When you are ready, put in for these Work Orders and the individual I assign this project to can work with you to fine tune.

You can continue to reach out to me for any questions and we can certainly discuss more over the phone and or email.

Thanks,

Ron Snodgrass
Lead, Service & Design, Oregon City
Portland General Electric
209 Warner Milne Rd
Oregon City, Oregon 97045

☎: 503.908.4394 Mobile
✉: Ron.Snodgrass@pgn.com

From: Scott Franklin <sfranklin@langan.com>
Sent: Monday, October 27, 2025 12:45 PM
To: Ron Snodgrass <Ron.Snodgrass@pgn.com>
Subject: RE: M5913944 - PUE questions re: new 208 apt unit construction - NE corner of Molalla Ave & Beavercreek Rd

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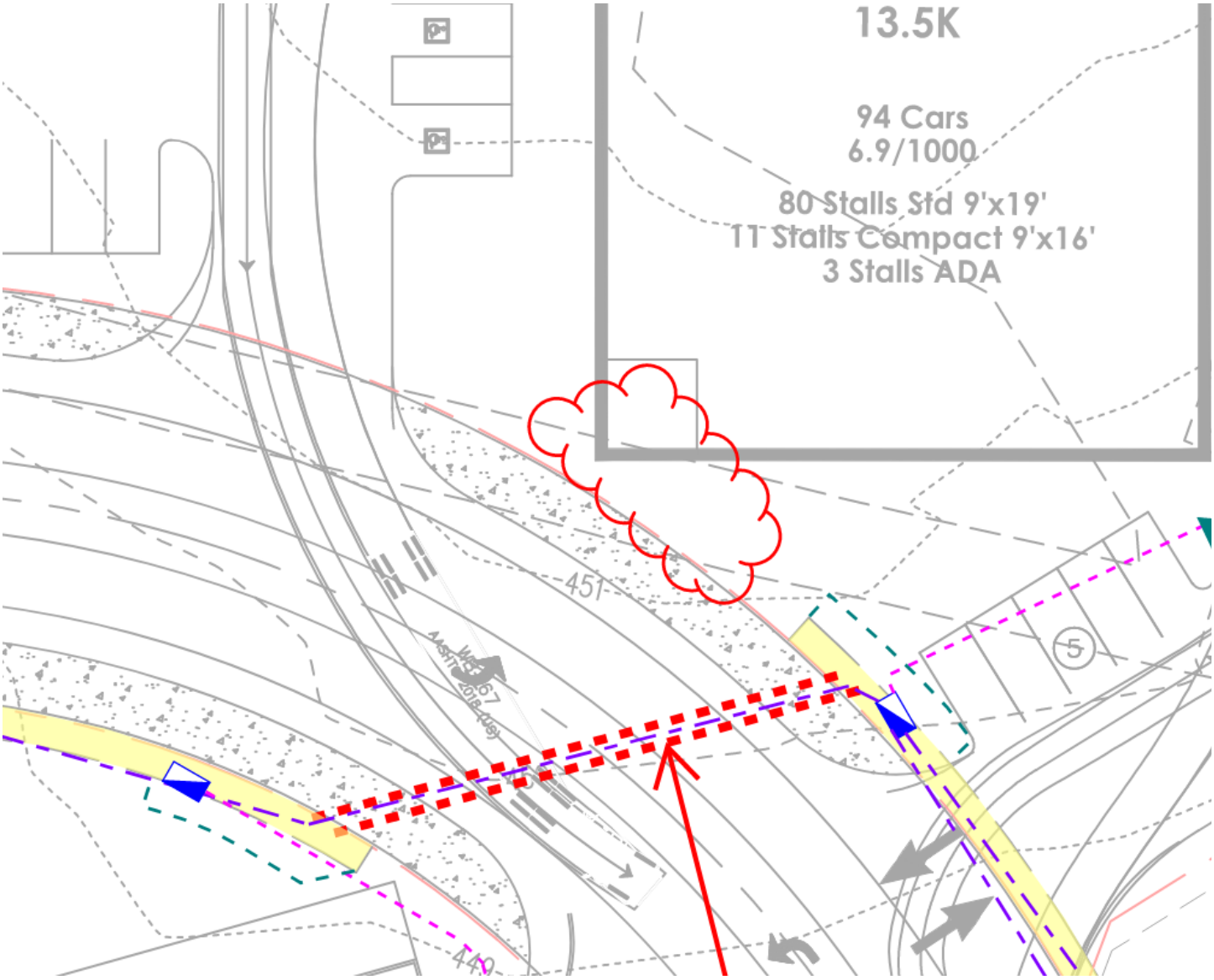
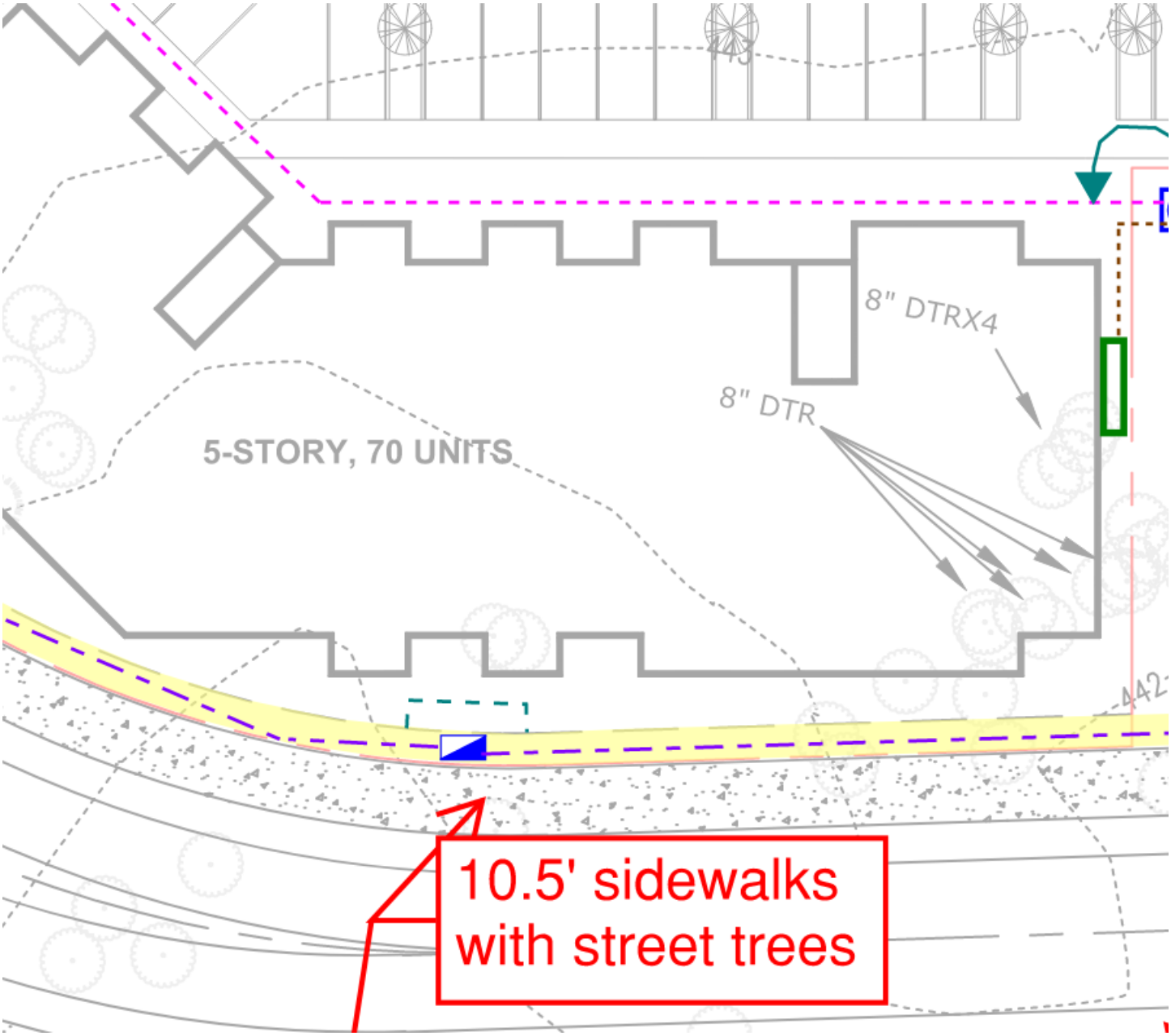
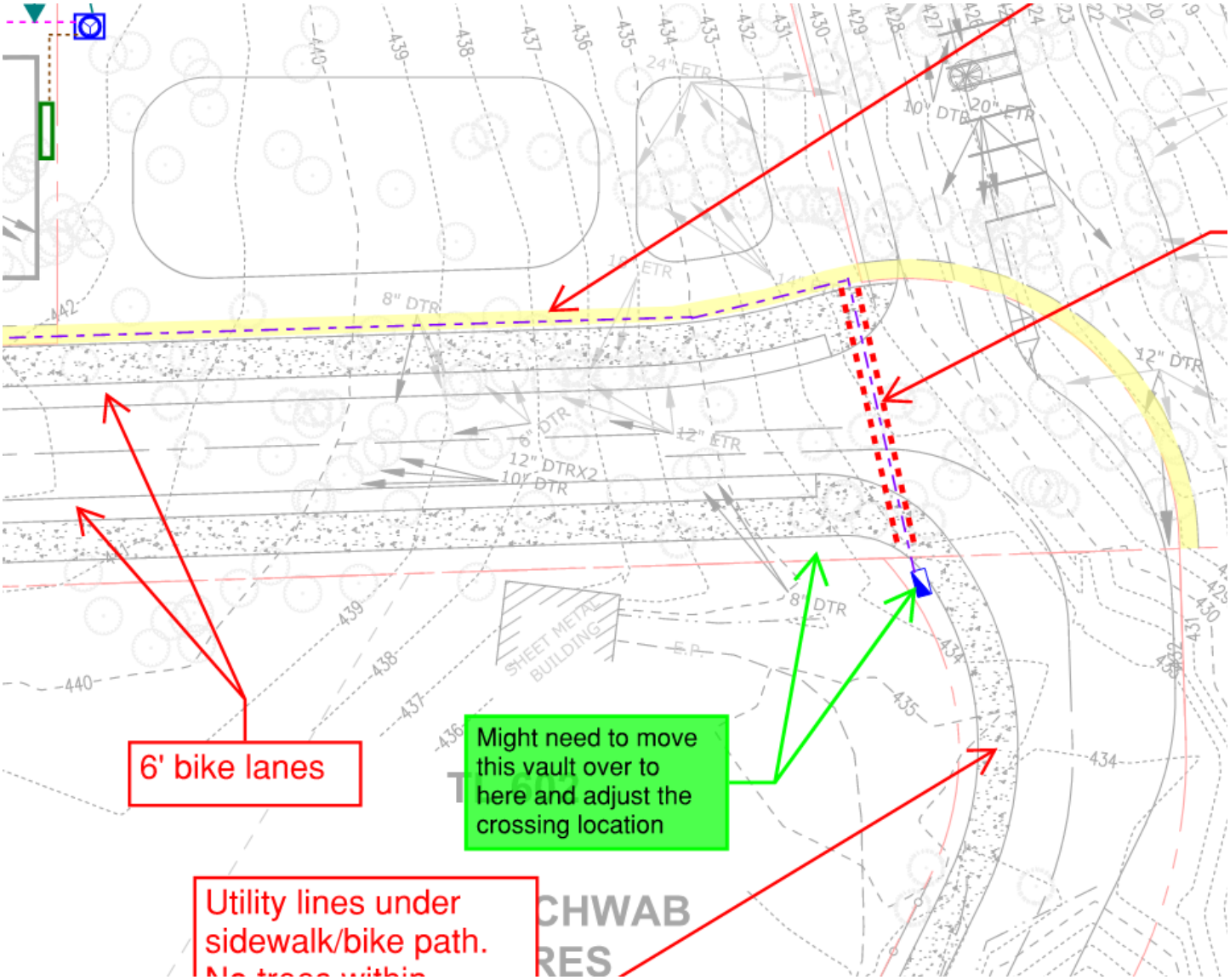
Thanks, Ron – hugely appreciated! Thanks for turning this around so quick. Looks like the routing we suggested is at least feasible. I'm pretty confident we can provide a widened PUE where we need to add vaults along the street to give you a little more room if you need it. I'm guessing some of the transformer pad will shift slightly in location (see below thoughts), but we can adjust locations of individual transformers based on a more detailed design of each of the pad users.

We'll need street lighting as well. We can coordinate that when we do detailed construction plans if we wouldn't need to allow extra room in the PUE at key location(s). If we need some extra room in certain spots to address street lighting service(s) and have an idea of what that would look like does it make sense to include that now or can that be pushed off to detailed design? Street lighting for Molalla would be the ornamental accord lights along Molalla and the rest of the internal street lighting would be the city's normal lighting. Ultimately, we'd want to provide for street lighting infrastructure for the access road going down to Beavercreek Rd. Presumably, this would fall under the proposed 10.5' wide multi-use sidewalk on the west side of the road (trees will be behind the sidewalk). Would the street lights on this road be served from the system within the internal public road or would it be served via Beavercreek Rd?


13.5K
94 Cars
6.9/1000
80 Stalls Std 9'x19'
11 Stalls Compact 9'x16'
3 Stalls ADA
451
449
5


8" DTRX4
8" DTR
5-STORY, 70 UNITS
10.5' sidewalks
with street trees



Scott Franklin
Senior Associate

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From: Ron Snodgrass <Ron.Snodgrass@pgn.com>
Sent: Monday, October 27, 2025 11:08 AM

To: Scott Franklin <sfranklin@langan.com>
Subject: RE: M5913944 - PUE questions re: new 208 apt unit construction - NE corner of Molalla Ave & Beavercreek Rd

Scott, take a look at this and then lets discuss.

Thanks,

Ron Snodgrass
Lead, Service & Design, Oregon City
Portland General Electric
209 Warner Milne Rd
Oregon City, Oregon 97045

☎: 503.908.4394 Mobile
✉: Ron.Snodgrass@pgn.com

From: Scott Franklin <sfranklin@langan.com>
Sent: Wednesday, October 22, 2025 10:50 AM
To: Ron Snodgrass <Ron.Snodgrass@pgn.com>
Subject: RE: M5913944 - PUE questions re: new 208 apt unit construction - NE corner of Molalla Ave & Beavercreek Rd

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Here's the site layout we're working on

Scott Franklin
Senior Associate

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From: Ron Snodgrass <Ron.Snodgrass@pgn.com>
Sent: Tuesday, October 21, 2025 3:46 PM
To: Scott Franklin <sfranklin@langan.com>
Subject: M5913944 - PUE questions re: new 208 apt unit construction - NE corner of Molalla Ave & Beavercreek Rd

Scott,

Just left you a VM. I'm heading out for the day, but give me a call in the morning to discuss your project.

Thanks,

Ron Snodgrass
Lead, Service & Design, Oregon City
Portland General Electric
209 Warner Milne Rd
Oregon City, Oregon 97045

☎: 503.908.4394 Mobile
✉: Ron.Snodgrass@pgn.com

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APPENDIX J
Preliminary Title Report

Fidelity National Title
Company of Oregon

PRELIMINARY REPORT

In response to the application for a policy of title insurance referenced herein Fidelity National Title Company of Oregon hereby reports that it is prepared to issue, or cause to be issued, as of the specified date, a policy or policies of title insurance describing the land and the estate or interest hereinafter set forth, insuring against loss which may be sustained by reason of any defect, lien or encumbrance not shown or referred to as an exception herein or not excluded from coverage pursuant to the printed Schedules or Conditions of said policy forms.

The printed Exceptions and Exclusions from the coverage of said policy or policies are set forth in Exhibit One. Copies of the policy forms should be read. They are available from the office which issued this report.

This report (and any supplements or amendments hereto) is issued solely for the purpose of facilitating the issuance of a policy of title insurance and no liability is assumed hereby.

The policy(s) of title insurance to be issued hereunder will be policy(s) of Fidelity National Title Insurance Company, a/an Florida corporation.

Please read the exceptions shown or referred to herein and the Exceptions and Exclusions set forth in Exhibit One of this report carefully. The Exceptions and Exclusions are meant to provide you with notice of matters which are not covered under the terms of the title insurance policy and should be carefully considered.

It is important to note that this preliminary report is not a written representation as to the condition of title and may not list all liens, defects and encumbrances affecting title to the land.

This preliminary report is for the exclusive use of the parties to the contemplated transaction, and the Company does not have any liability to any third parties nor any liability until the full premium is paid and a policy is issued. Until all necessary documents are placed of record, the Company reserves the right to amend or supplement this preliminary report.

Countersigned

Tara Waterman

Fidelity National Title
Company of Oregon

1455 SW Broadway, Suite 1450, Portland, OR 97201
(503)646-4444 FAX (503)469-4198

PRELIMINARY REPORT

TITLE OFFICER: Kim Alf
kim.alf@titlegroup.fntg.com
(503)317-9251

ORDER NO.: 45142501475
Supplement 1- Date and Taxes

TO: National Title Group, LLC
Denise Bell
4131 N Central Expy, Suite 450
Dallas, TX 75204

ESCROW LICENSE NO.: 901000243
OWNER/SELLER: Walmart Inc., a Delaware corporation
BUYER/BORROWER: Cypress Acquisitions, LLC, a Texas limited liability company
PROPERTY ADDRESS: 1367 Molalla Avenue, Oregon City, OR 97045

EFFECTIVE DATE: November 4, 2025, 08:00 AM

1. THE POLICY AND ENDORSEMENTS TO BE ISSUED AND THE RELATED CHARGES ARE:

	AMOUNT	PREMIUM
ALTA Owner's Policy 2021 **Owner's Standard**	$ 6,000,000.00	$ 9,600.00
OTIRO Endorsement No. 110		$ 0.00
Government Lien Search		$ 140.00

2. THE ESTATE OR INTEREST IN THE LAND HEREINAFTER DESCRIBED OR REFERRED TO COVERED BY THIS REPORT IS:

   A Fee

3. TITLE TO SAID ESTATE OR INTEREST AT THE DATE HEREOF IS VESTED IN:

   Walmart Inc., a Delaware corporation

4. THE LAND REFERRED TO IN THIS REPORT IS SITUATED IN THE CITY OF OREGON CITY, COUNTY OF CLACKAMAS, STATE OF OREGON, AND IS DESCRIBED AS FOLLOWS:

   SEE EXHIBIT "A" ATTACHED HERETO AND MADE A PART HEREOF

EXHIBIT "A"

Legal Description

PARCEL 1:

A tract of land situated in the Southwest one-quarter and the Southeast one-quarter of Section 5, Township 3 South, Range 2 East, Willamette Meridian, in the City of Oregon City, Clackamas County, Oregon, being more particularly described as follows:

Commencing at the extreme Southerly corner of tract described in Clackamas County Deed Book "O", Page 265, said point being in the centerline of Molalla Avenue; thence South 88°29'47" East a distance of 39.98 feet to a point being 35 feet Northeasterly of, when measured at right angles to, the centerline of said road, said point being the true point of beginning; thence along the Northeasterly right-of-way of said Molalla Avenue, North 27°23'32" West a distance of 10.28 feet; thence along the Southerly line that tract described in Fee No. 72-08888 Deed Records, Clackamas County, Oregon, South 88°29'47" East a distance of 653.92 feet to the Southeast corner of said tract; thence along the Easterly line of said tract, North 12°38'23" West a distance of 110.72 feet to the Northwest corner of that tract described in Fee No. 81-19662, Deed Records, Clackamas County, Oregon; thence along the Northerly line of said tract, South 88°29'47" East a distance of 120.00 feet to the Northeast corner of said tract; thence along the Easterly line of said tract, South 12°38'23" East a distance of 120.00 feet to a point on the Northerly line of that tract described in Fee No. 96-046001, Deed Records, Clackamas County, Oregon; thence along the Northerly line of said tract, North 88°29'47" West a distance of 771.22 feet to the true point of beginning.

PARCEL 2:

A tract of land situated in the Southwest one-quarter and the Southeast one-quarter of Section 5, Township 3 South, Range 2 East, Willamette Meridian, in the City of Oregon City, Clackamas County, Oregon, being more particularly described as follows:

Commencing at the extreme Southerly corner of tract described in Clackamas County Deed Book "O", Page 265, said point being in the centerline of Molalla Avenue; thence South 88°29'47" East a distance of 39.98 feet to a point being 35 feet Northeasterly of, when measured at right angles to, the centerline of said road; thence along the Northeasterly right-of-way of said Molalla Avenue, North 27°23'32" West a distance of 10.28 feet to the true point of beginning; thence continuing along the Northeasterly right-of-way of said Molalla Avenue, North 27°23'32" West a distance of 67.85 feet; thence North 62°36'28" East a distance of 5.00 feet to a point 40 feet Northeasterly of, when measured at right angles to, said centerline, said point also being on the Southerly line of that tract described in Fee No. 97-022793, Deed Records, Clackamas County, Oregon; thence leaving said Northeasterly right-of-way line, and continuing along said Southerly line, North 78°20'26" East a distance of 176.19 feet to the Southeasterly corner of said parcel; thence along the Easterly line of said tract, North 27°39'59" West a distance of 73.67 feet to the Southwest corner of that tract described in Fee No. 96-010378, Deed Records, Clackamas County, Oregon; thence along the Northerly line of those tracts described in Fee No. 72-08888 and Fee No. 69-09411, North 78°20'26" East a distance of 846.78 feet to the common corner of those lands described in Fee No. 69-09411, Fee No. 95-073144 and Fee No. 96-010376, Deed Records, Clackamas County, Oregon; thence along the Southerly line of that tract described in Fee No. 96-010376, Deed Records, Clackamas County, North 67°47'51" East a distance of 59.75 feet to the common corner of those lands described in Fee No. 96-010376 and Fee No. 96-007471, Deed Records, Clackamas County, Oregon; thence continuing along the Westerly line of that tract described in Fee No. 96-007471, Deed Records, Clackamas County, Oregon, South 14°26'42" East a distance of 407.81 feet to the common corner of those tracts described in Fee No. 69-09411, Fee No. 96-007471, and Fee No. 96-046001, Deed Records, Clackamas County, Oregon; thence along the Southerly line of that tract of land described in Fee No. 69-09411, Deed Records, Clackamas County, Oregon, North 88°29'47" West a distance of 322.36 feet to the Southeast corner of that tract described in Fee No. 81-19662, Deed Records, Clackamas County, Oregon; thence along the Easterly line of said tract described in Fee No. 81-19662, North 12°38'23" West a distance of 120.00 feet; thence along the Northerly line of said tract, North 88°29'47" West a distance of 120.00 feet; thence along the Westerly line of said tract, South 12°38'23" East a distance of 110.72

EXHIBIT "A"

Legal Description

feet to the Southeast corner of that tract described in Fee No. 72-08888, Deed Records, Clackamas County, Oregon; thence along the Southerly line of said tract described in Fee No. 72-08888, North 88°29'47" West a distance of 653.92 feet to the true point of beginning.

PARCEL 3:

A tract of land situated in the Southwest one-quarter and the Southeast one-quarter of Section 5, Township 3 South, Range 2 East, Willamette Meridian, City of Oregon City, Clackamas County, Oregon. Said tract is more particularly described as follow:

COMMENCING at the extreme Southerly corner of tract described in Clackamas County deed Book "O", Page 265, said point being in the centerline of Molalla Avenue; thence South 88° 29' 47" East a distance of 39.98 feet to a point being 35 feet Northeasterly of, when measured at right angles to, the centerline of said road, said point being the true point of beginning; thence along the Southerly line of those lands described in Fee No. 81-19662, Fee No. 69-09411, and Fee No. 96-007471 Deed Records, Clackamas County, Oregon, South 88° 29' 47" East a distance of 1156.21 feet; thence South 23° 58' 58" East a distance of 133.44 feet to the Southeasterly corner of that tract described in Fee No. 96-046001, Deed Records, Clackamas County, Oregon; thence continuing along the Southerly line of said tract, and along the Northerly line of those lands described in Fee No. 98-044696 and Fee No. 99-004122, Deed Records, Clackamas County, Oregon, South 76° 38' 35" West a distance of 125.26 feet; thence along said Southerly line of that tract described in Fee No. 96-046001, and the Northerly line of that tract described in Fee No. 95-045260, Deed Records, Clackamas County, Oregon, South 76° 19' 45" West a distance of 45.33 feet; thence along said Southerly line, and the Northerly line of those lands described in Fee No. 92-21067, Fee No. 97-004501, and Fee No. 98-041108, Deed Records, Clackamas County, Oregon, South 76° 29' 26" West a distance of 750.61 feet to a point in the Northeasterly right-of-way of Beavercreek road (Market Road No. 11) (County Road No. 398), said point being 30 feet Northeasterly of, when measured at right angles to, the centerline of said road; thence along said Northeasterly right-of-way, North 59° 27' 26" West a distance of 206.63 feet to the common Northeasterly right-of-way intersection of said Beavercreek Road and Molalla Avenue (formerly State Highway No. 213), said point being 35 feet Northeasterly of, when measured at right angles to, said centerline of Molalla Avenue; thence continuing along the Northeasterly right-of-way of said Molalla Avenue, along the arc of a 5694.58 foot radius curve to the right a distance of 66.39 feet, through a central angle of 00° 40' 05" (the long chord of which bears North 27° 43' 34" West a distance of 66.39 feet); thence North, 27° 23' 32" West a distance of 229.17 feet to the true point of beginning.

AS OF THE DATE OF THIS REPORT, ITEMS TO BE CONSIDERED AND EXCEPTIONS TO COVERAGE IN ADDITION TO THE PRINTED EXCEPTIONS AND EXCLUSIONS IN THE POLICY FORM WOULD BE AS FOLLOWS:

GENERAL EXCEPTIONS:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records; proceedings by a public agency which may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records.

2. Any facts, rights, interests or claims, which are not shown by the Public Records but which could be ascertained by an inspection of the Land or by making inquiry of persons in possession thereof.

3. Easements, or claims of easement, which are not shown by the Public Records; reservations or exceptions in patents or in Acts authorizing the issuance thereof; water rights, claims or title to water.

4. Any encroachment (of existing improvements located on the Land onto adjoining land or of existing improvements located on adjoining land onto the subject Land), encumbrance, violation, variation or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the subject Land.

5. Any lien or right to a lien for services, labor, material, equipment rental or workers compensation heretofore or hereafter furnished, imposed by law and not shown by the Public Records.

SPECIFIC ITEMS AND EXCEPTIONS:

6. City Liens, if any, in favor of the City of Oregon City. None found as of February 25, 2025.

7. Rights of the public to any portion of the Land lying within the area commonly known as

streets, roads and highway.

8. Covenants, conditions and restrictions but omitting any covenants or restrictions, if any, including but not limited to those based upon race, color, religion, sex, sexual orientation, familial status, marital status, disability, handicap, national origin, ancestry, source of income, gender, gender identity, gender expression, medical condition or genetic information, as set forth in applicable state or federal laws, except to the extent that said covenant or restriction is permitted by applicable law, as set forth in the document

   Recording Date: June 3, 1981
   Recording No: 81 19230
   Affects: Parcel 2

9. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

   Granted to: Clackamas County
   Purpose: Road purposes
   Recording Date: May 25, 1982
   Recording No: 82 14415
   Affects: Westerly property line of Parcel 2-also delineated on Survey SN2004-377

10. Easement(s) for the purpose(s) shown below and rights incidental thereto as condemned by an instrument,

    Entitled: Judgment
    Court: Circuit
    Cause No.: CCV96-09-321
    Entered: December 20, 1996
    In favor of: The City of Oregon City
    Purpose: Right of way purposes
    Affects: Westerly portion of Parcels 2 and 3-also delineated on Survey SN2004-377

11. Terms, provisions and conditions, including, but not limited to, maintenance provisions, and a covenant to share the costs of maintenance, contained in Easement

    Recording Date: September 30, 2004
    Recording No.: 2004-091253

12. Terms, provisions and conditions, including, but not limited to, maintenance provisions, and a covenant to share the costs of maintenance, contained in Agreement for Dedication and Mutual Easements
    By and Between: Les Schwab Profit Sharing Plan and Wal-Mart Stores, Inc.
    Recording Date: October 1, 2004
    Recording No.: 2004-091594

13. Terms, provisions and conditions, including, but not limited to, maintenance provisions, and a covenant to share the costs of maintenance, contained in Agreement for Dedication and Mutual Easements
    By and Between: Rocky C. Younger, Janice C. Younger, Letha A. Younger and Rocky Mountain Development Company and Wal-Mart Stores, Inc.
    Recording Date: August 15, 2013
    Recording No.: 2013-058815

    NOTE: Said document contains an erroneous legal description in Exhibit A

14. Please be advised that our search did not disclose any open Deeds of Trust of record. If you should have knowledge of any outstanding obligation, please contact the Title Department immediately for further review prior to closing.

15. Existing leases and tenancies, if any, and any interests that may appear upon examination of such leases.

16. If requested to issue an extended coverage ALTA loan policy, the following matters must be addressed:

    a) The rights of tenants holding under unrecorded leases or tenancies
    b) Matters disclosed by a statement as to parties in possession and as to any construction, alterations or repairs to the Land within the last 75 days. The Company must be notified in the event that any funds are to be used for construction, alterations or repairs.
    c) Any facts which would be disclosed by an accurate survey of the Land

17. Unpaid Property Taxes are as follows:

Fiscal Year:	2025-2026
Amount:	$11,110.91, plus interest, if any
Levy Code:	062-002
Account No.:	00848391
Map No.:	32E05DB03200

Prior to close of escrow, please contact the Tax Collector's Office to confirm all amounts owing, including current fiscal year taxes, supplemental taxes, escaped assessments and any delinquencies.

18. Unpaid Property Taxes are as follows:

Fiscal Year:	2025-2026
Amount:	$3,472.86, plus interest, if any
Levy Code:	062-002
Account No.:	00848408
Map No.:	32E05DB03201

Prior to close of escrow, please contact the Tax Collector's Office to confirm all amounts owing, including current fiscal year taxes, supplemental taxes, escaped assessments and any delinquencies.

19. Unpaid Property Taxes are as follows:

Fiscal Year:	2025-2026
Amount:	$11,326.08, plus interest, if any
Levy Code:	062-002
Account No.:	00848417
Map No.:	32E05DB03300

Prior to close of escrow, please contact the Tax Collector's Office to confirm all amounts owing, including current fiscal year taxes, supplemental taxes, escaped assessments and any delinquencies.

20. Unpaid Property Taxes are as follows:

Fiscal Year:	2025-2026
Amount:	$22,626.31, plus interest, if any
Levy Code:	062-002
Account No.:	00848435
Map No.:	32E05DB03400

Prior to close of escrow, please contact the Tax Collector's Office to confirm all amounts owing, including current fiscal year taxes, supplemental taxes, escaped assessments and any delinquencies.

ADDITIONAL REQUIREMENTS/NOTES:

A. Note: Property taxes for the fiscal year shown below are paid in full.

Fiscal Year: 2024-2025
Amount: $3,150.14
Levy Code: 062-002
Account No.: 00848408
Map No.: 32E05DB03201
Affects: Parcel 1

Prior to close of escrow, please contact the Tax Collector's Office to confirm all amounts owing, including current fiscal year taxes, supplemental taxes, escaped assessments and any delinquencies.

B. Note: Property taxes for the fiscal year shown below are paid in full.

Fiscal Year: 2024-2025
Amount: $10,078.40
Levy Code: 062-002
Account No.: 00848391
Map No.: 32E05DB03200
Affects: Portion of Parcel 2

Prior to close of escrow, please contact the Tax Collector's Office to confirm all amounts owing, including current fiscal year taxes, supplemental taxes, escaped assessments and any delinquencies.

C. Note: Property taxes for the fiscal year shown below are paid in full.

Fiscal Year: 2024-2025
Amount: $10,273.58
Levy Code: 062-002
Account No.: 00848417
Map No.: 32E05DB03300
Affects: Balance of Parcel 2

Prior to close of escrow, please contact the Tax Collector's Office to confirm all amounts owing, including current fiscal year taxes, supplemental taxes, escaped assessments and any delinquencies.

D. Note: Property taxes for the fiscal year shown below are paid in full.

Fiscal Year: 2024-2025
Amount: $20,523.70
Levy Code: 062-002
Account No.: 00848435
Map No.: 32E05DB03400
Affects: Parcel 3

Prior to close of escrow, please contact the Tax Collector's Office to confirm all amounts owing, including current fiscal year taxes, supplemental taxes, escaped assessments and any delinquencies.

E. In addition to the standard policy exceptions, the exceptions enumerated above shall appear on the final ALTA Policy unless removed prior to issuance.

F. Note: If an Owner's Title Insurance Policy is requested, the State of Oregon requires every ALTA Owner's Policy (07-01-2021) to include the OTIRO 110 Endorsement as a supplement to the definition of Insured in said Owner's Policy's Conditions to confirm coverage is the same for an Oregon Registered Domestic Partner as it is for a Spouse.

G. Furnish recording instructions with the documents to be recorded in this transaction. Said instructions must address each requirement made herein, list any endorsements to be issued with the policy and specify the recording order of any documents furnished.

The Company reserves the right to add additional items or make further requirements after review of the requested instructions prior to recording the documents or issuing any requested endorsement.

The Company also reserves the right to charge any applicable additional fees for any endorsement requested.

H. Any claim based on the failure to comply with the provisions of Governmental Laws and Regulations regarding the division of land.

I. Note: There are NO conveyances affecting said Land recorded within 24 months of the date of this report.

J. The Company will require the following documents for review prior to the issuance of any title insurance predicated upon a conveyance or encumbrance from the entity named below.

Limited Liability Company: Cypress Acquisitions, LLC

a. A copy of its operating agreement, if any, and any and all amendments, supplements and/or modifications thereto, certified by the appropriate manager or member.

b. If a domestic Limited Liability Company, a copy of its Articles of Organization and all amendment thereto with the appropriate filing stamps.

c. If the Limited Liability Company is member-managed a full and complete current list of members certified by the appropriate manager or member.

d. A current dated certificate of good standing from the proper governmental authority of the state in which the entity was created

e. If less than all members, or managers, as appropriate, will be executing the closing documents, furnish evidence of the authority of those signing.

The Company reserves the right to add additional items or make further requirements after review of the requested documentation.

K. Note: There are no matters against the party(ies) shown below which would appear as exceptions to coverage in a title insurance product:

Parties: Cypress Acquisitions, LLC, a Texas limited liability company

L. Notice: Please be aware that due to the conflict between federal and state laws concerning the cultivation, distribution, processing, manufacture, sale, dispensing or use of marijuana and psilocybin, the Company is not able to close or insure any transaction involving Land associated with these activities.

M. Note: No utility search has been made or will be made for water, sewer or storm drainage charges unless the City/Service District claims them as liens (i.e. foreclosable) and reflects them on its lien docket as of the date of closing. Buyers should check with the appropriate city bureau or water service district and obtain a billing cutoff. Such charges must be adjusted outside of escrow.

N. Note: Effective January 1, 2008, Oregon law (ORS 314.258) mandates withholding of Oregon income taxes from sellers who do not continue to be Oregon residents or qualify for an exemption. Please contact your Escrow Closer for further information.

O. Recording Charge (Per Document) is the following:

County	First Page	Each Additional Page
Multnomah	$86.00	$5.00
Washington	$81.00	$5.00
Clackamas	$93.00	$5.00

Note: When possible the company will record electronically. An additional charge may be applied.

Note: Please send any documents for recording to the following address:
Portland Title Group
Attn: Recorder
1455 SW Broadway, Suite 1450
Portland, OR. 97201

P. THE FOLLOWING NOTICE IS REQUIRED BY STATE LAW: YOU WILL BE REVIEWING, APPROVING AND SIGNING IMPORTANT DOCUMENTS AT CLOSING. LEGAL CONSEQUENCES FOLLOW FROM THE SELECTION AND USE OF THESE DOCUMENTS. YOU MAY CONSULT AN ATTORNEY ABOUT THESE DOCUMENTS. YOU SHOULD CONSULT AN ATTORNEY IF YOU HAVE QUESTIONS OR CONCERNS ABOUT THE TRANSACTION OR ABOUT THE DOCUMENTS. IF YOU WISH TO REVIEW TRANSACTION DOCUMENTS THAT YOU HAVE NOT SEEN, PLEASE CONTACT THE ESCROW AGENT.

Q. Note: This map/plat is being furnished as an aid in locating the herein described Land in relation to adjoining streets, natural boundaries and other land. Except to the extent a policy of title insurance is expressly modified by endorsement, if any, the Company does not insure dimensions, distances or acreage shown thereon.

R. NOTE: IMPORTANT INFORMATION REGARDING PROPERTY TAX PAYMENTS

Fiscal Year:	July 1st through June 30th
Taxes become a lien on real property, but are not yet payable:	July 1st
Taxes become certified and payable (approximately on this date):	October 15th
First one third payment of taxes is due:	November 15th
Second one third payment of taxes is due:	February 15th
Final payment of taxes is due:	May 15th

Discounts: If two thirds are paid by November 15th, a 2% discount will apply.
If the full amount of the taxes are paid by November 15th, a 3% discount will apply.

Interest: Interest accrues as of the 15th of each month based on any amount that is unpaid by the due date. No interest is charged if the minimum amount is paid according to the above mentioned payment schedule.

EXHIBIT ONE

2021 AMERICAN LAND TITLE ASSOCIATION LOAN POLICY (07-01-2021)
EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy, and the Company will not pay loss or damage, costs, attorneys' fees, or expenses that arise by reason of:

1. a. any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) that restricts, regulates, prohibits, or relates to:
   i. the occupancy, use, or enjoyment of the Land;
   ii. the character, dimensions, or location of any improvement on the Land;
   iii. the subdivision of land; or
   iv. environmental remediation or protection.
   b. any governmental forfeiture, police, regulatory, or national security power.
   c. the effect of a violation or enforcement of any matter excluded under Exclusion 1.a. or 1.b.
2. Any power of eminent domain. Exclusion 2 does not modify or limit the coverage provided under Covered Risk 7.
3. Any defect, lien, encumbrance, adverse claim, or other matter:
   a. created, suffered, assumed, or agreed to by the Insured Claimant;
   b. not Known to the Company, not recorded in the Public Records at the Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
   c. resulting in no loss or damage to the Insured Claimant;
   d. attaching or created subsequent to the Date of Policy (Exclusion 3.d. does not modify or limit the coverage provided under Covered Risk 11, 13, or 14); or
   e. resulting in loss or damage that would not have been sustained if consideration sufficient to qualify the Insured named in Schedule A as a bona fide purchaser or encumbrancer had been given for the Insured Mortgage at the Date of Policy.
4. Unenforceability of the lien of the Insured Mortgage because of the inability or failure of an Insured to comply with applicable doing-business law.
5. Invalidity or unenforceability of the lien of the Insured Mortgage that arises out of the transaction evidenced by the Insured Mortgage and is based upon usury or Consumer Protection Law.
6. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights law, that the transaction creating the lien of the Insured Mortgage is a:
   a. fraudulent conveyance or fraudulent transfer;
   b. voidable transfer under the Uniform Voidable Transactions Act; or
   c. preferential transfer:
      i. to the extend the Insured Mortgage is not a transfer made as a contemporaneous exchange for new value; or
      ii. for any reason not stated in the Covered Risk 13.b
7. Any claim of a PACA-PSA Trust. Exclusion 7 does not modify or limit the coverage provided under Covered Risk 8.
8. Any lien on the Title for real estate taxes or assessments imposed by a governmental authority and created or attaching between the Date of Policy and the date of recording of the Insured Mortgage in the Public Records. Exclusion 8 does not modify or limit the coverage provided under Covered Risk 2.b. or 11.b.
9. Any discrepancy in the quantity of the area, square footage, or acreage of the Land or of any improvement to the Land.

The above policy form may be issued to afford either Standard Coverage or Extended Coverage. In addition to the above Exclusions from Coverage, the Exceptions from Coverage in a Standard Coverage policy will also include the following Exceptions from Coverage.

SCHEDULE B - GENERAL EXCEPTIONS FROM COVERAGE

This policy does not insure against loss or damage (and the Company will not pay costs, attorneys' fees or expenses) which arise by reason of:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records; proceedings by a public agency which may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records.
2. Facts, rights, interests or claims which are not shown by the Public Records but which could be ascertained by an inspection of the Land or by making inquiry of persons in possession thereof.
3. Easements, or claims of easement, not shown by the Public Records; reservations or exceptions in patents or in Acts authorizing the issuance thereof, water rights, claims or title to water.
4. Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land. The term "encroachment" includes encroachments of existing improvements located on the Land onto adjoining land, and encroachments onto the Land of existing improvements located on adjoining land.
5. Any lien for services, labor or material heretofore or hereafter furnished, or for contributions due to the State of Oregon for unemployment compensation or worker's compensation, imposed by law and not shown by the Public Records.

2021 AMERICAN LAND TITLE ASSOCIATION OWNER'S POLICY (07-01-2021)
EXCLUSIONS FROM COVERAGE

The following matters are excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses that arise by reason of:

1. a. any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) that restricts, regulates, prohibits, or relates to:
   i. the occupancy, use, or enjoyment of the Land;
   ii. the character, dimensions or location of any improvement on the Land;
   iii. the subdivision of land; or
   iv. environmental remediation or protection;
   b. any governmental forfeiture, police, regulatory, or national security power
   c. the effect of a violation or enforcement of any matter excluded under Exclusion 1.a. or 1.b.

   Exclusion 1 does not modify or limit the coverage provided under Covered Risk 5 or 6.
2. Any power of eminent domain. Exclusion 2 does not modify or limit the coverage provided under Covered Risk 7.
3. Any defect, lien, encumbrance, adverse claim, or other matter:
   a. created, suffered, assumed or agreed to by the Insured Claimant;
   b. not known to the Company, not recorded in the Public Records at the Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
   c. resulting in no loss or damage to the Insured Claimant;
   d. attaching or created subsequent to the Date of Policy (Exclusion 3.d. does not modify or limit the coverage provided under Covered Risk 9 or 10); or
   e. resulting in loss or damage that would not have been sustained if consideration sufficient to qualify the Insured named in Schedule A as a bona fide purchaser had been given for the Title at the Date of Policy.
4. Any claim, by reason of the operation of federal bankruptcy, state insolvency or similar creditors' rights law, that the transaction vesting the Title as shown in Schedule A is a:
   a. fraudulent conveyance or fraudulent transfer, or
   b. voidable transfer under the Uniform Voidable Transactions Act; or
   c. preferential transfer:
      i. to the extent the instrument of transfer vesting the Title as shown in Schedule A is not a transfer made as a contemporaneous exchange for new value; or
      ii. for any other reason not stated in Covered Risk 9.b.
5. Any claim of a PACA-PSA Trust. Exclusion 5 does not modify or limit the coverage provided under Covered Risk 8.
6. Any lien on the Title for real estate taxes or assessments imposed or collected by a governmental authority that becomes due and payable after the Date of Policy. Exclusion 6 does not modify or limit the coverage provided under Covered Risk 2.b.
7. Any discrepancy in the quantity of the area, square footage, or acreage of the Land or of any improvement to the Land.

The above policy form may be issued to afford either Standard Coverage or Extended Coverage. In addition to the above Exclusions from Coverage, the Exceptions from Coverage in a Standard Coverage policy will also include the following Exceptions from Coverage.

SCHEDULE B - GENERAL EXCEPTIONS FROM COVERAGE

This policy does not insure against loss or damage (and the Company will not pay costs, attorneys' fees or expenses) which arise by reason of:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records; proceedings by a public agency which may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records.
2. Facts, rights, interests or claims which are not shown by the Public Records but which could be ascertained by an inspection of the Land or by making inquiry of persons in possession thereof.
3. Easements, or claims of easement, not shown by the Public Records; reservations or exceptions in patents or in Acts authorizing the issuance thereof, water rights, claims or title to water.
4. Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land. The term "encroachment" includes encroachments of existing improvements located on the Land onto adjoining land, and encroachments onto the Land of existing improvements located on adjoining land.
5. Any lien for services, labor or material heretofore or hereafter furnished, or for contributions due to the State of Oregon for unemployment compensation or worker's compensation, imposed by law and not shown by the Public Records.

EXHIBIT ONE

2006 AMERICAN LAND TITLE ASSOCIATION LOAN POLICY (06-17-06)
EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses that arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to building and zoning) restricting, regulating, prohibiting or relating to
   (i) the occupancy, use, or enjoyment of the Land;
   (ii) the character, dimensions or location of any improvement erected on the land;
   (iii) the subdivision of land; or
   (iv) environmental protection;
   or the effect of any violation of these laws, ordinances or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5.
   (b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 6.
2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.
3. Defects, liens, encumbrances, adverse claims, or other matters
   (a) created, suffered, assumed or agreed to by the Insured Claimant;
   (b) not known to the Company, not recorded in the Public Records at Date of Policy, but known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
   (c) resulting in no loss or damage to the Insured Claimant;
   (d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risk 11, 13, or 14); or
   (e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Insured Mortgage.
4. Unenforceability of the lien of the Insured Mortgage because of the inability or failure of an Insured to comply with the applicable doing-business laws of the state where the Land is situated.
5. Invalidity or unenforceability in whole or in part of the lien of the Insured Mortgage that arises out of the transaction evidenced by the Insured Mortgage and is based upon usury or any consumer credit protection or truth-in-lending law.
6. Any claim, by reason of the operation of federal bankruptcy, state insolvency or similar creditors' rights laws, that the transaction creating the lien of the Insured Mortgage, is
   (a) a fraudulent conveyance or fraudulent transfer, or
   (b) a preferential transfer for any reason not stated in the Covered Risk 13(b) of this policy.
7. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching between Date of Policy and the date of recording of the Insured Mortgage in the Public Records. This Exclusion does not modify or limit the coverage provided under Covered Risk 11(b).

The above policy form may be issued to afford either Standard Coverage or Extended Coverage. In addition to the above Exclusions from Coverage, the Exceptions from Coverage in a Standard Coverage policy will also include the following Exceptions from Coverage.

SCHEDULE B - GENERAL EXCEPTIONS FROM COVERAGE

This policy does not insure against loss or damage (and the Company will not pay costs, attorneys' fees or expenses) which arise by reason of:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records; proceedings by a public agency which may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records.
2. Facts, rights, interests or claims which are not shown by the Public Records but which could be ascertained by an inspection of the Land or by making inquiry of persons in possession thereof.
3. Easements, or claims of easement, not shown by the Public Records; reservations or exceptions in patents or in Acts authorizing the issuance thereof, water rights, claims or title to water.
4. Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land. The term "encroachment" includes encroachments of existing improvements located on the Land onto adjoining land, and encroachments onto the Land of existing improvements located on adjoining land.
5. Any lien for services, labor or material heretofore or hereafter furnished, or for contributions due to the State of Oregon for unemployment compensation or worker's compensation, imposed by law and not shown by the Public Records.

2006 AMERICAN LAND TITLE ASSOCIATION OWNER'S POLICY (06-17-06)
EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses that arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to building and zoning) restricting, regulating, prohibiting or relating to
   (i) the occupancy, use, or enjoyment of the Land;
   (ii) the character, dimensions or location of any improvement erected on the land;
   (iii) the subdivision of land; or
   (iv) environmental protection;
   or the effect of any violation of these laws, ordinances or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5.
   (b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 6.
2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.
3. Defects, liens, encumbrances, adverse claims, or other matters
   (a) created, suffered, assumed or agreed to by the Insured Claimant;
   (b) not known to the Company, not recorded in the Public Records at Date of Policy, but known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
   (c) resulting in no loss or damage to the Insured Claimant;
   (d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risk 9 and 10); or
   (e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Title.
4. Any claim, by reason of the operation of federal bankruptcy, state insolvency or similar creditors' rights laws, that the transaction creating the lien of the Insured Mortgage, is
   (a) a fraudulent conveyance or fraudulent transfer, or
   (b) a preferential transfer for any reason not stated in the Covered Risk 9 of this policy.
7. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching between Date of Policy and the date of recording of the deed or other instrument of transfer in the Public Records that vests Title as shown in Schedule A.

The above policy form may be issued to afford either Standard Coverage or Extended Coverage. In addition to the above Exclusions from Coverage, the Exceptions from Coverage in a Standard Coverage policy will also include the following Exceptions from Coverage.

SCHEDULE B - GENERAL EXCEPTIONS FROM COVERAGE

This policy does not insure against loss or damage (and the Company will not pay costs, attorneys' fees or expenses) which arise by reason of:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records; proceedings by a public agency which may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records.
2. Facts, rights, interests or claims which are not shown by the Public Records but which could be ascertained by an inspection of the Land or by making inquiry of persons in possession thereof.
3. Easements, or claims of easement, not shown by the Public Records; reservations or exceptions in patents or in Acts authorizing the issuance thereof, water rights, claims or title to water.
4. Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land. The term "encroachment" includes encroachments of existing improvements located on the Land onto adjoining land, and encroachments onto the Land of existing improvements located on adjoining land.
5. Any lien for services, labor or material heretofore or hereafter furnished, or for contributions due to the State of Oregon for unemployment compensation or worker's compensation, imposed by law and not shown by the Public Records.

WIRE SAFE™ | Inquire before you wire!

WIRE FRAUD ALERT

This Notice is not intended to provide legal or professional advice.
If you have any questions, please consult with a lawyer.

All parties to a real estate transaction are targets for wire fraud and many have lost hundreds of thousands of dollars because they simply relied on the wire instructions received via email, without further verification. **If funds are to be wired in conjunction with this real estate transaction, we strongly recommend verbal verification of wire instructions through a known, trusted phone number prior to sending funds.**

In addition, the following non-exclusive self-protection strategies are recommended to minimize exposure to possible wire fraud.

- **NEVER RELY** on emails purporting to change wire instructions. Parties to a transaction rarely change wire instructions in the course of a transaction.
- **ALWAYS VERIFY** wire instructions, specifically the ABA routing number and account number, by calling the party who sent the instructions to you. DO NOT use the phone number provided in the email containing the instructions, use phone numbers you have called before or can otherwise verify. **Obtain the number of relevant parties to the transaction as soon as an escrow account is opened.** DO NOT send an email to verify as the email address may be incorrect or the email may be intercepted by the fraudster.
- **USE COMPLEX EMAIL PASSWORDS** that employ a combination of mixed case, numbers, and symbols. Make your passwords greater than eight (8) characters. Also, change your password often and do NOT reuse the same password for other online accounts.
- **USE MULTI-FACTOR AUTHENTICATION** for email accounts. Your email provider or IT staff may have specific instructions on how to implement this feature.

For more information on wire-fraud scams or to report an incident, please refer to the following links:

Federal Bureau of Investigation:
http://www.fbi.gov

Internet Crime Complaint Center:
http://www.ic3.gov

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FIDELITY NATIONAL FINANCIAL
PRIVACY NOTICE

Effective January 1, 2025

Fidelity National Financial, Inc. and its majority-owned subsidiary companies (collectively, "FNF," "our," or "we") respect and are committed to protecting your privacy. This Privacy Notice explains how we collect, use, and protect personal information, when and to whom we disclose such information, and the choices you have about the use and disclosure of that information.

A limited number of FNF subsidiaries have their own privacy notices. If a subsidiary has its own privacy notice, the privacy notice will be available on the subsidiary's website and this Privacy Notice does not apply.

Collection of Personal Information

FNF may collect the following categories of Personal Information:

- contact information (*e.g.*, name, address, phone number, email address);
- demographic information (*e.g.*, date of birth, gender, marital status);
- identity information (*e.g.,* Social Security Number, driver's license, passport, or other government ID number);
- financial account information (*e.g.,* loan or bank account information);
- biometric data (e.g., fingerprints, retina or iris scans, voiceprints, or other unique biological characteristics; and
- other personal information necessary to provide products or services to you.

We may collect Personal Information about you from:

- information we receive from you or your agent;
- information about your transactions with FNF, our affiliates, or others; and
- information we receive from consumer reporting agencies and/or governmental entities, either directly from these entities or through others.

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- Internet Protocol (IP) address and operating system;
- browser version, language, and type;
- domain name system requests; and
- browsing history on the FNF Website, such as date and time of your visit to the FNF Website and visits to the pages within the FNF Website.

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Other Online Specifics

Cookies. When you visit an FNF Website, a "cookie" may be sent to your computer. A cookie is a small piece of data that is sent to your Internet browser from a web server and stored on your computer's hard drive. Information gathered using cookies helps us improve your user experience. For example, a cookie can help the website load properly or can customize the display page based on your browser type and user preferences. You can choose whether or not to accept cookies by changing your Internet browser settings. Be aware that doing so may impair or limit some functionality of the FNF Website.

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FNF uses Personal Information for these main purposes:

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- To improve our products and services.
- To prevent and detect fraud;
- To maintain the security of our systems, tools, accounts, and applications;
- To verify and authenticate identities and credentials;
- To communicate with you about our, our affiliates', and others' products and services, jointly or independently.
- To provide reviews and testimonials about our services, with your consent.

When Information Is Disclosed

We may disclose your Personal Information and Browsing Information in the following circumstances:

- to enable us to detect or prevent criminal activity, fraud, material misrepresentation, or nondisclosure;
- to affiliated or nonaffiliated service providers who provide or perform services or functions on our behalf and who agree to use the information only to provide such services or functions;
- to affiliated or nonaffiliated third parties with whom we perform joint marketing, pursuant to an agreement with them to jointly market financial products or services to you;
- to law enforcement or authorities in connection with an investigation, or in response to a subpoena or court order; or
- in the good-faith belief that such disclosure is necessary to comply with legal process or applicable laws, or to protect the rights, property, or safety of FNF, its customers, or the public.

The law does not require your prior authorization and does not allow you to restrict the disclosures described above. Additionally, we may disclose your information to third parties for whom you have given us authorization or consent to make such disclosure. We do not otherwise share your Personal Information or Browsing Information with nonaffiliated third parties, except as required or permitted by law.

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- Non-affiliated third parties, with your consent;
- Business in connection with the sale or other disposition of all or part of the FNF business and/or assets;
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For Nevada Residents: We are providing this notice pursuant to state law. You may be placed on our internal Do Not Call List by calling FNF Privacy at (888) 714-2710 or by contacting us via the information set forth at the end of this Privacy Notice. For further information concerning Nevada's telephone solicitation law, you may contact: Bureau of Consumer Protection, Office of the Nevada Attorney General, 555 E. Washington St., Suite 3900, Las Vegas, NV 89101; Phone number: (702) 486-3132; email: aginquiries@ag.state.nv.us.

For Oregon Residents: We will not share your Personal Information or Browsing Information with nonaffiliated third parties for marketing purposes, except after you have been informed by us of such sharing and had an opportunity to indicate that you do not want a disclosure made for marketing purposes. For additional information about your Oregon consumer privacy rights, or to make a consumer privacy request, or appeal a previous privacy request, please email privacy@fnf.com or call (888) 714-2710

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By submitting Personal Information and/or Browsing Information to FNF, you consent to the collection and use of the information in accordance with this Privacy Notice. We may change this Privacy Notice at any time. The Privacy Notice's effective date will show the last date changes were made. If you provide information to us following any change of the Privacy Notice, that signifies your assent to and acceptance of the changes to the Privacy Notice.

Accessing and Correcting Information; Contact Us

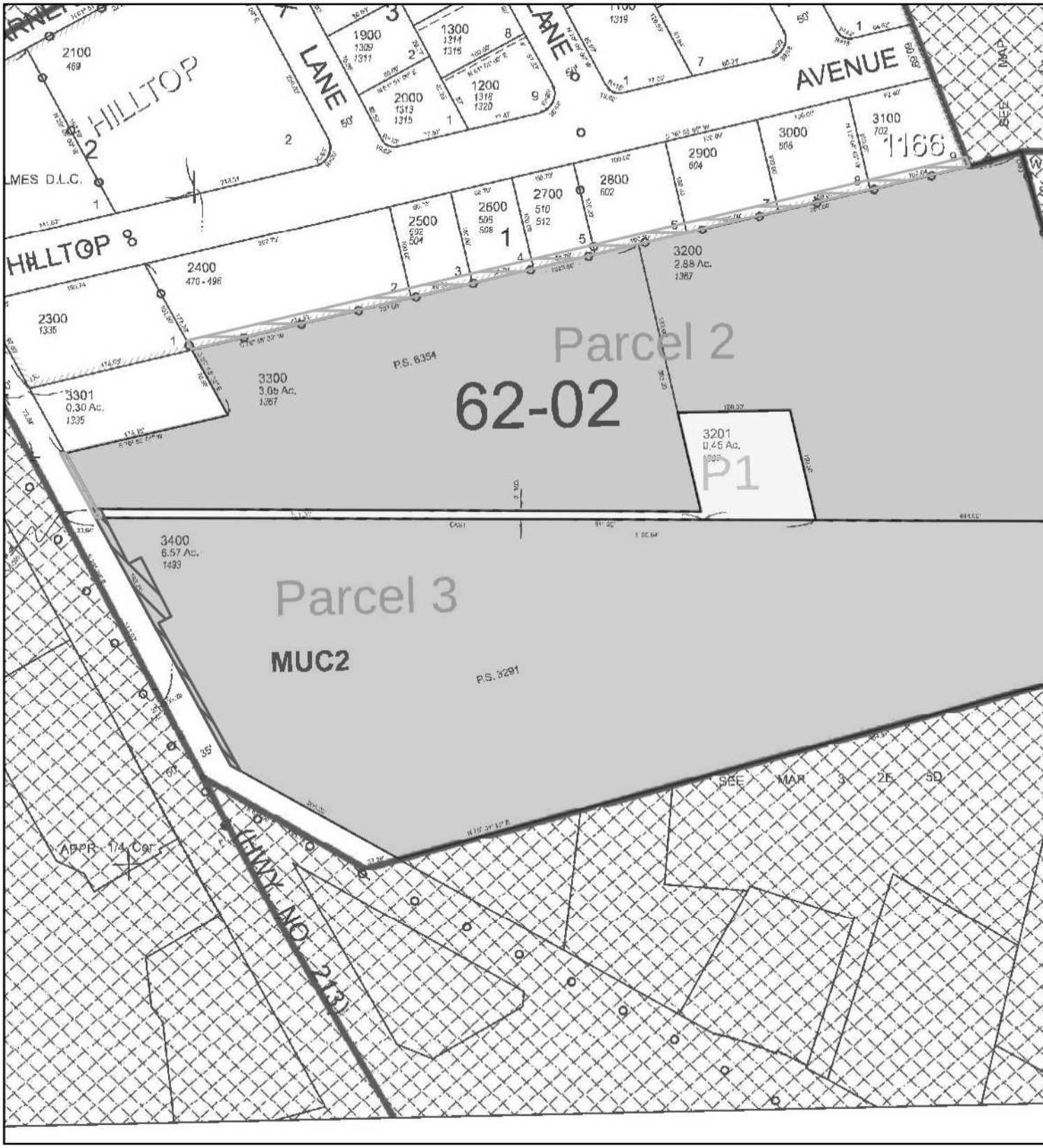
If you have questions or would like to correct your Personal Information, visit FNF's Privacy Request website or contact us by phone at (888) 714-2710, by email at privacy@fnf.com, or by mail to:

Fidelity National Financial, Inc.
601 Riverside Avenue,
Jacksonville, Florida 32204
Attn: Chief Privacy Officer

Scale 1 inch = 65

Feet

0 50 100 200 300 400



Legend

PARCEL 1 - Property In Question, Fee

APPENDIX K
Arborist Report

Walter H. Knapp & Associates, LLC
Consultants in Arboriculture, Silviculture, and Forest Ecology

February 20, 2013

PACLAND – OREGON CITY PROJECT
ARBORIST REPORT AND TREE PRESERVATION PLAN

1228

Purpose

This Arborist Report is the tree inventory, protection and mitigation plan for the Pacland Oregon City project provided pursuant to City of Oregon City Municipal Code Chapter 17.41. This document describes the existing trees located on the project site, provides arborist recommendations for tree retention and protection during construction, and explains the number of replacement trees required to be planted as mitigation for tree removal.

Site Description and Methods

The project site is located at 1367 Molalla Avenue in Oregon City, Oregon. The site is a vacant lot and primarily a flat field. Trees are scattered across the site and along property boundaries, but the majority of trees are located in the southeast portion of the site. Commercial development is planned across the site.

A visual assessment of individual trees located on the Pacland Oregon City project site was conducted on November 28, 2012 by ISA Certified Arborists Morgan Holen (PN-6145A) and Walt Knapp (PN-0497A). Additional fieldwork was performed on January 2 and 8, 2013. Pacland provided us with survey site maps of the existing trees and we collected inventory data for trees measuring 6-inches and larger in diameter as measured 4.5-feet above ground level.

Prior to developing this report, we coordinated with Pacland to discuss the tree inventory data, recommendations for tree removal and preservation, alternative designs to maximize tree preservation, specifications for tree protection during construction, and mitigation requirements.

Tree Inventory

A complete description of individual trees is provided in the enclosed tree inventory data. In all, 487 trees were inventoried, including 97 (20%) trees located off-site on adjacent properties. These neighboring trees are recommended for preservation with protection during construction. An additional 26 (5%) trees located off-site are located within the construction area, specifically in the southeast area where right-of-way improvements are required to connect Beavercreek Road to the project site; these 26 trees are recommended for removal for the purposes of construction.

The inventory data include a numerical condition rating assigned by the arborists to generally describe the condition of individual trees as follows:

7615 SW Dunsmuir Lane, Beaverton, OR 97007
Phone: (503) 646-4349 Fax: (503) 747-4863

0: Off-site, condition not evaluated
1: Dead / Hazardous
2: Poor Condition
3: Fair Condition
4: Good Condition
5: Excellent Condition

Of the 364 on-site trees inventoried, 11 tree species were identified. The trees were highly variable in size and condition, and condition ratings varied depending on species, stand structure and development. None of the trees rated 5 for excellent condition. Refer to the enclosed Arborist Site Plan Mark-up for an illustration of trees color-coded by general condition rating. Table 1 provides a count of trees by species and treatment recommendations.

Table 1. Number of Tree by Species and Treatment Recommendations.

Tree Species	Retain	Remove	Protect Off-Site	Remove Off-Site	Total
apple (*Malus* spp.)		1			**1** (0.2%)
bigleaf maple (*Acer macrophyllum*)	12	98		1	**111** (23%)
black cottonwood (*Populus trichocarpa*)		13		1	**14** (3%)
Douglas-fir (*Pseudotsuga menziesii*)	6	93		24	**123** (25%)
English hawthorn (*Crataegus monogyna*)		11			**11** (2%)
Oregon ash (*Fraxinus latifolia*)		4			**4** (0.8%)
Oregon white oak (*Quercus garryana*)	6	6			**12** (2%)
pear (*Pryus* spp.)		1			**1** (0.2%)
Port-Orford-cedar (*Chamaecyparis lawsoniana*)	8				**8** (2%)
Scouler's willow (*Salix scouleriana*)		4			**4** (0.8%)
sweet cherry (*Prunus avium*)		101			**101** (21%)
Adjacent, Off-Site Tree			97		**97** (20%)
Total Percent of Total Inventory	**32** 7%	**332** 68%	**97** 20%	**26** 5%	**487**

Native species that dominate the relatively natural forest stand located in the southeast portion of the site include bigleaf maple (*Acer macrophyllum*) and Douglas-fir (*Pseudotsuga menziesii*), accounting for 110 (23%) and 99 (20%) of the

on-site trees respectively. Many of the bigleaf maples were senescent and exhibited branch and stem decay. The Douglas-firs were generally in good condition, although the larger and more dominant trees generally appeared more sustainable than the smaller and more suppressed trees, which is natural stand dynamics for the shade intolerant species. Twelve bigleaf maples and six Douglas-firs are suitable for retention with development.

Non-native and invasive tree species were also common, including sweet cherry (*Prunus avium*) and English hawthorn (*Crataegus monogyna*), accounting for 101 (21%) and 11 (2%) of the on-site tree respectively. Invasive species are broadly defined as species that were introduced by humans to locations outside of their native range that spread and persist over large areas, outcompeting native species. Invasive species negatively impact natural ecosystems by displacing native species, reducing biological diversity and interfering with natural succession. The City of Oregon City lists both sweet cherry and English Hawthorn on the City's *Nuisance Plant List.* These fast growing and short-lived trees generally appeared in poor condition. All of the invasive trees are recommended for removal because of species.

A total of 12 (2%) Oregon white oaks (*Quercus garryana*) are located on-site, primarily along the southern property boundary and generally appear in good condition. Six oaks are suitable for preservation with development along the southern property boundary.

Fast growing and short-lived black cottonwoods were identified primarily in the northeast area, including 13 (3%) on-site trees. These trees are all recommended for removal because of inherent species limitations and for construction.

Other species identified on-site include one (<1%) apple (*Malus* spp.), one (<1%) pear (*Pyrus* spp.), and four (<1%) Scouler's willow (*Salix scouleriana*) all recommended for removal because of condition, and eight (2%) Port-Orford-cedars (*Chamaecyparis lawsoniana*) that are small, vigorous and suitable for preservation along the northern property boundary.

Tree Preservation and Mitigation

City of Oregon City Municipal Code Chapter 17.41 intends to ensure that new development is designed in order to maximize tree preservation to the greatest extent feasible. Healthy trees located outside of the construction area—defined in section 17.04.230 as rights-of-way, public utility easements, and within the building footprint of a building site for any mixed-use, commercial or industrial development—must be preserved to the greatest extent possible. Hazardous trees and trees listed as invasive species are exempt from these regulations.

In addition, section 17.41.060 requires tree replacement for the removal of regulated healthy trees that are removed outside of the construction area at a ratio of 1 to 15 trees replanted for each tree removed depending on the size of the tree to be removed

and whether or not that tree is located outside of or within the construction area. Replacement trees must be at least 2-inch caliper deciduous trees or 6-foot tall evergreens. Table 2 duplicates Table 17.41.060-1 from the Oregon City Municipal Code. Note that the number of replacement trees required on a development site must be calculated separately from, and in addition to, any required street trees per City of Oregon City Municipal Code section 12.08.

Table 2. Oregon City Tree Replacement Requirements.

Size of Tree Removed	Number of Tree to be Planted (If removed Outside of construction area)	Number of Tree to be Planted (If removed Within construction area)
6 to 12”	3	1
13 to 18”	6	2
19 to 24”	9	3
25 to 30”	12	4
31”+	15	5

We coordinated with the project team to discuss grading requirements, modify plans to meander sidewalks and utilities away from trees as feasible, and to explore alternative construction techniques to provide sufficient tree protection.

In all, 32 on-site trees are recommended for retention with construction, including 24 trees located outside of the construction area and eight trees located within the construction area. Of the remaining 455 inventoried trees, 97 off-site trees are recommended for protection, 26 off-site trees must be removed for street improvements, and 332 on-site trees must be removed for construction, including 16 hazardous trees (with an assigned condition rating of 1) and 112 invasive trees.

We coordinated with Pacland to account for whether trees were located outside of or within the construction area as defined by the City’s Code. Table 3 provides a summary of the number of trees required to be replanted as mitigation for tree removal based on the criteria described in table 2. Refer to the enclosed tree inventory data for individual tree data.

Table 3. Mitigation Required for Tree Removal

	Outside of Construction Area	Within Construction Area	Total Mitigation Required
Number of trees required as mitigation for the removal of 204 non-invasive and non-hazardous trees located on-site and 26 off-site trees to be removed for street improvements *(refer to tree inventory for individual tree data)*	669	193	**862**

Replanting with 862 trees is required as mitigation for 204 trees to be removed that are non-invasive and non-hazardous and for the 26 off-site trees to be removed for

required street improvements. We recommend replanting with a diverse mix of tree species along the eastern property boundary, including western redcedar (*Thuja plicata*), cascara (*Rhamnus purshiana*), pacific yew (*Taxus brevifolia*), western hemlock (*Tsuga heterophylla*), Oregon ash (*Fraxinus latifolia*), vine maple (*Acer circinatum*) and serviceberry (*Amelanchier alnifolia*). Additionally, Incense-cedar (*Calocedrus decurrens*) would be a good candidate for providing a screen along property lines where needed.

The City's Code also provides options for the applicant to plant mitigation trees off-site or make a cash payment in-lieu-of replanting. Since the amount of available on-site planting space is limited and street trees are not counted towards tree replacement requirements, the applicant will likely rely on a combination of on-site planting and payment in-lieu-of replanting in order to satisfy the required mitigation.

The trees to be retained will require special consideration to ensure their protection during construction.

Some preserved trees will require pruning for clearance and to remove dead and defective branches. The project arborist can help identify where pruning is necessary once trees recommended for removal have been removed and the site is staked and prepared for construction. Tree removal and pruning should be performed by a qualified tree service.

When the proposed sidewalks are staked, the alignment should be adjusted to avoid tree protection areas as feasible. Field-fitting sidewalks around trees and building up from the existing grade to avoid root zone excavation will help to ensure adequate protection. A modified profile is recommended for sidewalks and pathways beneath the dripline of protected trees (figure 1). This approach includes installation of permeable geotextile fabric on the ground surface and building up from the natural grade to avoid excavation in the root zone as much as feasible.

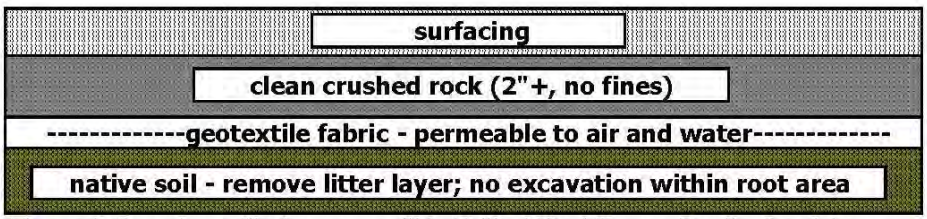


Figure 1. Sample profile for areas within Critical Root Zones. Depth of rock is dependent on grading. Technique based on best management practices.

Standard recommendations for tree protection are provided below.

Tree Protection Recommendations

The tree protection recommendations provided herein may be transferred onto construction drawings. It is the Client's responsibility to implement this Tree Plan

fully, and to monitor the construction process. The project arborist will be available during construction to help with tree related issues.

Before Construction:

1. **Preconstruction Conference.** The project arborist shall be on site to discuss methods of tree removal and tree protection prior to any construction.
2. **Tree Protection Zone.** The project arborist shall designate the Tree Protection Zone (TPZ). Where feasible, the TPZ shall be established at the dripline of protected trees. If infrastructure (roads, sidewalks, and utilities) must be installed closer to the tree(s), the TPZ may be established at or within the dripline area if the project arborist determines that the tree(s) will not be unduly damaged. The location of the TPZ shall be shown on construction drawings.
3. **Protection Fencing.** All trees to be retained shall be protected by construction fencing. Tree protection fencing shall be minimum four foot tall construction fencing with steel posts placed no farther than ten feet apart.
4. **Signage.** Approved signs shall be attached to the fencing stating that inside the fencing is a tree protection zone, not to be disturbed unless prior approval has been obtained from the Community Development Director.
5. **Verification Inspection.** Fencing shall be installed and then verified by the project arborist prior to construction.
6. **Tree Removal.** To avoid damaging the roots of retained trees, stumps of trees slated for removal located adjacent to retained trees shall be cut flush with the ground surface and left in place, or removed from the ground using a stump grinder.

During Construction:

1. **Tree Protection Zone Maintenance.** The protection fencing shall not be moved, removed, or entered by equipment except under direction of the project arborist. No construction activity shall occur within the TPZ, including, but not limited to:
    a. Dumping or storage of materials such as building supplies, soil, waste items, paints, thinners, cleaning solutions, petroleum products, concrete or drywall excess, construction debris, or run-off;
    b. Passage or parking of vehicles or equipment;
    c. Machinery repair of cleaning, which shall be performed a minimum distance of 10-feet from protected tree driplines;
    d. Excavation, trenching, grading, root pruning or other activities, unless under the direct supervision of the project arborist and only as approved by the Community Development Director. If excavation within the TPZ in unavoidable, the project arborist shall evaluate the proposed excavation to determine methods to minimize impacts to trees. This can include tunneling, hand digging, or other approaches;

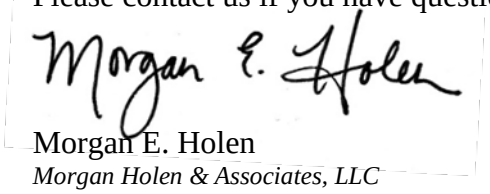
e. Digging a trench for placement of public or private utilities or other structure within the critical root zone of any protected tree; nor,
f. Changes in soil hydrology due to soil compaction and site drainage within tree protection areas.
g. Soil compaction, material or spoils storage or other activity deleterious to trees, except under the supervision of the project arborist.

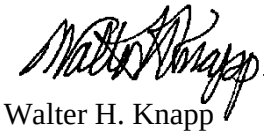
2. **Arborist Coordination.** All construction within the TPZ shall be under the on-site technical supervision of the project arborist. Project managers are responsible for coordinating with the project arborist prior to performing any necessary construction beneath the dripline of protected trees. The project arborist will be available on-call throughout construction.
3. **Tree Protection Inspection.** The project arborist shall monitor construction activities and progress, and provide written reports to the developer and the City at regular intervals.

After Construction:

1. **Final Report.** After the project has been completed, the project arborist shall provide a final report that describes the measures needed to maintain and protect the preserved trees.

Please contact us if you have questions or need any additional information.





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ISA Certified Tree Risk Assessor, PN- 449

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Walter H. Knapp & Associates, LLC
Certified Forester, SAF 406
ISA Certified Arborist, PN-0497A

Enclosures: 1228 Pacland Oregon City – Tree Inventory 2-20-13
1228 Pacland Oregon City – Arborist Markup 2-20-13

No.	Outside (O) or Within (W) Construction	Common Name	Species Name	DBH[1]	C-Rad[2]	Cond[3]	Comments	Invasive Species	Treatment	Mitigation
2931	O	Oregon white oak	*Quercus garryana*	26		0	not accessible		off-site	0
2932	O	adjacent tree		6		0			off-site	0
2935	O	adjacent tree		7		0			off-site	0
2936	O	adjacent tree		10	10	0			off-site	0
2937	O	adjacent tree		12	12	0			off-site	0
2938	O	adjacent tree		11	10	0			off-site	0
2939	O	adjacent tree		12	12	0			off-site	0
2940	O	adjacent tree		15	12	0			off-site	0
2941	W	bigleaf maple	*Acer macrophyllum*	14	12	3			retain	0
2953	O	adjacent tree		22		0			off-site	0
2954	O	adjacent tree		10	10	0			off-site	0
2955	W	bigleaf maple	*Acer macrophyllum*	10	10	3			retain	0
2956	O	adjacent tree		11	10	0			off-site	0
2957	W	sweet cherry	*Prunus avium*	8	8	1		Yes	remove	0
2958	W	Scouler's willow	*Salix scouleriana*	12	12	1			remove	0
2966	O	bigleaf maple	*Acer macrophyllum*	14	14	3			remove	6
2967	O	bigleaf maple	*Acer macrophyllum*	28	22	3			remove	12
2968	O	sweet cherry	*Prunus avium*	10	10	2		Yes	remove	0
2969	O	sweet cherry	*Prunus avium*	10	10	2		Yes	remove	0
2970	O	bigleaf maple	*Acer macrophyllum*	24	20	4			remove	9
2971	O	bigleaf maple	*Acer macrophyllum*	9	9	2			remove	3
2972	O	sweet cherry	*Prunus avium*	6		2		Yes	remove	0
2973	O	bigleaf maple	*Acer macrophyllum*	8	8	2			remove	3
2974	O	bigleaf maple	*Acer macrophyllum*	10	8	3			remove	3
2975	O	bigleaf maple	*Acer macrophyllum*	10	8	3			remove	3
2976	O	bigleaf maple	*Acer macrophyllum*	8	8	2			remove	3
2977	O	bigleaf maple	*Acer macrophyllum*	8	8	2			remove	3
2978	O	bigleaf maple	*Acer macrophyllum*	11		2			remove	3
2979	O	bigleaf maple	*Acer macrophyllum*	10	10	2			remove	3
2980	O	bigleaf maple	*Acer macrophyllum*	10	10	2			remove	3
2981	O	bigleaf maple	*Acer macrophyllum*	12	10	2			remove	3
2982	O	bigleaf maple	*Acer macrophyllum*	12	15	2			remove	3
2983	O	bigleaf maple	*Acer macrophyllum*	10	8	2			remove	3
2984	O	bigleaf maple	*Acer macrophyllum*	10	8	2			remove	3
2985	O	bigleaf maple	*Acer macrophyllum*	10	8	2			remove	3
2986	O	bigleaf maple	*Acer macrophyllum*	10	8	2			remove	3
2987	O	bigleaf maple	*Acer macrophyllum*	14	10	3			remove	6
2988	O	bigleaf maple	*Acer macrophyllum*	12	10	3			remove	3
2989	O	Oregon ash	*Fraxinus latifolia*	11	10	3			remove	3
2990	O	bigleaf maple	*Acer macrophyllum*	12	8	3			remove	3
2991	O	bigleaf maple	*Acer macrophyllum*	6		3			remove	3
2992	O	bigleaf maple	*Acer macrophyllum*	10	10	3			remove	3
2996	O	adjacent tree		30		0			off-site	0
2998	W	bigleaf maple	*Acer macrophyllum*	20		3			remove	3
2999	W	bigleaf maple	*Acer macrophyllum*	18		3			remove	2
3000	W	Douglas-fir	*Pseudotsuga menziesii*	52	20	4			remove	5
3005	O	Douglas-fir	*Pseudotsuga menziesii*	30		4			remove	12
3006	O	Douglas-fir	*Pseudotsuga menziesii*	22		4			remove	9
3007	O	Douglas-fir	*Pseudotsuga menziesii*	8		2			remove	3
3008	O	Douglas-fir	*Pseudotsuga menziesii*	15	10	3			remove	6
3009	O	Douglas-fir	*Pseudotsuga menziesii*	8		2			remove	3
3010	O	Douglas-fir	*Pseudotsuga menziesii*	20		3			remove	9
3011	O	Douglas-fir	*Pseudotsuga menziesii*	15		3			remove	6
3012	O	Douglas-fir	*Pseudotsuga menziesii*	18		3			remove	6
3013	O	Douglas-fir	*Pseudotsuga menziesii*	12		3			remove	3
3014	O	Douglas-fir	*Pseudotsuga menziesii*	24	15	4			remove	9
3015	O	Douglas-fir	*Pseudotsuga menziesii*	15		2	old broken top		remove	6
3016	W	Douglas-fir	*Pseudotsuga menziesii*	22	12	4			remove	3
3017	W	bigleaf maple	*Acer macrophyllum*	15		3			remove	2
3018	W	sweet cherry	*Prunus avium*	12		2		Yes	remove	0
3019	O	sweet cherry	*Prunus avium*	6		2		Yes	remove	0
3021	O	sweet cherry	*Prunus avium*	8		2		Yes	remove	0
3022	O	sweet cherry	*Prunus avium*	8		2		Yes	remove	0
3023	O	sweet cherry	*Prunus avium*	8		2		Yes	remove	0
3024	O	sweet cherry	*Prunus avium*	11	10	2		Yes	remove	0
3026	O	sweet cherry	*Prunus avium*	12	10	2		Yes	remove	0

No.	Outside (O) or Within (W) Construction	Common Name	Species Name	DBH[1]	C-Rad[2]	Cond[3]	Comments	Invasive Species	Treatment	Mitigation
3027	O	sweet cherry	*Prunus avium*	6		2		Yes	remove	0
3028	O	bigleaf maple	*Acer macrophyllum*	9	8	2	broken top		remove	3
3030	O	sweet cherry	*Prunus avium*	6		1	dead	Yes	remove	0
3031	O	sweet cherry	*Prunus avium*	6		1	dying, not viable	Yes	remove	0
3032	O	Douglas-fir	*Pseudotsuga menziesii*	27	20	4			remove	12
3033	O	bigleaf maple	*Acer macrophyllum*	8	8	2			remove	3
3034	O	bigleaf maple	*Acer macrophyllum*	12	12	2			remove	3
3035	O	Douglas-fir	*Pseudotsuga menziesii*	18		3			remove	6
3036	O	bigleaf maple	*Acer macrophyllum*	8		2			remove	3
3037	O	Douglas-fir	*Pseudotsuga menziesii*	30		4			remove	12
3038	W	Douglas-fir	*Pseudotsuga menziesii*	8		2			remove	1
3039	W	pear	*Pryrus* spp.	6		2			remove	1
3040	O	Douglas-fir	*Pseudotsuga menziesii*	18	10	3			remove	6
3041	O	Douglas-fir	*Pseudotsuga menziesii*	13	10	3			remove	6
3042	O	sweet cherry	*Prunus avium*	8	8	2		Yes	remove	0
3043	O	Douglas-fir	*Pseudotsuga menziesii*	24	12	3			remove	9
3044	O	sweet cherry	*Prunus avium*	8		2		Yes	remove	0
3046	W	sweet cherry	*Prunus avium*	8		2		Yes	remove	0
3047	W	sweet cherry	*Prunus avium*	8		2		Yes	remove	0
3048	W	sweet cherry	*Prunus avium*	10		2		Yes	remove	0
3049	W	sweet cherry	*Prunus avium*	9	8	2		Yes	remove	0
3050	W	sweet cherry	*Prunus avium*	9	8	2		Yes	remove	0
3051	W	sweet cherry	*Prunus avium*	14	10	2		Yes	remove	0
3052	O	bigleaf maple	*Acer macrophyllum*	6		2			remove	3
3063	W	bigleaf maple	*Acer macrophyllum*	25	12	3			remove	4
3070	O	Oregon ash	*Fraxinus latifolia*	12	10	3			remove	3
3071	O	bigleaf maple	*Acer macrophyllum*	6		2			remove	3
3072	O	Douglas-fir	*Pseudotsuga menziesii*	26		4			remove	12
3073	O	Douglas-fir	*Pseudotsuga menziesii*	18	18	4			remove	6
3074	O	Douglas-fir	*Pseudotsuga menziesii*	26	22	4			remove	12
3075	O	Douglas-fir	*Pseudotsuga menziesii*	26	22	4			remove	12
3076	O	English hawthorn	*Crataegus monogyna*	6		2		Yes	remove	0
3077	O	Douglas-fir	*Pseudotsuga menziesii*	26		3			remove	12
3078	O	Douglas-fir	*Pseudotsuga menziesii*	38		3	codominant stems		remove	15
3079	O	Douglas-fir	*Pseudotsuga menziesii*	15		2			remove	6
3080	O	Douglas-fir	*Pseudotsuga menziesii*	15		2			remove	6
3081	O	Douglas-fir	*Pseudotsuga menziesii*	12		2			remove	3
3082	O	Douglas-fir	*Pseudotsuga menziesii*	26		3			remove	12
3083	O	Douglas-fir	*Pseudotsuga menziesii*	10		1			remove	0
3084	O	Douglas-fir	*Pseudotsuga menziesii*	22	10	4			remove	9
3085	O	Douglas-fir	*Pseudotsuga menziesii*	24	20	3			remove	9
3086	O	Douglas-fir	*Pseudotsuga menziesii*	17	12	3			remove	6
3087	O	Douglas-fir	*Pseudotsuga menziesii*	6	10	2			remove	3
3088	O	Douglas-fir	*Pseudotsuga menziesii*	22	10	4			remove	9
3089	O	Douglas-fir	*Pseudotsuga menziesii*	16		3			remove	6
3090	O	Douglas-fir	*Pseudotsuga menziesii*	12	10	3			remove	3
3091	W	Douglas-fir	*Pseudotsuga menziesii*	10	6	2			remove	1
3092	W	Douglas-fir	*Pseudotsuga menziesii*	24		3			remove	3
3093	W	Douglas-fir	*Pseudotsuga menziesii*	8		1			remove	0
3095	W	Douglas-fir	*Pseudotsuga menziesii*	17		3			remove	2
3096	O	Douglas-fir	*Pseudotsuga menziesii*	6		2			remove	3
3097	O	sweet cherry	*Prunus avium*	8		2		Yes	remove	0
3098	W	sweet cherry	*Prunus avium*	6		2		Yes	remove	0
3099	W	Douglas-fir	*Pseudotsuga menziesii*	32		4			remove	5
3100	O	Oregon ash	*Fraxinus latifolia*	8		2			remove	3
3101	O	bigleaf maple	*Acer macrophyllum*	14	10	3			remove	6
3102	O	English hawthorn	*Crataegus monogyna*	10	10	2		Yes	remove	0
3103	O	English hawthorn	*Crataegus monogyna*	12	12	2		Yes	remove	0
3107	O	Douglas-fir	*Pseudotsuga menziesii*	22	12	4	ROW access		protect off-site tree	0
3108	O	adjacent tree		20	20	0			off-site	0
3109	O	bigleaf maple	*Acer macrophyllum*	17	15	2			remove	6
3110	O	adjacent tree		7	7	0			off-site	0
3111	O	adjacent tree		8	10	0			off-site	0
3112	O	adjacent tree		10	10	0			off-site	0
3113	O	adjacent tree		14	10	0			off-site	0
3114	O	adjacent tree		16	10	0			off-site	0

No.	Outside (O) or Within (W) Construction	Common Name	Species Name	DBH[1]	C-Rad[2]	Cond[3]	Comments	Invasive Species	Treatment	Mitigation
3115	O	adjacent tree		14	10	0			off-site	0
3116	O	Port-Orford-cedar	*Chamaecyparis lawsoniana*	14	15	4			retain	0
3117	O	Port-Orford-cedar	*Chamaecyparis lawsoniana*	12	12	4			retain	0
3118	O	Port-Orford-cedar	*Chamaecyparis lawsoniana*	15	15	4			retain	0
3119	O	Port-Orford-cedar	*Chamaecyparis lawsoniana*	22	12	4			retain	0
3120	O	Port-Orford-cedar	*Chamaecyparis lawsoniana*	8	8	4			retain	0
3137	O	adjacent tree		11	10	0			off-site	0
3208	O	Port-Orford-cedar	*Chamaecyparis lawsoniana*	12	10	4			retain	0
3216	O	Port-Orford-cedar	*Chamaecyparis lawsoniana*	14	10	4			retain	0
3217	O	Port-Orford-cedar	*Chamaecyparis lawsoniana*	12	10	4			retain	0
3273	W	sweet cherry	*Prunus avium*	10		2		Yes	remove	0
3583	W	Douglas-fir	*Pseudotsuga menziesii*	24	14	4	retain in group only		remove	3
3584	W	Douglas-fir	*Pseudotsuga menziesii*	12	12	3	retain in group only		remove	1
3585	W	Douglas-fir	*Pseudotsuga menziesii*	8	8	2			remove	1
3586	W	Douglas-fir	*Pseudotsuga menziesii*	24	15	4	retain in group only		remove	3
3587	W	Douglas-fir	*Pseudotsuga menziesii*	24	15	4	retain in group only		remove	3
3587b	O	Scouler's willow	*Salix scouleriana*	14		1			remove	0
3588	W	Douglas-fir	*Pseudotsuga menziesii*	24	20	4	retain in group only		remove	3
3589	W	Douglas-fir	*Pseudotsuga menziesii*	19	18	3	retain in group only		remove	3
3590	W	Douglas-fir	*Pseudotsuga menziesii*	24	20	4	retain in group only		remove	3
3591	W	Douglas-fir	*Pseudotsuga menziesii*	24	18	4	retain in group only		remove	3
3592	W	Douglas-fir	*Pseudotsuga menziesii*	10	10	2			remove	1
3593	W	Douglas-fir	*Pseudotsuga menziesii*	24	20	4	retain in group only		remove	3
3627	W	Douglas-fir	*Pseudotsuga menziesii*	22	12	4			remove	3
3628	W	bigleaf maple	*Acer macrophyllum*	36	15	1	*Ganoderma* conks		remove	0
3665	O	adjacent tree		38	23	0			off-site	0
3670	O	sweet cherry	*Prunus avium*	17	12	3		Yes	remove	0
3672	O	adjacent tree		30	25	0			off-site	0
3673	O	adjacent tree		30	25	0			off-site	0
3682	O	adjacent tree		23	20	0			off-site	0
3683	O	adjacent tree		26	12	0			off-site	0
3684	O	adjacent tree		18	12	0			off-site	0
3685	O	adjacent tree		26	15	0			off-site	0
3691	W	Douglas-fir	*Pseudotsuga menziesii*	12		3			remove	1
3692	W	Douglas-fir	*Pseudotsuga menziesii*	8		1	dying, suppressed		remove	0
3693	W	Douglas-fir	*Pseudotsuga menziesii*	24		4			remove	3
3696	W	Douglas-fir	*Pseudotsuga menziesii*	18		4			remove	2
3697	W	bigleaf maple	*Acer macrophyllum*	18		2			remove	2
3698	W	bigleaf maple	*Acer macrophyllum*	14		2			remove	2
3699	W	bigleaf maple	*Acer macrophyllum*	10	10	2			remove	1
3700	W	Douglas-fir	*Pseudotsuga menziesii*	12	8	3			remove	1
3701	W	Oregon white oak	*Quercus garryana*	28		2			remove	4
3702	W	Douglas-fir	*Pseudotsuga menziesii*	14		3			remove	2
3703	W	bigleaf maple	*Acer macrophyllum*	14		1	stem decay		remove	0
3704	W	Douglas-fir	*Pseudotsuga menziesii*	12	8	3			remove	1
3706	W	bigleaf maple	*Acer macrophyllum*	12		1	broken top, not viable		remove	0
3707	W	Douglas-fir	*Pseudotsuga menziesii*	12		3			remove	1
3708	W	Douglas-fir	*Pseudotsuga menziesii*	24		4			remove	3
3709	W	bigleaf maple	*Acer macrophyllum*	12		2			remove	1
3710	W	Douglas-fir	*Pseudotsuga menziesii*	24	10	4			remove	3
3711	W	Douglas-fir	*Pseudotsuga menziesii*	10	8	2			remove	1
3712	W	Douglas-fir	*Pseudotsuga menziesii*	24	12	4			remove	3
3713	W	Douglas-fir	*Pseudotsuga menziesii*	10		3			remove	1
3714	W	Douglas-fir	*Pseudotsuga menziesii*	26		3			remove	4
3715	W	bigleaf maple	*Acer macrophyllum*	12		2			remove	1
3716	W	Douglas-fir	*Pseudotsuga menziesii*	20	10	3			remove	3
3717	W	bigleaf maple	*Acer macrophyllum*	17	10	2			remove	2
3719	W	sweet cherry	*Prunus avium*	6		2		Yes	remove	0
3720	W	sweet cherry	*Prunus avium*	14		2		Yes	remove	0
3721	W	sweet cherry	*Prunus avium*	10	10	2		Yes	remove	0
3722	W	sweet cherry	*Prunus avium*	14		2		Yes	remove	0
3724	W	sweet cherry	*Prunus avium*	8		1	lean	Yes	remove	0
3725	W	sweet cherry	*Prunus avium*	16		2		Yes	remove	0
3726	W	sweet cherry	*Prunus avium*	10		1	dying, not viable	Yes	remove	0
3728	W	bigleaf maple	*Acer macrophyllum*	18		1	hollow with decay		remove	0
3734	W	bigleaf maple	*Acer macrophyllum*	16		1	decay, history of failure		remove	0

No.	Outside (O) or Within (W) Construction	Common Name	Species Name	DBH[1]	C-Rad[2]	Cond[3]	Comments	Invasive Species	Treatment	Mitigation
3737	W	bigleaf maple	*Acer macrophyllum*	18		1	stem decay		remove	0
3739	O	sweet cherry	*Prunus avium*	21	12	2		Yes	remove	0
3740	O	bigleaf maple	*Acer macrophyllum*	16	12	2			remove	6
3741	O	sweet cherry	*Prunus avium*	36		1	stem decay, branch failures	Yes	remove	0
3742	O	sweet cherry	*Prunus avium*	14	10	2		Yes	remove	0
3743	O	sweet cherry	*Prunus avium*	12		2		Yes	remove	0
3744	O	sweet cherry	*Prunus avium*	8		2		Yes	remove	0
3745	O	sweet cherry	*Prunus avium*	10		2		Yes	remove	0
3746	O	bigleaf maple	*Acer macrophyllum*	20		2			retain	0
3747	O	bigleaf maple	*Acer macrophyllum*	11	8	2			retain	0
3748	O	bigleaf maple	*Acer macrophyllum*	12	8	3			retain	0
3749	O	bigleaf maple	*Acer macrophyllum*	6		1			remove	0
3750	O	bigleaf maple	*Acer macrophyllum*	14		2			remove	6
3751	O	bigleaf maple	*Acer macrophyllum*	12		1			remove	0
3752	O	sweet cherry	*Prunus avium*	10	10	2		Yes	remove	0
3753	O	sweet cherry	*Prunus avium*	12		2		Yes	remove	0
3754	W	Douglas-fir	*Pseudotsuga menziesii*	20	10	3			remove	3
3755	W	bigleaf maple	*Acer macrophyllum*	9		2			remove	1
3756	W	Douglas-fir	*Pseudotsuga menziesii*	16		3			remove	2
3757	W	bigleaf maple	*Acer macrophyllum*	8		2			remove	1
3758	W	Douglas-fir	*Pseudotsuga menziesii*	12		3			remove	1
3759	W	bigleaf maple	*Acer macrophyllum*	8		2			remove	1
3760	O	Douglas-fir	*Pseudotsuga menziesii*	18	8	3			remove	6
3761	O	bigleaf maple	*Acer macrophyllum*	12		2			remove	3
3762	O	sweet cherry	*Prunus avium*	12		2		Yes	remove	0
3763	O	bigleaf maple	*Acer macrophyllum*	10	8	2			remove	3
3764	O	Douglas-fir	*Pseudotsuga menziesii*	18	10	4			remove	6
3765	O	Douglas-fir	*Pseudotsuga menziesii*	24	12	4			retain	0
3766	O	Douglas-fir	*Pseudotsuga menziesii*	17		2	old broken top		remove	6
3767	O	Douglas-fir	*Pseudotsuga menziesii*	20		2			remove	9
3768	O	Douglas-fir	*Pseudotsuga menziesii*	12		2			remove	3
3769	O	Douglas-fir	*Pseudotsuga menziesii*	24		4			remove	9
3770	O	bigleaf maple	*Acer macrophyllum*	10		2			retain	0
3771	O	Douglas-fir	*Pseudotsuga menziesii*	12	7	3			retain	0
3772	O	Douglas-fir	*Pseudotsuga menziesii*	15	8	3			retain	0
3773	W	bigleaf maple	*Acer macrophyllum*	16		2			remove	2
3775	O	bigleaf maple	*Acer macrophyllum*	12		2			remove	3
3777	O	bigleaf maple	*Acer macrophyllum*	14		2			remove	6
3778	O	bigleaf maple	*Acer macrophyllum*	28	25	2			remove	12
3779	O	bigleaf maple	*Acer macrophyllum*	12		2			remove	3
3780	O	bigleaf maple	*Acer macrophyllum*	10		2			remove	3
3781	O	Douglas-fir	*Pseudotsuga menziesii*	20	10	4			retain	0
3782	O	bigleaf maple	*Acer macrophyllum*	12		2			remove	3
3783	O	Douglas-fir	*Pseudotsuga menziesii*	10		3			retain	0
3784	O	bigleaf maple	*Acer macrophyllum*	10		2			retain	0
3785	O	bigleaf maple	*Acer macrophyllum*	24	12	2			retain	0
3786	O	bigleaf maple	*Acer macrophyllum*	12		2			retain	0
3787	O	bigleaf maple	*Acer macrophyllum*	12		2			retain	0
3834	O	bigleaf maple	*Acer macrophyllum*	16		3	ROW access		protect off-site tree	0
3838	O	Oregon white oak	*Quercus garryana*	26		3	ROW access		protect off-site tree	0
3839	O	Oregon white oak	*Quercus garryana*	20	20	3	ROW access		protect off-site tree	0
3864	W	Douglas-fir	*Pseudotsuga menziesii*	16		3	ROW access		remove off-site tree	2
3904	W	Douglas-fir	*Pseudotsuga menziesii*	22		3	ROW access		protect off-site tree	0
3905	W	Douglas-fir	*Pseudotsuga menziesii*	14		3	ROW access		protect off-site tree	0
4184	O	adjacent tree		14	10	0	ROW access		protect off-site tree	0
4185	O	adjacent tree		12	8	0	ROW access		protect off-site tree	0
4211	W	Douglas-fir	*Pseudotsuga menziesii*	15		4	ROW access		remove off-site tree	2
4212	W	Douglas-fir	*Pseudotsuga menziesii*	12	10	4	ROW access		remove off-site tree	1
4213	W	Douglas-fir	*Pseudotsuga menziesii*	8	8	3	ROW access		remove off-site tree	1
4214	W	Douglas-fir	*Pseudotsuga menziesii*	16	12	4	ROW access		remove off-site tree	2
4215	W	Douglas-fir	*Pseudotsuga menziesii*	16	12	4	ROW access		remove off-site tree	2
4216	W	bigleaf maple	*Acer macrophyllum*	32	15	3	ROW access		remove off-site tree	5
4725	O	adjacent tree		15	12	0			off-site	0
4726	O	adjacent tree		15	12	0			off-site	0
4748	O	adjacent tree		18	20	0			off-site	0
4757	O	adjacent tree		18	12	0			off-site	0

No.	Outside (O) or Within (W) Construction	Common Name	Species Name	DBH[1]	C-Rad[2]	Cond[3]	Comments	Invasive Species	Treatment	Mitigation
4758	O	adjacent tree		20	15	0			off-site	0
4775	O	adjacent tree		10	10	0			off-site	0
4786	O	adjacent tree		18	15	0			off-site	0
4787	O	adjacent tree		15	15	0			off-site	0
4998	O	adjacent tree		18	12	0			off-site	0
6005	O	Douglas-fir	*Pseudotsuga menziesii*	14	10	0			off-site	0
6224	O	bigleaf maple	*Acer macrophyllum*	17	10	2			remove	6
6225	O	bigleaf maple	*Acer macrophyllum*	17	10	2			remove	6
6226	O	sweet cherry	*Prunus avium*	8	8	2		Yes	remove	0
6227	O	sweet cherry	*Prunus avium*	10	10	2		Yes	remove	0
6228	W	bigleaf maple	*Acer macrophyllum*	6	8	2			remove	1
6229	W	bigleaf maple	*Acer macrophyllum*	18	15	2			remove	2
6230	O	Scouler's willow	*Salix scouleriana*	17	12	1			remove	0
6231	O	bigleaf maple	*Acer macrophyllum*	14	12	2			remove	6
6232	O	bigleaf maple	*Acer macrophyllum*	8	8	2			remove	3
6233	O	sweet cherry	*Prunus avium*	20	14	2		Yes	remove	0
6234	O	sweet cherry	*Prunus avium*	12	10	2		Yes	remove	0
6235	O	sweet cherry	*Prunus avium*	12	10	2		Yes	remove	0
6236	O	sweet cherry	*Prunus avium*	16	14	1		Yes	remove	0
6237	O	sweet cherry	*Prunus avium*	6	10	2		Yes	remove	0
6238	O	sweet cherry	*Prunus avium*	23	20	2		Yes	remove	0
6239	O	adjacent tree		17	15	0			off-site	0
6289	W	bigleaf maple	*Acer macrophyllum*	10	15	2			remove	1
6290	W	bigleaf maple	*Acer macrophyllum*	10	15	2			remove	1
6291	O	bigleaf maple	*Acer macrophyllum*	10	15	2			remove	3
6293	W	bigleaf maple	*Acer macrophyllum*	10	15	2			remove	1
6294	W	bigleaf maple	*Acer macrophyllum*	14	15	2			remove	2
6295	W	bigleaf maple	*Acer macrophyllum*	8	12	2			remove	1
7353	W	sweet cherry	*Prunus avium*	6	8	2		Yes	remove	0
7702	O	black cottonwood	*Populus trichocarpa*	6	8	2			remove	3
7703	O	black cottonwood	*Populus trichocarpa*	10	10	3			remove	3
7704	O	Oregon ash	*Fraxinus latifolia*	10	10	3			remove	3
7705	O	black cottonwood	*Populus trichocarpa*	12	15	3			remove	3
7706	W	black cottonwood	*Populus trichocarpa*	14	6	3			remove	2
7707	W	black cottonwood	*Populus trichocarpa*	6	10	3			remove	1
7708	W	black cottonwood	*Populus trichocarpa*	6	10	3			remove	1
7709	O	black cottonwood	*Populus trichocarpa*	10	15	3			remove	3
7710	O	black cottonwood	*Populus trichocarpa*	16	20	3			remove	6
8257	O	adjacent tree		6	6	0			off-site	0
8258	O	adjacent tree		6	6	0			off-site	0
8259	O	adjacent tree		6	6	0			off-site	0
8276	O	adjacent tree		10	15	0			off-site	0
8452	O	adjacent tree		6	5	0			off-site	0
8453	O	adjacent tree		6	5	0			off-site	0
8454	O	adjacent tree		6	5	0			off-site	0
8455	O	adjacent tree		6	5	0			off-site	0
8456	O	adjacent tree		6	5	0			off-site	0
8457	O	adjacent tree		6	5	0			off-site	0
8538	O	adjacent tree		12	12	0			off-site	0
8539	O	adjacent tree		16	10	0			off-site	0
9782	O	Douglas-fir	*Pseudotsuga menziesii*	8	5	0	ROW access		protect off-site tree	0
10048	O	adjacent tree		14	25	0			off-site	0
10049	O	adjacent tree		14	25	0			off-site	0
10050	O	adjacent tree		14	25	0			off-site	0
10051	O	adjacent tree		8	15	0			off-site	0
10052	O	adjacent tree		8	15	0			off-site	0
10053	O	adjacent tree		8	15	0			off-site	0
10054	O	adjacent tree		28	15	0			off-site	0
10055	O	adjacent tree		21	15	0			off-site	0
10056	O	adjacent tree		25	20	0			off-site	0
10057	O	adjacent tree		18	20	0			off-site	0
10058	O	adjacent tree		6	15	0			off-site	0
10059	O	adjacent tree		6	10	0			off-site	0
10060	O	adjacent tree		18	25	0			off-site	0
10061	O	adjacent tree		8	10	0			off-site	0
10062	O	adjacent tree		12	20	0			off-site	0

No.	Outside (O) or Within (W) Construction	Common Name	Species Name	DBH[1]	C-Rad[2]	Cond[3]	Comments	Invasive Species	Treatment	Mitigation
10063	O	adjacent tree		12	20	0			off-site	0
10064	O	adjacent tree		6	10	0			off-site	0
10065	O	adjacent tree		14	20	0			off-site	0
10066	W	adjacent tree		14	20	0			off-site	0
10067	O	adjacent tree		8	12	0			off-site	0
10068	W	adjacent tree		18	25	0			off-site	0
10069	O	adjacent tree		10	12	0			off-site	0
10070	O	adjacent tree		17	20	0			off-site	0
10071	O	adjacent tree		28	25	0			off-site	0
10132	O	adjacent tree		8	10	0			off-site	0
10134	O	adjacent tree		8	10	0			off-site	0
10135	O	adjacent tree		6	10	0			off-site	0
10147	W	sweet cherry	*Prunus avium*	6	10	3		Yes	remove	0
10148	W	bigleaf maple	*Acer macrophyllum*	14	15	2			remove	2
10149	W	bigleaf maple	*Acer macrophyllum*	6	5	3			remove	1
10150	W	sweet cherry	*Prunus avium*	20	10	2		Yes	remove	0
10152	O	bigleaf maple	*Acer macrophyllum*	6	10	3			remove	3
10156	O	sweet cherry	*Prunus avium*	6	10	3		Yes	remove	0
10168	O	sweet cherry	*Prunus avium*	6	10	2		Yes	remove	0
10169	O	sweet cherry	*Prunus avium*	8	15	2		Yes	remove	0
10170	O	sweet cherry	*Prunus avium*	7	10	2		Yes	remove	0
10171	O	sweet cherry	*Prunus avium*	7	10	2		Yes	remove	0
10172	O	sweet cherry	*Prunus avium*	6	10	2		Yes	remove	0
10176	O	English hawthorn	*Crataegus monogyna*	14	15	2			remove	0
10177	O	Douglas-fir	*Pseudotsuga menziesii*	40	30	3			remove	15
10182	O	Douglas-fir	*Pseudotsuga menziesii*	20	20	4			remove	9
10190	W	bigleaf maple	*Acer macrophyllum*	20	25	2			remove	3
10191	O	bigleaf maple	*Acer macrophyllum*	6	10	2			remove	3
10192	W	bigleaf maple	*Acer macrophyllum*	6	10	2			remove	1
10193	O	bigleaf maple	*Acer macrophyllum*	10	15	2			remove	3
10286	O	bigleaf maple	*Acer macrophyllum*	10	12	2	ROW access		protect off-site tree	0
10287	O	lodgepole pine	*Pinus contorta*	12	10	2	ROW access		protect off-site tree	0
10288	W	Douglas-fir	*Pseudotsuga menziesii*	8	8	3	ROW access		remove off-site tree	1
10289	W	Douglas-fir	*Pseudotsuga menziesii*	6	4	3	ROW access		remove off-site tree	1
10290	W	Douglas-fir	*Pseudotsuga menziesii*	12	5	3	ROW access		remove off-site tree	1
10291	W	black cottonwood	*Populus trichocarpa*	8	10	2	ROW access		remove off-site tree	1
10292	W	Douglas-fir	*Pseudotsuga menziesii*	6	4	3	ROW access		remove off-site tree	1
10293	W	Douglas-fir	*Pseudotsuga menziesii*	7	4	3	ROW access		remove off-site tree	1
10294	W	Douglas-fir	*Pseudotsuga menziesii*	7	10	3	ROW access		remove off-site tree	1
10295	W	Douglas-fir	*Pseudotsuga menziesii*	6	10	3	ROW access		remove off-site tree	1
10296	W	Douglas-fir	*Pseudotsuga menziesii*	6	6	3	ROW access		remove off-site tree	1
10297	W	Douglas-fir	*Pseudotsuga menziesii*	7	10	3	ROW access		remove off-site tree	1
10298	W	Douglas-fir	*Pseudotsuga menziesii*	7	10	3	ROW access		remove off-site tree	1
10299	W	Douglas-fir	*Pseudotsuga menziesii*	7	10	3	ROW access		remove off-site tree	1
10300	W	Douglas-fir	*Pseudotsuga menziesii*	7	10	3	ROW access		remove off-site tree	1
10301	W	Douglas-fir	*Pseudotsuga menziesii*	10	10	3	ROW access		remove off-site tree	1
10302	W	Douglas-fir	*Pseudotsuga menziesii*	6	5	3	ROW access		remove off-site tree	1
10303	W	Douglas-fir	*Pseudotsuga menziesii*	9	8	3	ROW access		remove off-site tree	1
10304	W	Douglas-fir	*Pseudotsuga menziesii*	6	5	3	ROW access		remove off-site tree	1
10305	W	Douglas-fir	*Pseudotsuga menziesii*	10	5	3	ROW access		remove off-site tree	1
10306	W	Douglas-fir	*Pseudotsuga menziesii*	8	5	3	ROW access		remove off-site tree	1
12650	O	English hawthorn	*Crataegus monogyna*	6	7	2		Yes	remove	0
12657	W	bigleaf maple	*Acer macrophyllum*	34	25	2			remove	5
12658	O	bigleaf maple	*Acer macrophyllum*	29	25	2			remove	12
12659	O	bigleaf maple	*Acer macrophyllum*	29	25	2			remove	12
12663	W	bigleaf maple	*Acer macrophyllum*	14	10	2			remove	2
12670	W	sweet cherry	*Prunus avium*	12	12	2		Yes	remove	0
12671	W	English hawthorn	*Crataegus monogyna*	6	6	2		Yes	remove	0
12672	W	sweet cherry	*Prunus avium*	6	6	2		Yes	remove	0
12673	W	sweet cherry	*Prunus avium*	6	6	2		Yes	remove	0
12674	W	sweet cherry	*Prunus avium*	8	6	2		Yes	remove	0
12675	W	sweet cherry	*Prunus avium*	6	6	2		Yes	remove	0
12676	W	sweet cherry	*Prunus avium*	10	10	2		Yes	remove	0
12677	W	sweet cherry	*Prunus avium*	8	8	2		Yes	remove	0
12678	W	sweet cherry	*Prunus avium*	6	6	2		Yes	remove	0
12679	W	sweet cherry	*Prunus avium*	6	6	2		Yes	remove	0

No.	Outside (O) or Within (W) Construction	Common Name	Species Name	DBH[1]	C-Rad[2]	Cond[3]	Comments	Invasive Species	Treatment	Mitigation
12680	W	sweet cherry	*Prunus avium*	8	6	2		Yes	remove	0
12681	W	sweet cherry	*Prunus avium*	6	6	2		Yes	remove	0
12682	W	sweet cherry	*Prunus avium*	8	6	2		Yes	remove	0
12683	W	sweet cherry	*Prunus avium*	12	12	2		Yes	remove	0
12684	W	sweet cherry	*Prunus avium*	6	6	2		Yes	remove	0
12687	W	English hawthorn	*Crataegus monogyna*	13	14	2		Yes	remove	0
12689	O	English hawthorn	*Crataegus monogyna*	8	8	3		Yes	remove	0
12690	O	English hawthorn	*Crataegus monogyna*	10	10	3		Yes	remove	0
12691	O	English hawthorn	*Crataegus monogyna*	8	6	3		Yes	remove	0
12692	W	sweet cherry	*Prunus avium*	12	14	2		Yes	remove	0
12693	O	bigleaf maple	*Acer macrophyllum*	7	8	2			remove	3
12694	O	bigleaf maple	*Acer macrophyllum*	6	8	2			remove	3
12695	O	bigleaf maple	*Acer macrophyllum*	10	10	2			remove	3
12698	O	Scouler's willow	*Salix scouleriana*	12	12	2			remove	3
12699	O	black cottonwood	*Populus trichocarpa*	17	10	2			remove	6
12701	O	black cottonwood	*Populus trichocarpa*	16	10	2			remove	6
12703	W	Douglas-fir	*Pseudotsuga menziesii*	12	12	4			remove	1
12704	O	black cottonwood	*Populus trichocarpa*	7	8	2			remove	3
12705	O	Douglas-fir	*Pseudotsuga menziesii*	12	12	4			remove	3
12706	O	Douglas-fir	*Pseudotsuga menziesii*	15	15	4			remove	6
12708	W	Douglas-fir	*Pseudotsuga menziesii*	8	12	3			remove	1
12709	W	Douglas-fir	*Pseudotsuga menziesii*	6	10	3			remove	1
12710	W	Oregon white oak	*Quercus garryana*	14	10	4			retain	0
12713	W	Oregon white oak	*Quercus garryana*	26	20	4			retain	0
12714	W	Oregon white oak	*Quercus garryana*	15	15	4			retain	0
12715	O	sweet cherry	*Prunus avium*	7	10	2		Yes	remove	0
12716	O	sweet cherry	*Prunus avium*	8	10	2		Yes	remove	0
12718	O	bigleaf maple	*Acer macrophyllum*	7	12	2			remove	3
12719	O	Douglas-fir	*Pseudotsuga menziesii*	42	35	4			remove	15
12720	O	English hawthorn	*Crataegus monogyna*	10	12	2		Yes	remove	0
12721	O	apple	*Malus* spp.	14	15	2			remove	6
12723	W	sweet cherry	*Prunus avium*	10	12	3		Yes	remove	0
12724	O	sweet cherry	*Prunus avium*	8	12	1		Yes	remove	0
12725	O	sweet cherry	*Prunus avium*	10	10	3		Yes	remove	0
12726	W	sweet cherry	*Prunus avium*	12	15	3		Yes	remove	0
12926	O	adjacent tree		16	12	0			off-site	0
12927	O	adjacent tree		18	12	0			off-site	0
12946	O	bigleaf maple	*Acer macrophyllum*	14	15	2			remove	6
12947	O	adjacent tree		12	15	0			off-site	0
12948	O	adjacent tree		8	10	0			off-site	0
12949	O	adjacent tree		8	6	0			off-site	0
12954	O	black cottonwood	*Populus trichocarpa*	17	14	1			remove	0
12955	O	black cottonwood	*Populus trichocarpa*	28	16	1			remove	0
12955b	O	Douglas-fir	*Pseudotsuga menziesii*	11		3	not surveyed		remove	3
13008	W	Oregon white oak	*Quercus garryana*	10	15	4			retain	0
13009	W	Oregon white oak	*Quercus garryana*	10	15	4			remove	1
13010	W	Oregon white oak	*Quercus garryana*	8	15	4			remove	1
13011	W	Oregon white oak	*Quercus garryana*	10	15	4			remove	1
13012	O	sweet cherry	*Prunus avium*	6	10	2		Yes	remove	0
13013	O	sweet cherry	*Prunus avium*	6	10	2		Yes	remove	0
13014	W	Oregon white oak	*Quercus garryana*	6	8	4			remove	1
13118	O	adjacent tree		17	15	0			off-site	0
13120	W	Oregon white oak	*Quercus garryana*	15	12	4			remove	2
13121	O	adjacent tree		6	10	0			off-site	0
13122	O	adjacent tree		8	12	0			off-site	0
13123	W	Oregon white oak	*Quercus garryana*	21	20	4			retain	0
13124	O	adjacent tree		6	10	0			off-site	0
13125	W	sweet cherry	*Prunus avium*	6	10	2		Yes	remove	0
13126	W	sweet cherry	*Prunus avium*	8	12	2		Yes	remove	0
13127	W	sweet cherry	*Prunus avium*	10	15	2		Yes	remove	0
13128	W	Oregon white oak	*Quercus garryana*	24	32	4			retain	0
13138	W	sweet cherry	*Prunus avium*	10	10	2		Yes	remove	0
13140	W	bigleaf maple	*Acer macrophyllum*	6	10	2			remove	1
13159	O	bigleaf maple	*Acer macrophyllum*	9	15	2			remove	3
13164	O	bigleaf maple	*Acer macrophyllum*	10	12	2			remove	3
13165	O	bigleaf maple	*Acer macrophyllum*	10	12	2			remove	3

No.	Outside (O) or Within (W) Construction	Common Name	Species Name	DBH[1]	C-Rad[2]	Cond[3]	Comments	Invasive Species	Treatment	Mitigation
13300	O	sweet cherry	*Prunus avium*	10	15	2		Yes	remove	0
13301	W	sweet cherry	*Prunus avium*	6	12	2		Yes	remove	0
13302	W	sweet cherry	*Prunus avium*	10	10	2		Yes	remove	0
13303	W	sweet cherry	*Prunus avium*	6	6	2		Yes	remove	0
13304	W	sweet cherry	*Prunus avium*	6	6	1		Yes	remove	0
13305	W	sweet cherry	*Prunus avium*	10	10	2		Yes	remove	0
13306	W	sweet cherry	*Prunus avium*	6	10	2		Yes	remove	0
13307	W	sweet cherry	*Prunus avium*	6	10	2		Yes	remove	0
13308	W	sweet cherry	*Prunus avium*	6		1		Yes	remove	0
13315	W	Douglas-fir	*Pseudotsuga menziesii*	6	7	2	change point symbol		remove	1
13316	W	bigleaf maple	*Acer macrophyllum*	10	8	2			remove	1
13317	W	Douglas-fir	*Pseudotsuga menziesii*	10	7	2			remove	1
13318	O	bigleaf maple	*Acer macrophyllum*	8	8	2			remove	3
13319	O	Douglas-fir	*Pseudotsuga menziesii*	6	6	2			remove	3
13320	O	Douglas-fir	*Pseudotsuga menziesii*	8	6	2			retain	0
13321	O	bigleaf maple	*Acer macrophyllum*	8	6	2			retain	0
13322	O	bigleaf maple	*Acer macrophyllum*	10	8	2			retain	0
13323	O	sweet cherry	*Prunus avium*	8		2		Yes	remove	0
13324	W	sweet cherry	*Prunus avium*	8		2		Yes	remove	0
13325	W	bigleaf maple	*Acer macrophyllum*	10	8	2			remove	1
13326	O	sweet cherry	*Prunus avium*	6	6	2		Yes	remove	0
13327	O	sweet cherry	*Prunus avium*	6	6	2		Yes	remove	0
13328	W	sweet cherry	*Prunus avium*	6	6	2		Yes	remove	0
13329	W	sweet cherry	*Prunus avium*	6	6	2		Yes	remove	0
13330	W	Douglas-fir	*Pseudotsuga menziesii*	20	15	4	retain in group only		remove	3

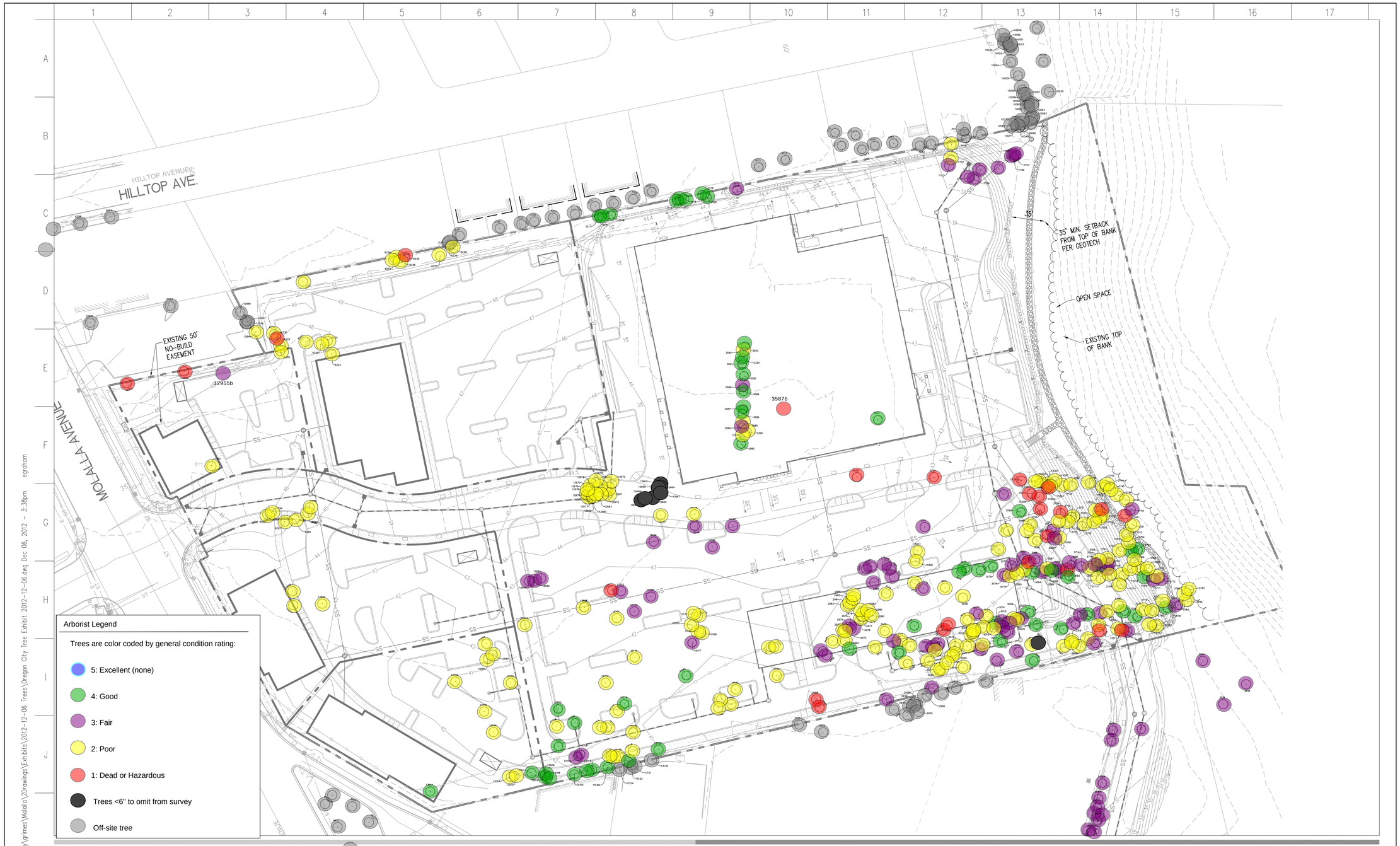
[1]**DBH** is tree diameter measured at 4.5-feet above the ground level, in inches

Replacement Trees Required: 862

[2]**C-Rad** is the average crown radius measured in feet

[3]**Cond** is an arborist assigned rating to generally describe the condition of individual trees as follows-

0: Off-site, condition not evaluated
1: Dead / Hazardous
2: Poor Condition
3: Fair Condition
4: Good Condition
5: Excellent Condition



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No.	Date	By	Revision Description

Designed By:	Issue Date:
Drawn By:	Issue: PRELIMINARY
Checked By:	Project No. 20-001-125

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PROPOSED DEVELOPMENT
MOLALLA AVE AND BEAVERCREEK RD
OREGON CITY, OREGON

APPENDIX L
NROD Report

Environmental Science & Assessment, LLC

MEMORANDUM

DATE: August 6, 2012

TO: Oregon City Community Development – Planning Department

CC: Jeff Vanderdasson PACLAND

FROM: Jack Dalton

RE: Shopping Center - Molalla and Beavercreek Road NROD Compliance (PA 11-19)

Environmental Science & Assessment (ES&A) prepared this documentation to address Natural Resource Overlay District (NROD) compliance for the proposed improvements associated with the Molalla and Beavercreek Road Shopping Center project located in Oregon City, Oregon (Figure 1). The Oregon City ("City") Municipal Code (17.49) requires the project applicant provide a natural resource documentation to verify the NROD boundary (17.49.250), a maintenance and monitoring plan (17.49.180(F)), and a Mitigation Plan Report (17.49.230).

The proposed shopping center site is located within Tax Map 3-2E-05DB, lots 3200, 3201, 3300 and 3400. The proposed site improvements require an off-site roadway access to Beavercreek Road to the south and the tax lot directly south (Tax Map 3-2E-05D, lot 500) was also included in the study area for this project. A NROD resource is mapped on the off-site tax lot 500(Figure 2). A wetland delineation was completed for the off-site lot, based on existing hydrology and topographic conditions, and a short stream segment extending to the east from a culvert outfall was mapped (Figure 3). The water resource is a tributary to Newell Creek.

Proposed site improvements affecting the off-site NROD include construction of a public roadway access from Beavercreek Road to the southern end of the proposed shopping center site (Figure 5). The mitigation plan for NROD encroachment from the roadway access is included in this documentation, incorporating a maintenance and monitoring plan.

Attachments provided with this memo include the following:

Attachment A	Figures
Attachment B	Photos
Attachment C	ODFW Fish Determination

NROD ECOLOGICAL BASELINE ANALYSIS

A NROD resource is mapped on the off-site tax lot and no NROD is present within the main project area (Figure 2). ES&A senior wetland scientist, Jack Dalton, conducted the site investigation on April 4, 2012. It was determined that the hydrology on site is confined to the ordinary high water line (OHWL) of the waterway. No wetland fringe is present outside the channel top-of-bank due to the steep banks north and south of the channel (Figure 3).

The off-site lot has been used for commercial or light industrial uses and a compacted gravel driveway extends into the middle of the site (Photo 1). Most native vegetation has been cleared in the lot and invasive non-native vegetation, primarily Himalayan blackberry (*Rubus armeniacus*, FACU), has re-established along the eastern edge of the site (Photo 2). The only native vegetation is a small grove of young Douglas fir (*Pseudotsuga menziesii*, FACU) and black cottonwood (*Populus balsamifera*, FAC) located in the middle of the parcel.

The existing functions of the drainage mapped in the NROD were found to be limited to primarily stormwater conveyance from the culvert outfall (Figure 3). No significant wetland functions are provided by the drainage due to the constrained channel morphology, which prevents any wetland outside of the channel top-of-bank. Water quality and sediment control functions are therefore, extremely limited by the existing channelized conditions. Other wetland/waterway habitat functions within the study area are limited, including wildlife corridor cover and forage.

The existing pavement and grading extends up to the existing top of bank (within the mapped 50-foot Oregon City NROD) west of the tributary. The area north and south of the tributary is a mix of impervious/pervious fill material with invasive vegetative cover (Figure 3).

NROD - Waterway

The Newell Creek tributary currently daylights at the 48-inch concrete culvert, but historically extended west and connected to an upstream segment of the Newell Creek, west of Molalla Avenue (Figure 2). The channel segment was piped with the development of the intersection of Beaver Creek Road and Molalla Avenue. The waterway within the study area has been channelized into a linear feature with steep banks up to the surrounding elevation of the site (Photo 2). The channel makes a right angle turn and extends off site to the north east and to lower reaches of Newell Creek in a more natural channel.

The waterway is approximately 68 feet long by an average of 6.5 feet wide at OHWL, totaling 462 square feet (0.01 acres) within the study area. The OHWL is clearly defined in the field by a topographic transition from the channel top-of-bank to the steep bank slopes surrounding the culvert outfall (Figure 3). Vegetative cover outside the channel is upland species, primarily Himalayan blackberry. The channel is a maximum of 6.8 feet wide and the channel top-of-banks range from 1.5 to 2 feet high within the study area. Flow was

observed in the channel at the time of the site investigation and is considered perennial (Photo 2).

NROD – Riparian Buffer

The Newell Creek tributary is a perennial stream with a break to less than 25 percent slope within the first 50 feet from the top-of-bank. The City NROD mapping indicates the minimum NROD buffer is 200 feet since listed fish are present in downstream segments of Newell Creek.

During the site investigation both on-line and state agency sources were consulted to verify the presence of listed fish species in Newell Creek. StreamNet maps downstream segments with winter steelhead (StreamNet 2012). However, a culvert barrier existing on Highway 213 would prevent these fish from being present in the study area. Consultation with Oregon Department of Fish and Wildlife (ODFW) district fish biologist indicates no fish are likely present in the Newell Creek segment on site or any segment upslope of the Highway 213 culvert (Attachment C - Personal Communication Danette Faucera, July 12, 2012).

Since no listed anadromous fish are known on site, the NROD buffer was adjusted for the site following criteria in Municipal Code 17.49.110. The required minimum buffer width was determined to be 50 feet. Including the short tributary segment, the total NROD on site was determined as 10,125 square feet (Figure 3).

The NROD riparian buffer extends north and south into currently undeveloped portions of the tax lot. The buffer extends west into an area of existing encroachment from a packed gravel roadway. This portion of the NROD is not currently functioning as a buffer. The buffer north and south of the tributary is highly degraded from past site disturbance and is primarily Himalayan blackberry with one big leaf maple sapling (*Acer macrophyllum*, FACU) on the south bank outside the channel.

NROD ENCROACHMENT

The proposed off-site roadway improvements through the off-site lot will involve grading and fill work for the roadway access to Beavercreek Road and will result in 685 square feet of permanent encroachment and 1,328 square feet of temporary encroachment within the NROD. A total of 560 square feet of existing encroachment from the packed gravel driveway was excluded from the impact total since it was pre-existing encroachment. The roadway improvements will avoid any encroachment into the waterway (Figure 6).

The applicant has negotiated a roadway right of way dedication with the property owner of the off-site parcel. This agreement only grants the applicant a temporary construction easement to complete the roadway construction and the final roadway will be dedicated as a public right-of-way. All permanent off-site NROD encroachment will extend only to the limits of the roadway right-of-way (Figure 6). Since the applicant will not have access to the remainder of the off-site parcel, mitigation for the proposed NROD encroachment will not

be mitigated adjacent to the water resource, but provided on the eastern edge of the proposed shopping center development. This mitigation is discussed in further detail in the next section.

NROD MITIGATION

17.49.180(A-D) – Mitigation Standards

The Oregon City municipal code requires mitigation for encroachment into the NROD by providing a minimum 2:1 ratio of mitigation area to disturbance area within the NROD (17.49.180). As mitigation for the 685 square feet of off-site NROD encroachment, the applicant proposes to enhance forest habitat on site exceeding the 2:1 ratio minimum area of 1370 square feet and instead providing a larger riparian buffer mitigation area totaling 2055 square feet on site (Figure 6).

The proposed mitigation site is located along the edge of a mature mixed forest of big-leaf maple and Douglas fir that extends down the steep slope to the east, into the adjacent open space parcel (Photo 4). The forest community to the east transitions into a mixed riparian community at the base of the slope and further east, NROD overlays are mapped on tributaries to Newell Creek (Figure 2).

The understory along the edge of the existing forest habitat in the proposed mitigation area has been impacted by past site grading. Fill material has been pushed up to the top of slope, piled into a narrow berm ranging from 2-3 feet high, extending along the entire eastern edge of the site. As a result of this disturbance, invasive weedy species are the dominant understory vegetative cover (Photos 5-6). The geotech consultant recommends a 35-foot setback from the top of bank along the eastern edge of the site for built structures, so this area would not otherwise be improved with the proposed development (Figure 6).

Mitigation will be provided by pulling out the top 2-3 feet of fill material down to the native soil, which will be more conducive to a native plant community. The existing understory strata of the forest community will be restored by the installation of native tree and shrub plantings seeded with native groundcover species.

While the proposed mitigation area is not directly adjacent to the impacted NROD, the proposed mitigation will achieve a larger habitat enhancement area, providing a 3:1 ratio of mitigation to encroachment. Additionally, the expansion of the riparian forest along the eastern edge of the site will allow for a larger native plant community along the existing forest habitat at that location than would otherwise be completed under the existing site plan (Figure 5).

When looking at NROD mitigation options, it was determined that the area of NROD encroachment from the off-site access cannot be adequately off-set adjacent to the waterway resource within the off-site roadway. The site is currently highly constrained by steep slopes and the expansion and enhancement of existing NROD buffer area on the off-site parcel will further constrain access from Beavercreek to the site and make the site

more difficult to develop. Regardless of current proposed roadway improvements, any future development proposed the off-site parcel will have to address existing and proposed NROD encroachment with a mitigation plan. Adding to the NROD area on the off-site lot further encumbers any future site development options.

Therefore, instead of providing NROD mitigation on the off-site parcel, the applicant proposes to provide 2055 square feet of forested habitat enhancement along the eastern edge of the proposed shopping center development (Figure 6). While the NROD buffer cannot be enhanced or expanded adjacent to the tributary on the off-site parcel, the larger mitigation area habitat enhancement adjacent to the mostly intact, mature forest on site provides additional buffer functions not achievable at the impact location.

All temporary encroachment will be mitigated in place.

The proposed NROD mitigation areas will use the plant lists shown in Tables 1, 2 and 3. Invasive and nuisance vegetation shall be removed within the mitigation area prior to planting. Mulching and irrigation shall be applied following the site landscape and irrigation plan.

17.49.180.E - Rehabilitation and Planting Plan

Temporary impacts within the NROD are limited to the bank outside of the waterway. No direct or temporary impacts to the waterway will result from the project (Figure 6).

Using landscape requirements in the Oregon City municipal code (17.49.180) the minimum number of shrub and tree plantings (5 tree/25 shrub per 500sf of disturbance) for the riparian mitigation area was calculated. Table 2 and 3 summarizes the placement and the number of plantings for the enhancement areas which will include 7 trees/34 shrubs for the permanent impact mitigation and 13 trees/66 shrubs for the temporary impact mitigation.

Table 1: Enhancement / Mitigation Area Seed Mix

Common Name	Scientific Name	Seeding Rate*	Percentage of Seed Mix **
Native Wildflower/Grass Mix			
California brome	*Bromus carinatus*	40	40
Blue wildrye	*Elymus glaucus*		15
White yarrow	*Achillea millefolium*		15
Northwest cinquefoil	*Potentilla gracilis*		15
Woodland strawberry	*Fragaria vesca*		15
		TOTAL	100

**Seeding rate of pure live seed (PLS) in pounds per acre for hydroseed application. **Seed mix application quantity is to be calculated for enhancement area and is subject to availability and measure PLS.*

Table 2: Plant List for Enhancement/NROD Mitigation Area (2,055 SF)

Common Name	*Scientific Name*	Plant Form/Size [1]	Plant Spacing (ft on center)	Total Number of plants
NROD ENHANCEMENT				
Trees				
Big-leaf maple	*Acer macrophyllum*	1 gal/24”	10 ft O.C.	2
Bitter cherry	*Prunus emarginata*	1 gal/24”	10 ft O.C.	2
Douglas fir	*Pseudotsuga menziesii*	1 gal/24”	10 ft O.C.	3
			Subtotal	7
Shrubs				
Nootka Rose	*Rosa nutkana*	1 gal/18”	Clusters of 3-4 plants; 8 ft O.C.	7
Mock Orange	*Philadelphus lewisii*	1 gal/18”	Clusters of 3-4 plants; 8 ft O.C.	5
Red-flowering Currant	*Ribes sanguineum*	1 gal/18”	Clusters of 3-4 plants; 8 ft O.C.	5
Snowberry	*Symphoricarpos albus*	1 gal/18”	Clusters of 3-4 plants; 8 ft O.C.	6
Kinnikinnick	*Arctostaphylos uva-ursi*	1 gal/18”	Clusters of 3-4 plants; 8 ft O.C.	5
Tall Oregon Grape	*Mahonia aquifolium*	1 gal/18”	Clusters of 3-4 plants; 8 ft O.C.	6
			Subtotal	34
			TOTAL	**41**

[1] Recommended plant form and size. Suitable replacement may be used based on availability.

Table 3: Plant List for Temporary Impacts/In Place Mitigation Area (1,328 SF)

Common Name	*Scientific Name*	Plant Form/Size [1]	Plant Spacing (ft on center)	Total Number of plants
NROD ENHANCEMENT				
Trees				
Big-leaf maple	*Acer macrophyllum*	1 gal/24"	10 ft O.C.	6
Douglas fir	*Pseudotsuga menziesii*	1 gal/24"	10 ft O.C.	7
			Subtotal	13
Shrubs				
Oceanspray	*Holodiscus discolor*	1 gal/18"	8 ft O.C.	15
Red-flowering Currant	*Ribes sanguineum*	1 gal/18"	Clusters of 3-4 plants; 8 ft O.C.	15
Snowberry	*Symphoricarpos albus*	1 gal/18"	Clusters of 3-4 plants; 8 ft O.C.	18
Tall Oregon Grape	*Mahonia aquifolium*	1 gal/18"	Clusters of 3-4 plants; 8 ft O.C.	18
			Subtotal	66
			TOTAL	**79**

[1] Recommended plant form and size. Suitable replacement may be used based on availability.

17.49.180(F) - Monitoring and Maintenance

The mitigation area identified as riparian buffer shall be monitored for 5 years following construction (Figure 6). During the five year monitoring and maintenance period, the owner will provide annual reports to be submitted to the city's planning division. The report shall provide a narrative on mitigation site conditions and photographs from designated photo points. The site owner will maintain the entire mitigation site and monitor and maintain any irrigation system installed.

If trees are installed adjacent to the NROD mitigation site, as mitigation for removed trees in the site development, these additional planting areas will not be included in the annual mitigation monitoring report.

NROD Monitoring Plan

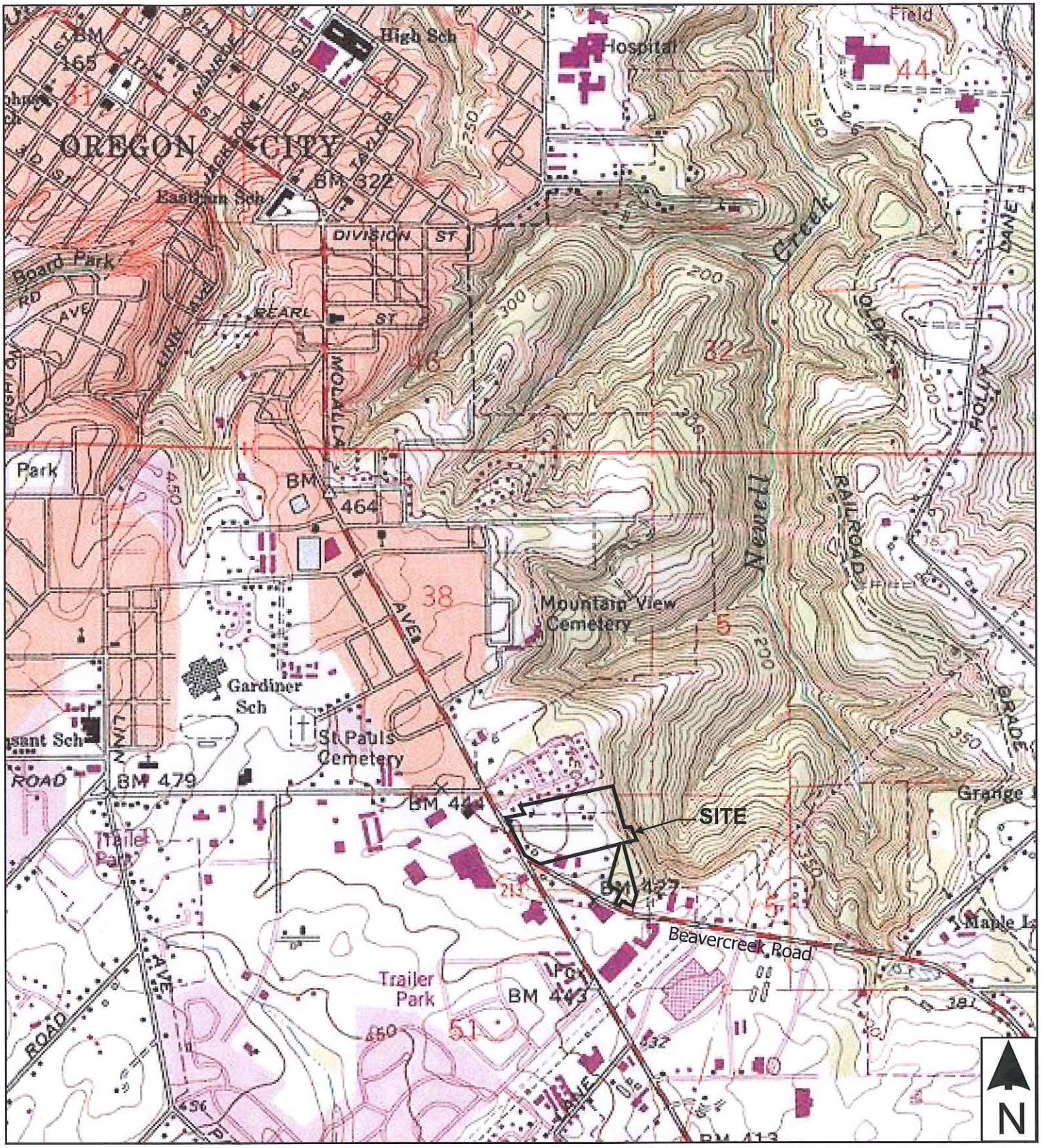
The report shall provide photographs from designated photo points (Figure 7) and provide data on the following:

- Plant Counts and Survival
- General Observation on community condition
- Notes on invasive plant species/recommendations for removal as necessary
- Irrigation/general site maintenance issues as necessary
- Photo Points

Rehabilitation and Riparian Buffer Mitigation Performance Criteria

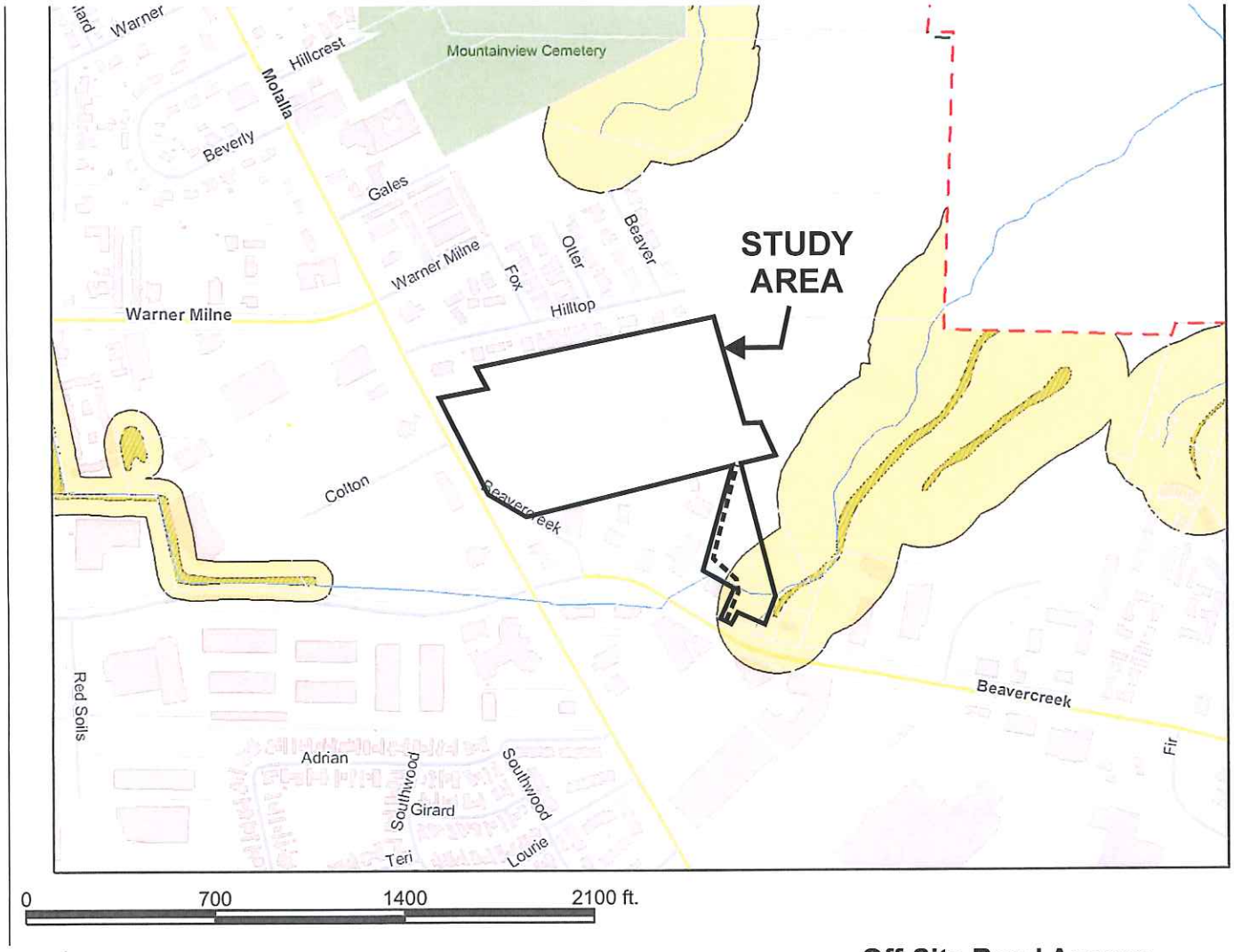
The NROD Mitigation Plan specifies the following criteria to ensure a successful mitigation:

- A minimum of 80% percent survival of trees and shrubs of the base plant density requirement of 76 trees and shrubs at the end of the five-year maintenance and monitoring period. Plants that die shall be replaced in-kind unless demonstrated that the species is not suitable for the site.
- Periodic maintenance and invasive weed control,
- Installation of irrigation necessary to ensure 80% survival
- Maintenance of ground preparation as needed that includes mulching of shrub and ground areas
- Bare spots and areas of invasive vegetation larger than twenty square feet shall be replanted or reseeded with native grasses and ground cover species.



Source: USGS 7.5-Minute Oregon City, OR Quadrangle, 1985. Printed from TOPO! 2000 National Geographic Holdings

Environmental Science & Assessment, LLC e s & a	Vicinity Map Shopping Center - Molalla and Beavercreek Road Oregon City, Oregon	Figure 1 Approx. Scale: 1in. = 2000 ft.



Source: www.ci.oregon-city.or.us.org

Environmental Science & Assessment, LLC	NROD Overlay Map Shopping Center - Molalla and Beavercreek Road Oregon City, Oregon	Figure 2 Not To Scale

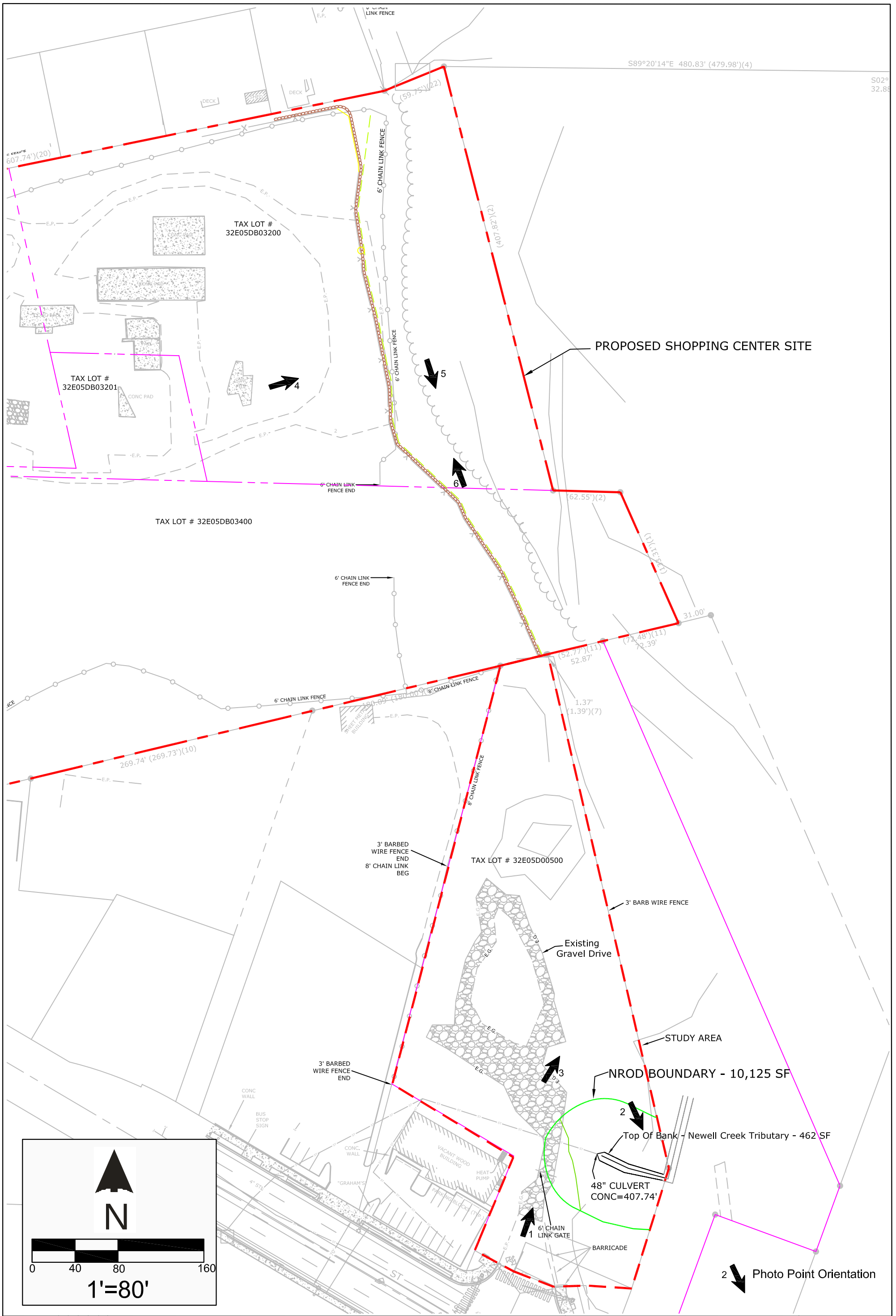


Fig. 3

Existing Conditions Map
Shopping Center
Molalla and Beavercreek Road
Oregon City, Oregon

Rev:
Job: 12008
Date: 8/12
Modified By: KR
Source Mapping By: CES

Environmental Science & Assessment, LLC

107 SE Washington St., Suite 249
Portland, OR 97204
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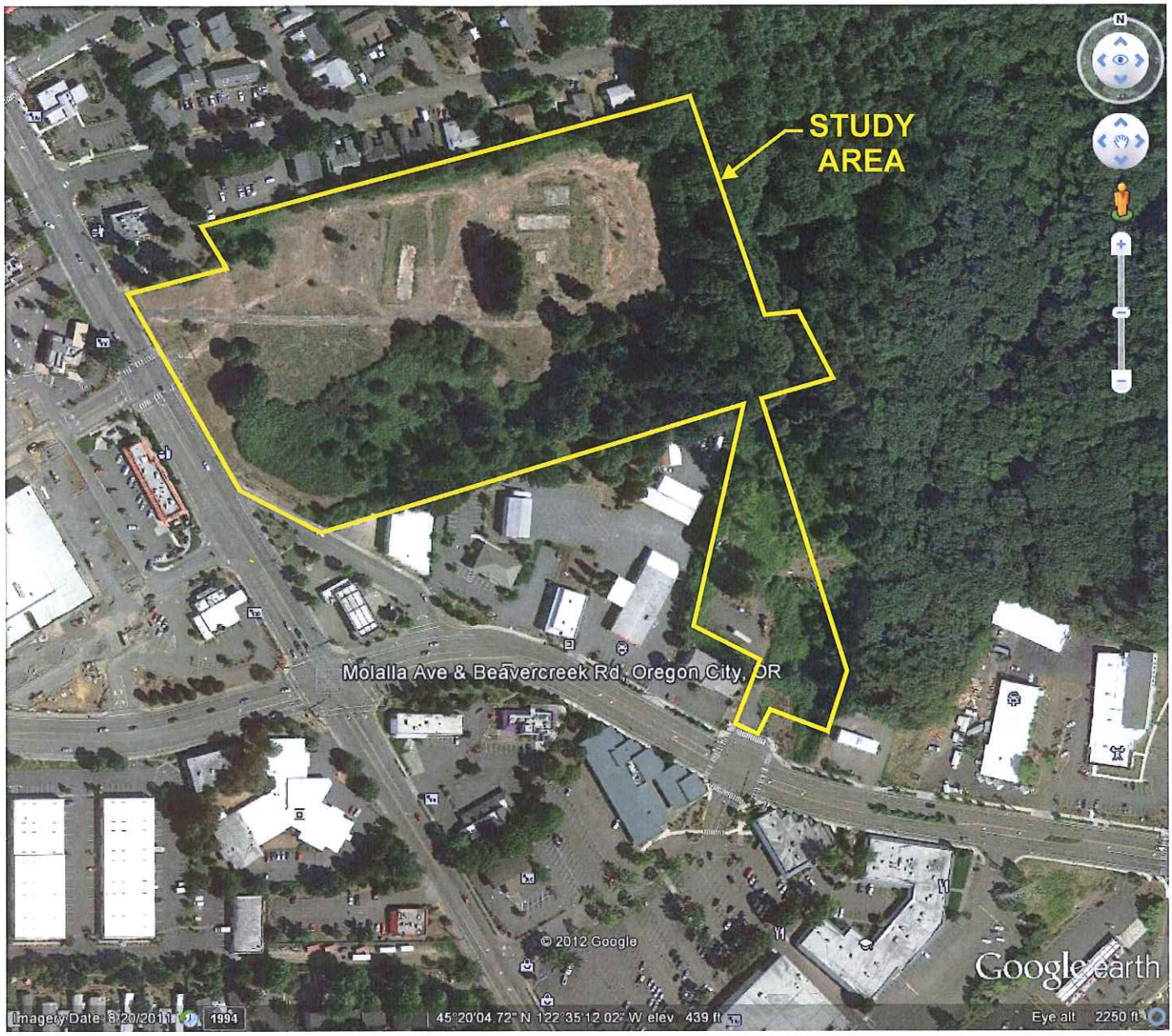
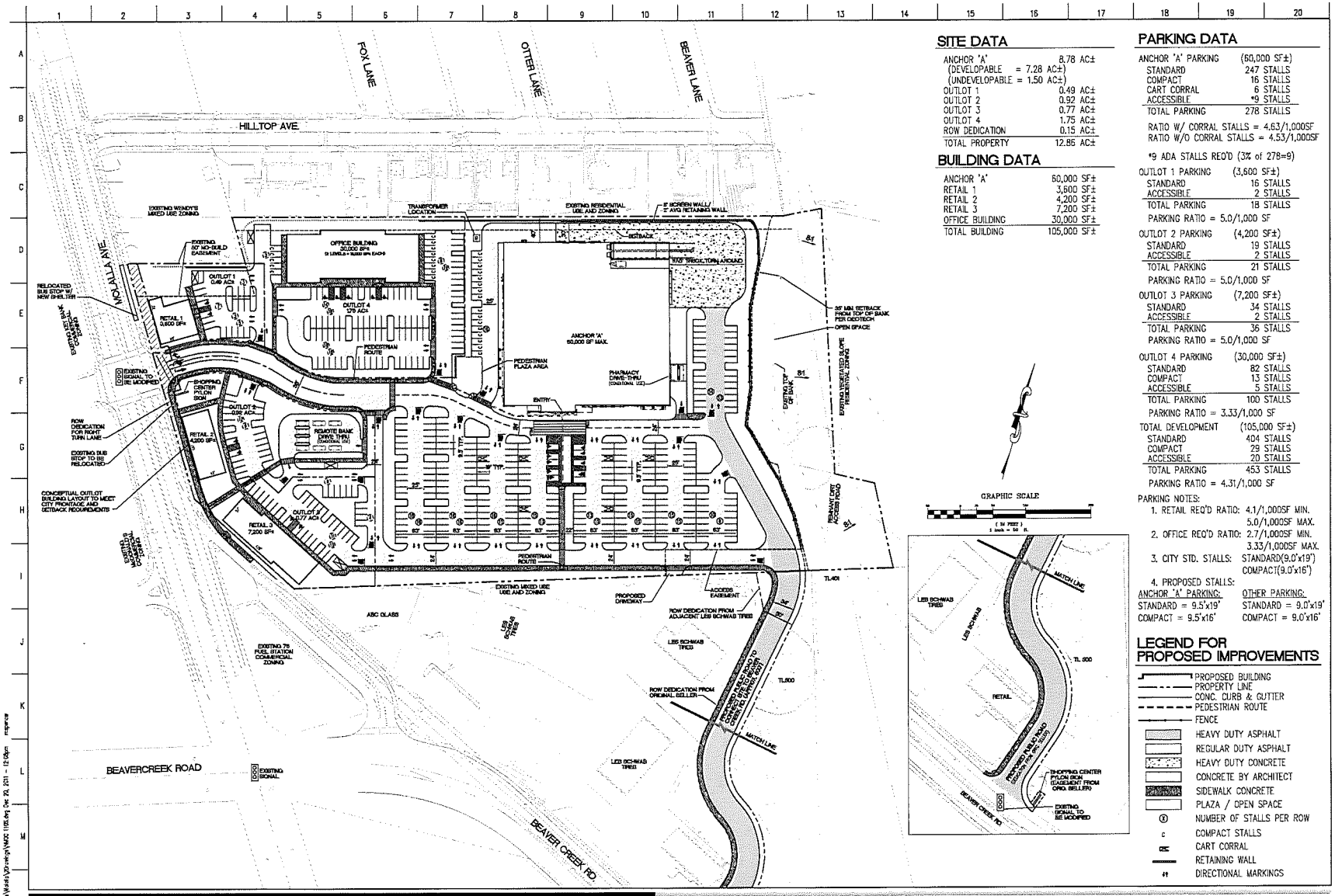
www.esapdx.com



N

Source: Google earth

Environmental Science & Assessment, LLC	2011 Aerial Photo Shopping Center - Molalla and Beavercreek Road Oregon City, Oregon	Figure 4 Approximate Scale: 1 in = 360 ft



SITE DATA

ANCHOR 'A'	8.78 AC±
(DEVELOPABLE = 7.28 AC±)	
(UNDEVELOPABLE = 1.50 AC±)	
OUTLOT 1	0.49 AC±
OUTLOT 2	0.92 AC±
OUTLOT 3	0.77 AC±
OUTLOT 4	1.75 AC±
ROW DEDICATION	0.15 AC±
TOTAL PROPERTY	12.85 AC±

BUILDING DATA

ANCHOR 'A'	60,000 SF±
RETAIL 1	3,600 SF±
RETAIL 2	4,200 SF±
RETAIL 3	7,200 SF±
OFFICE BUILDING	30,000 SF±
TOTAL BUILDING	105,000 SF±

PARKING DATA

ANCHOR 'A' PARKING	(60,000 SF±)
STANDARD	247 STALLS
COMPACT	16 STALLS
CART CORRAL	6 STALLS
ACCESSIBLE	*9 STALLS
TOTAL PARKING	278 STALLS

RATIO W/ CORRAL STALLS = 4.63/1,000SF
RATIO W/O CORRAL STALLS = 4.53/1,000SF

*9 ADA STALLS REQ'D (3% of 278=9)

OUTLOT 1 PARKING	(3,600 SF±)
STANDARD	16 STALLS
ACCESSIBLE	2 STALLS
TOTAL PARKING	18 STALLS

PARKING RATIO = 5.0/1,000 SF

OUTLOT 2 PARKING	(4,200 SF±)
STANDARD	19 STALLS
ACCESSIBLE	2 STALLS
TOTAL PARKING	21 STALLS

PARKING RATIO = 5.0/1,000 SF

OUTLOT 3 PARKING	(7,200 SF±)
STANDARD	34 STALLS
ACCESSIBLE	2 STALLS
TOTAL PARKING	36 STALLS

PARKING RATIO = 5.0/1,000 SF

OUTLOT 4 PARKING	(30,000 SF±)
STANDARD	82 STALLS
COMPACT	13 STALLS
ACCESSIBLE	5 STALLS
TOTAL PARKING	100 STALLS

PARKING RATIO = 3.33/1,000 SF

TOTAL DEVELOPMENT	(105,000 SF±)
STANDARD	404 STALLS
COMPACT	29 STALLS
ACCESSIBLE	20 STALLS
TOTAL PARKING	453 STALLS

PARKING RATIO = 4.31/1,000 SF

PARKING NOTES:
1. RETAIL REQ'D RATIO: 4.1/1,000SF MIN. 5.0/1,000SF MAX.
2. OFFICE REQ'D RATIO: 2.7/1,000SF MIN. 3.33/1,000SF MAX.
3. CITY STD. STALLS: STANDARD(9.0'x19') COMPACT(9.0'x16')
4. PROPOSED STALLS:

ANCHOR 'A' PARKING:	OTHER PARKING:
STANDARD = 9.5'x19'	STANDARD = 9.0'x19'
COMPACT = 9.5'x16'	COMPACT = 9.0'x16'

LEGEND FOR PROPOSED IMPROVEMENTS

- PROPOSED BUILDING
- PROPERTY LINE
- CONC. CURB & GUTTER
- PEDESTRIAN ROUTE
- FENCE
- HEAVY DUTY ASPHALT
- REGULAR DUTY ASPHALT
- HEAVY DUTY CONCRETE
- CONCRETE BY ARCHITECT
- SIDEWALK CONCRETE
- PLAZA / OPEN SPACE
- (#) NUMBER OF STALLS PER ROW
- c COMPACT STALLS
- CRT CART CORRAL
- RETAINING WALL
- ↔ DIRECTIONAL MARKINGS

No.	Date	By	Revision Description

Designed By:	Issue Date:
MKS	12/20/2011
Drawn By:	Issue:
MKS	PRE-APPLICATION
Checked By:	Project No.:
MKS	20-001-125

PACLAND
9450 SW Locust Road, Suite 200, Portland, OR 97223
T (503) 639-9500 F (503) 639-2237 www.PacLand.com

SHOPPING CENTER
MOLALLA AVENUE AND BEAVERCREEK ROAD
OREGON CITY, OREGON

PRELIMINARY SITE PLAN

PC-1.0

Figure 5

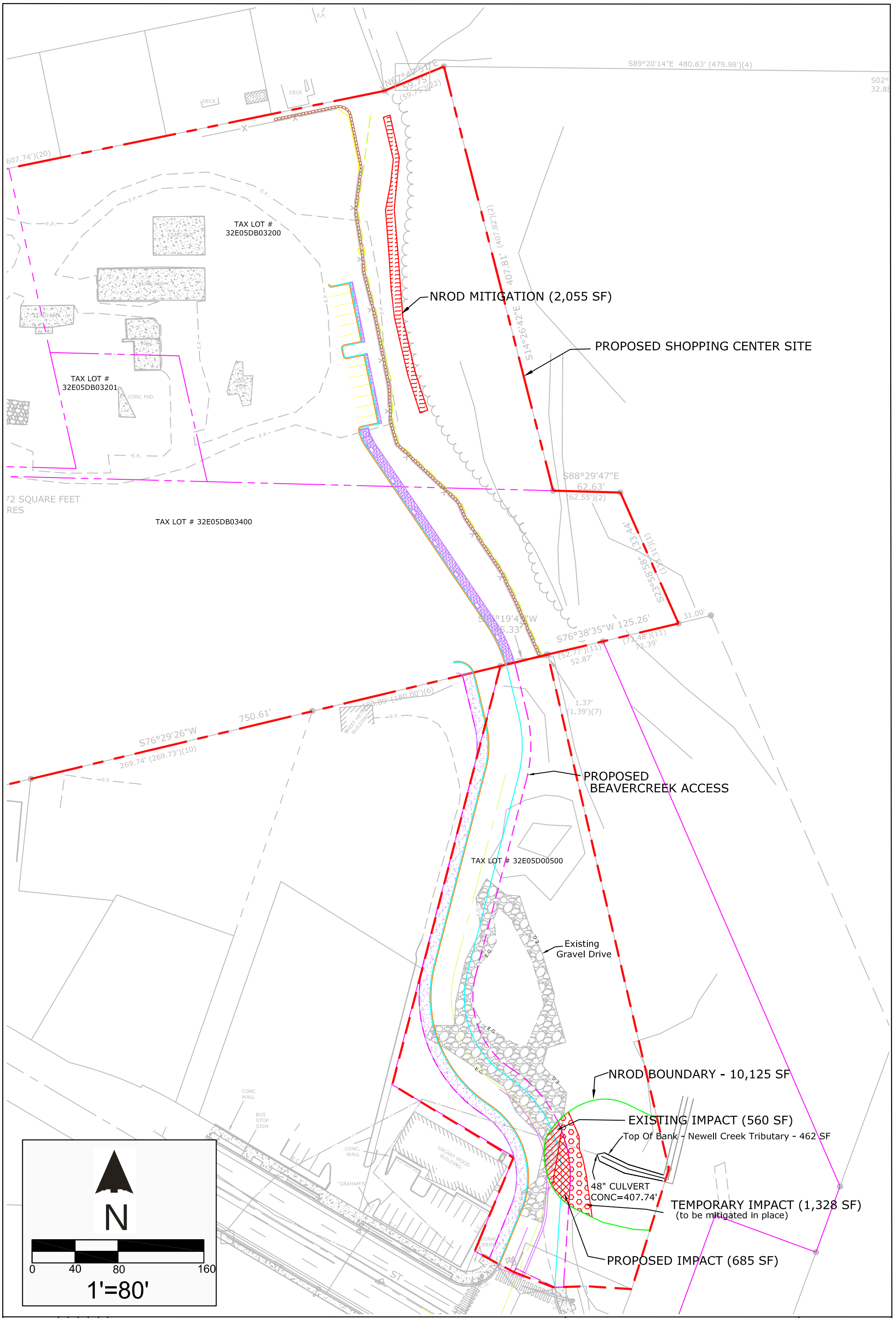


Fig. 6

NROD Impact/Mitigation Map
Shopping Center
Molalla and Beavercreek Road
Oregon City, Oregon

Rev:	
Job:	12008
Date:	8/12
Modified By:	KR
Source Mapping By:	CES

Environmental Science & Assessment, LLC

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Portland, OR 97204
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FAX: 503.478.0422
www.esapdx.com

TAX LOT # 32E05DB03400

Plant List for Enhancement/NROD Mitigation Area (2,055 SF)

Common Name	*Scientific Name*	Plant Form/Size [1]	Plant Spacing (ft on center)	Total Number of plants
NROD ENHANCEMENT				
Trees				
Big-leaf maple	*Acer macrophyllum*	1 gal/24”	10 ft O.C.	2
Bitter cherry	*Prunus emarginata*	1 gal/24”	10 ft O.C.	2
Douglas fir	*Pseudotsuga menziesii*	1 gal/24”	10 ft O.C.	3
			Subtotal	7
Shrubs				
Nootka Rose	*Rosa nutkana*	1 gal/18”	Clusters of 3-4 plants; 8 ft O.C.	7
Mock Orange	*Philadelphus lewisii*	1 gal/18”	Clusters of 3-4 plants; 8 ft O.C.	5
Red-flowering Currant	*Ribes sanguineum*	1 gal/18”	Clusters of 3-4 plants; 8 ft O.C.	5
Snowberry	*Symphoricarpos albus*	1 gal/18”	Clusters of 3-4 plants; 8 ft O.C.	6
Kinnikinnick	*Arctostaphylos uva-ursi*	1 gal/18”	Clusters of 3-4 plants; 8 ft O.C.	5
Tall Oregon Grape	*Mahonia aquifolium*	1 gal/18”	Clusters of 3-4 plants; 8 ft O.C.	6
			Subtotal	34
			TOTAL	**41**

[1] Recommended plant form and size. Suitable replacement may be used based on availability.

2 Photo Point Stations

NROD MITIGATION (2,055 SF)

PROPOSED SHOPPING CENTER SITE

PROPOSED BEAVERCREEK ACCESS

NROD BOUNDARY - 10,125 SF

EXISTING IMPACT (560 SF)

Top Of Bank - Newell Creek Tributary - 462 SF

48" CULVERT CONC=407.74'

TEMPORARY IMPACT (1,328 SF) (to be mitigated in place)

PROPOSED IMPACT (685 SF)

TAX LOT # 32E05DB03200

TAX LOT # 32E05DB03201

TAX LOT # 32E05D00500

Existing Gravel Drive

S89°20'14"E 480.83' (479.98')(4)

S14°26'42"E 407.81' (407.82')(2)

S88°29'47"E 62.63' (62.55')(2)

S76°38'35"W 125.26' (72.48')(11) 72.39'

31.00'

0 40 80 160

1'=80'

Fig. 7

NROD Monitoring Plan
Shopping Center
Molalla and Beavercreek Road
Oregon City, Oregon

Rev:
Job: 12008
Date: 8/12
Modified By: KR
Source Mapping By: CES

Environmental Science & Assessment, LLC

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APPENDIX M
2025 Wetland Delineation

AQUATIC RESOURCE DELINEATION REPORT

for

Oregon City Commercial Masterplan

Survey Date:
October 6, 2025

Prepared For:

Cypress Equities
8144 Walnut Hill Lane, Suite 1200
Dallas, TX 75231

Prepared By:

Langan Engineering and Environmental Services, LLC
104 W. Anapamu Street, Suite 204B
Santa Barbara, CA 93101

Steven Neumann
Senior Staff Biologist

David Murray
Senior Project Scientist

3 November 2025
794002701

LANGAN

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1.0 INTRODUCTION

On behalf of Cypress Equities, Langan Engineering and Environmental Services, LLC (Langan) has prepared this Aquatic Resource Delineation Report. This report documents the delineation of wetlands and waters for the United States Army Corps of Engineers (USACE) and the Oregon Department of State Lands (DSL) permitting. The 12.95-acre project site is north of Beavercreek Road and east of Molalla Avenue in Oregon City, Clackamas County, Oregon (**Figure 1**). The project site is comprised of four contiguous parcels (tax lot IDs 00848417, 00848408, 00848391, 00848435, and 00847864). Three parcels are within the northern portion of the project site and the remaining parcel extends south to Beavercreek Road (**Figure 2**). The proposed project includes a commercial mixe-used masterplan development in the northern portion with grading activities in the southern parcel (TL 500) to provide access and utilities to the commercial development in the northern portion. The entirety of all four parcels were included within the study area for this field effort.

2.0 LANDSCAPE SETTING AND LAND USE

The study area is situated to the northeast of the intersection of Molalla Road and Beavercreek Road in Oregon City, Oregon (Township 3S, Range 2E, Section 05; Figure 1). Molalla Road forms the western boundary and Beavercreek Road forms the southern boundary of the study area, which is surrounded by developed land featuring parking lots, buildings, and associated landscaping.

Currently, the northern portion of the site is a vacant lot primarily consisting of open space with a woodland segment to the south and east. The open space area is dominated by Kentucky blue grass (*Poa pratensis*, facultative [FAC]) and Armenian blackberry (Himalayan blackberry, *Rubus armeniacus,* FAC). The woodland area to the south and east consist of Douglas fir (*Pseudotsuga menziesii*, facultative upland [FACU]) and big leaf maple (*Acer macrophyllum*, FACU). The northern portion of the study area generally slopes east to west.

The southern parcel of the study area is a vacant commercial lot with developed road access to Beavercreek Road at its southern edge. To the east, there is a mature mixed forest consisting of Douglas fir and big leaf maple. An unnamed tributary to Newell Creek emerges from a culvert outfall at the southeastern corner of the parcel and flows into the forested area to the north and east.

3.0 SITE ALTERATIONS

The site has been used for commercial or industrial uses. The northern portion has been graded and historically used for industrial storage but is currently empty and regularly mowed. In the southern portion, native vegetation has been cleared, and a compacted gravel road extends from Beavercreek Road through the middle of the site. Invasive non-native vegetation, mainly Armenian blackberry, has re-established itself along the eastern boundary of the site. Additionally, a small grove of young Douglas fir and black cottonwood (*Populus balsamifera*, FAC) remains in the center of the parcel.

A tributary of Newell Creek daylights at the 48-inch culvert east of the existing gravel road in the southern parcel but historically extended west. This channel segment was piped with the development of Beaver Creek Road and Molalla Avenue.

4.0 PRECIPITION AND DATA ANALYSIS

The total amount of precipitation that occurred during the two weeks preceding the site investigation is listed in **Table 1**. No precipitation was recorded on the day of the investigation.

Table 1: Recent Precipitation Totals

Date	Actual Precipitation (in)
September 24 – 30, 2025	0.03
October 1 – 6, 2025	0.32
Total	0.35

Source: (National Weather Service 2025)

The Antecedent Precipitation Tool (APT) reported an observed rainfall of 1.69 inches over the 30 days preceding the site investigation. The APT output reported an antecedent precipitation score of 12, indicating conditions were normal for that time of year (**Appendix B**; **Table 2**).

Table 2: Antecedent Precipitation Tool Output Data

Date	Season	30 Day Precipitation (in)	Antecedent Precipitation Score
10/6/2025	Wet Season	1.69	12 – Normal Conditions

5.0 SOILS

The NRCS soil survey maps three soil types within the SA (Figure 4).

- Jory silty clay loam, 2 to 8 percent slopes (45B). This soil type is a well-drained soil typically found on foothills. This soil covers the majority of the study area and is not hydric.

- Bornstedt silt loam, 0 to 8 percent slopes (8B). This soil type is moderately well-drained and found on terraces and rolling uplands. This soil type is found along the western edge and southeastern corner of the study area and is predominantly not hydric.

- Xerochrepts and Haploxerolls, very steep (92F). This soil type is well-drained and primarily found on hillsides and mountainous terrain. The soil makes up the eastern edge of the study area and is not hydric.

None of the soil types mapped in the SA are considered hydric, therefore wetland sample points were not investigated based on the presence of known hydric soils.

6.0 METHODS

The site was delineated in accordance with the 1987 Corps of Engineers Wetland Delineation Manual (Environmental Laboratory, 1987) and the Western Mountains, Valleys, and Coast Regional Supplement (USACE 2010). The following sections describe the methods used to assess the jurisdictional areas within the site. Survey dates are provided in **Table 3**.

Table 3: Field Survey Efforts

Date	Survey Focus	Survey Area
October 6, 2025	Jurisdictional Determination	Oregon City Commercial Masterplan Site

A desktop literature review was completed prior to visiting the site to identify potential jurisdictional resources. The following data sources were reviewed:

- United States (U.S.) Geological Survey (USGS) 7.5-minute Oregon City quadrangle map (USGS 2021);
- U.S. Department of Agriculture (USDA) – Natural Resources Conservation Service (NRCS) Web Soil Mapper (USDA 2025);
- U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI; USFWS 2025);
- Statewide Wetlands Inventory (SWI) Map (State of Oregon 2025); and
- Aerial photography of the site and its surroundings (Google 2025).

Jurisdictional Determinations for the USACE were based on guidance in Clean Water Act Jurisdiction following the U.S. Supreme Court's Decision in Sackett v. United States (33 CFR Part 328). Jurisdictional determinations for the Oregon Department of State Lands (DSL) were made based on Oregon Administrative Rules (OAR) 141-085-0515.

Langan biologists, Steven Neumann and Chrissy Whitacre, conducted the site investigation on October 6, 2025. Jurisdictional boundary determinations were made based on existing topographic conditions, vegetation, and presence of hydrology.

It was determined that the hydrology on site was confined to the ordinary high-water mark (OHWM) of the tributary in the southern parcel of the study area with a wetland channel bar below the OHWM. No wetland fringe is present outside of the channel due to the steep channel banks. No other wetland hydrology was present in both portions of the study area due to the east to west sloping of the landscape. Furthermore, no inundation was present during the aerial photography review (Google 2025) (**Figure 5**).

7.0 WETLANDS AND WATERS

Langan biologists identified one stream within the study area, the Newell Creek tributary. The tributary daylights from a culvert east of the existing gravel road, flowing west to east out of the SA, connecting with Newell Creek off-site (**Figure 6a and 6b**). Newell Creek drains to Willamette River, approximately 2 miles north of the study area, which drains to the Pacific Ocean via the Columbia River. The tributary varies from 6 to 8 feet wide and was observed flowing at the time of the site investigation. The OHWM was determined by the presence of a break in slope, transition from rock to vegetated soil, and undercutting (**Appendix A**). Due to the presence of an OHWM, perennial flow, and connectivity to a traditionally navigable water, this tributary likely meets the definition of waters of the United States and waters of the state regulated by USACE and DSL, respectively. The tributary is further described in **Table 4** below.

Table 4: Waters Within the Study Area

Aquatic Resource Name	Aquatic Resource Classification		Aquatic Resource Size (Square Feet)	Aquatic Resource Size (Linear Feet)
	Streamflow Duration	Location (Lat/Long)		
Newell Creek Tributary	Perennial	45.333881, -122.585161	378.71	70.0

A vegetated channel bar was investigated within the tributary at wetland sample point 1 (WSP-01, **Figure 6b**). WSP-01 was primarily vegetated by reed canary grass (*Phalaris arundinacea*, facultative wetland [FACW]) and was determined to contain hydrophytic vegetation, wetland hydrology indicators, and hydric soils (**Appendix A**). The banks of the channel immediately outside of the channel bar are significantly steep and unable to hold water for sustained periods. Therefore, a flat area above the top of bank was investigated as an upland sample point at WSP-02 (**Figure 6b**). This sample area did not contain hydrophytic vegetation, wetland hydrology, or

hydric soils (**Appendix A**). The channel bar was mapped as a 3-parameter wetland associated with WSP-01. The wetland is further described in **Table 5** below.

Table 5: Wetlands within the Study Area

Aquatic Resource Name	Aquatic Resource Classification			Aquatic Resource Size (Sq. Feet)
	Cowardin Class	HGM Class	Location (Lat/Long)	
Channel Bar (WSP-01)	R3EM	RFT	45.333881, -122.585161	130.99

Note: R3EM = riverine upper perennial emergent wetland
RFT = riverine forested temporarily flooded

Two upland swales were investigated along the northern boundary and southeastern corner of the study area. Both swales were completely vegetated with Armenian blackberry and showed no OHWM indicators (**Appendix C**; Photos 1 & 8). The swale in the southeastern corner study area is approximately 13 feet long before it flows off-site to the northeast (**Figure 6b**). Outside of the stream described above, this swale was the lowest topographical area of the southern portion that could potentially contain a wetland. It was investigated at WSP-03 and determined that hydrophytic vegetation was present but lacked hydric soils and wetland hydrology.

The swale in the northern portion of the study area was investigated at WSP-04, where the swale terminates in a lowland portion of the study area (**Figure 6a**). The swale ends just west of WSP-04 where the topography flattens, and the hydrology becomes sheet flow. This sample point was chosen to investigate the lowest and relatively flattest area of the northern portion of the study area. The tree canopy was dominated by big-leaf maple (FACU) with an understory moderately covered by Armenian blackberry (FAC). It was determined that no wetland indicators were present at WSP-04 (**Appendix A**). Due to the lack of an OHWM and adjacent wetlands, these swales are not anticipated to be regulated by USACE or DSL.

8.0 DEVIATION FROM LWI OR NWI

NWI and LWI map Newell Creek as a riverine feature east of the study area (**Figure 3**). The tributary detailed in this report is not mapped on either NWI or LWI.

9.0 MAPPING METHOD

Aquatic features and points were mapped in the field using ESRI Field Maps mobile application and a Trimble DA2 GPS receiver to achieve sub-meter accuracy.

10.0 ADDITIONAL INFORMATION

Stream net has mapped the presence of steelhead (*Oncorhynchus mykiss*) and other anadromous fish species in Abernethy Creek, downstream of Newell Creek (PSMFC 2025). However, multiple downstream fish barriers along Newell Creek indicates no fish are likely present in the Newell Creek segment on site and directly downstream (ODOT 2025).

The City of Oregon City regulates Newell Creek and its tributaries as a natural resource overlay district (NROD) under Municipal Code 17.49. This code requires a vegetation corridor buffer for aquatic features within the NROD. The tributary on site is a stream with banks greater than 25 percent slope and approximately 20 feet wide on each side of the stream. Since no listed anadromous fish are known on the site, the NROD buffer was adjusted for the site following criteria in Municipal Code 17.49.110. The required minimum buffer width was determined to be 50 feet from the top of bank (**Figure 6b**).

11.0 RESULTS AND CONCLUSIONS

During the site visit in October 2025, Langan identified 378.71 square feet of jurisdictional non-wetland waters and 130.99 square feet of jurisdictional wetlands within the SA (**Figure 6b**).

12.0 DISCLAIMER

This report documents the investigation, best professional judgement and conclusions of the investigators. It is correct and complete to the best of my knowledge. It should be considered a Preliminary Jurisdictional Determination of wetlands and other waters and used at your own risk unless it has been reviewed and approved in writing by the Oregon Department of State Lands in accordance with OAR 141-090-0005 through 141-090-0055.

13.0 REFERENCES CITED

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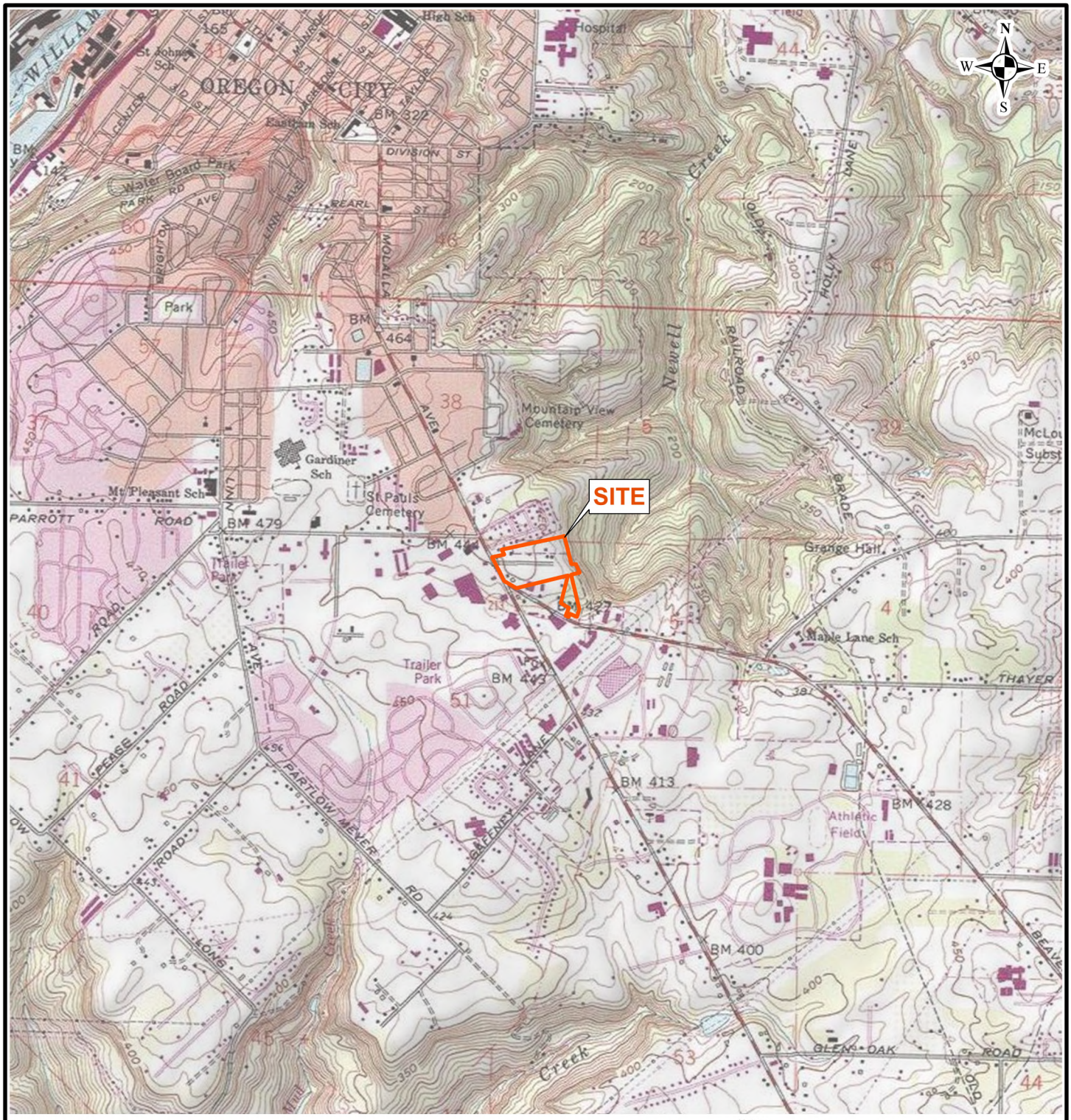
FIGURES



Legend

Study Area (~12.95 acres)

Notes:
1. Oregon City USGS Quadrangle Map Topographic basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online.
2. All features shown are approximate.

2,000 0 2,000
SCALE IN FEET

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Project	OREGON CITY COMMERCIAL MASTERPLAN OREGON CITY CLACKAMAS COUNTY OREGON
Figure Title	PROJECT VICINITY
Project No.	794002701
Date	10/24/2025
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Drawn By	GS
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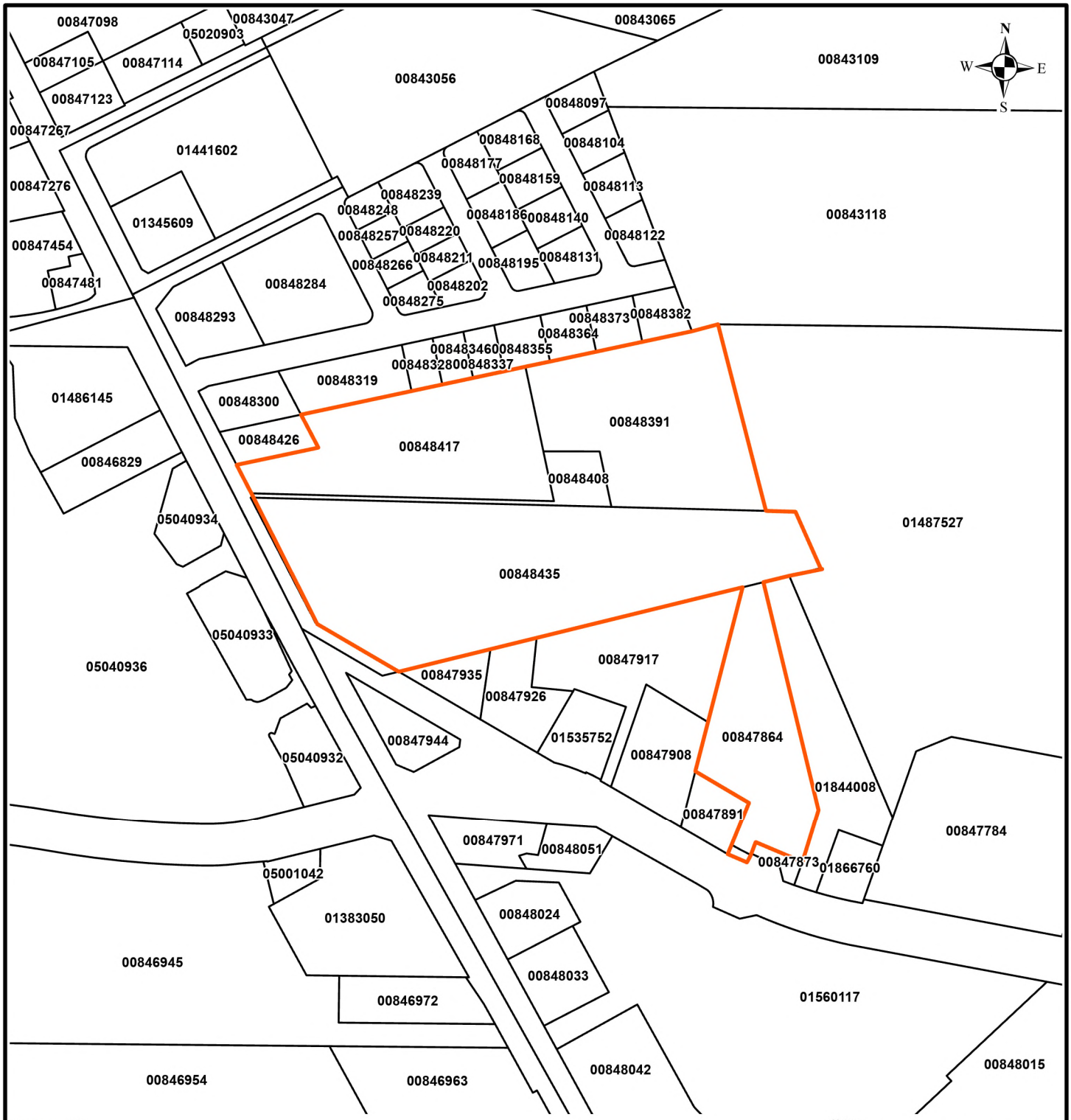

Legend

- Study Area (~12.95 acres)
- Tax Parcel

Notes:
1. Tax parcel data provided by Clackamas County.
2. All features shown are approximate.

300 0 300
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Figure Title	TAX LOT MAP
Project No.	794002701
Date	10/24/2025
Scale	1" = 300'
Drawn By	GS
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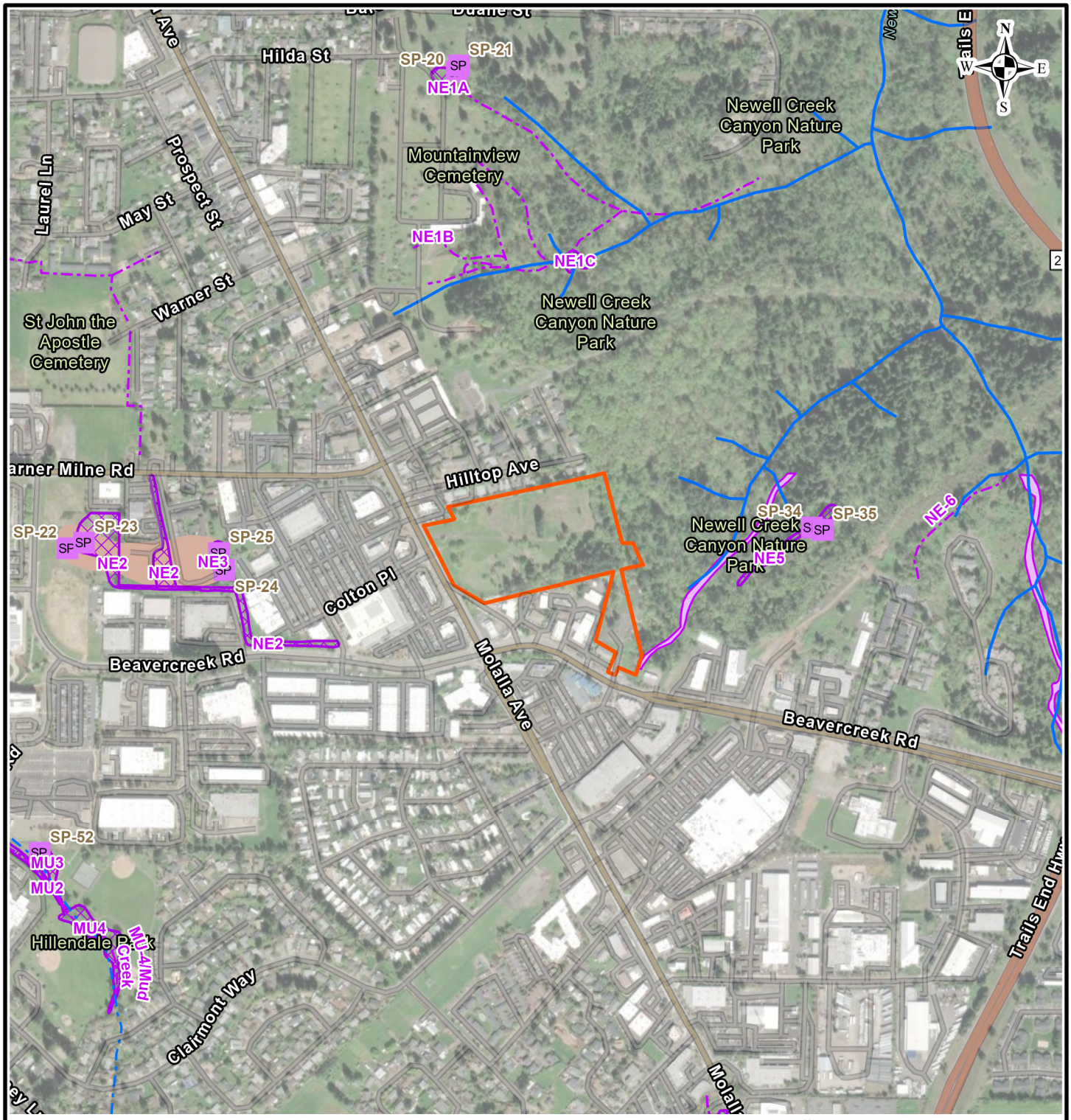

Legend

- SP — LWI Sample Plot points
- LWI Stream Lines
- **NHD Streams and Rivers**
- Perennial
- Intermittent
- SWI Predominantly Hydric Soil Map Units
- LWI Waterbody polygons
- LWI Wetlands polygons
- Study Area (~12.95 acres)

Notes:
1. World Imagery basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online.
2. All features shown are approximate.
3. Wetlands data provided by the Oregon Department of State Lands Statewide Wetlands Inventory.

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Project
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Figure Title
STATE WETLANDS INVENTORY MAP

Project No. 794002701
Date 10/27/2025
Scale 1" = 800'
Drawn By GS

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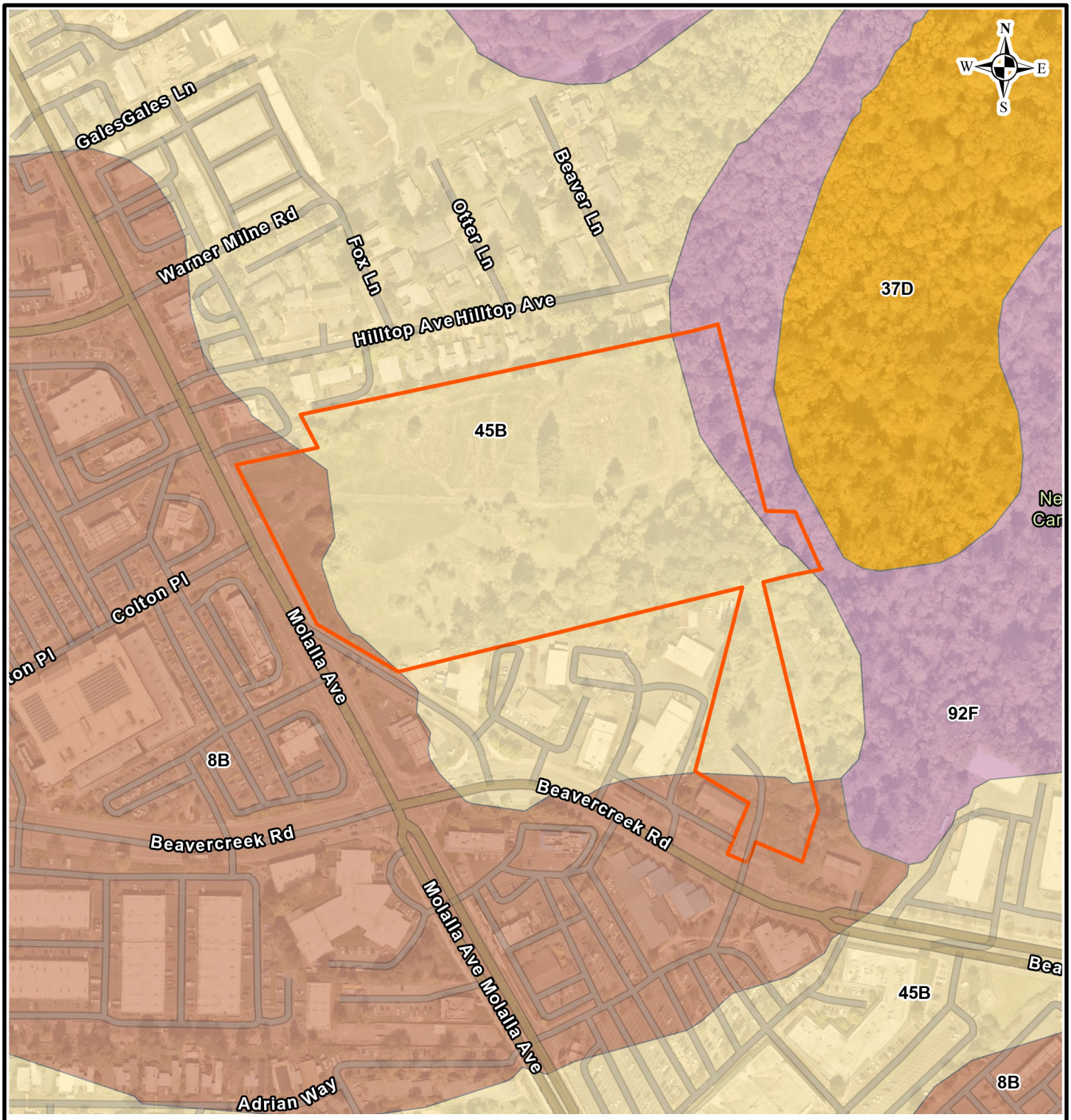

Legend

- Study Area (~12.95 acres)

Soil Unit | Description

- 37D | Helvetia silt loam, 15 to 30 percent slopes, Nonhydric
- 45B | Jory silty clay loam, 2 to 8 percent slopes, Nonhydric
- 8B | Bornstedt silt loam, 0 to 8 percent slopes, Predominantly Nonhydric
- 92F | Xerochrepts and Haploxerolls, very steep, Nonhydric

Notes:
1. Aerial imagery provided through Langan's subscription to NearMap.com, flown 04/16/2025.
2. All features shown are approximate.
3. Soils data provided by the USDA Natural Resources Conservation Service (NRCS) Web Soil Survey.

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Figure Title
NRCS SOILS MAP

Project No. 794002701
Date 10/24/2025
Scale 1" = 300'
Drawn By GS

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Legend

Study Area (~12.95 acres)

Notes:
1. Aerial imagery provided through Langan's subscription to NearMap.com, flown 04/16/2025.
2. All features shown are approximate.

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Project
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Figure Title
AERIAL MAP

Project No. 794002701
Date 10/24/2025
Scale 1" = 300'
Drawn By GS

5

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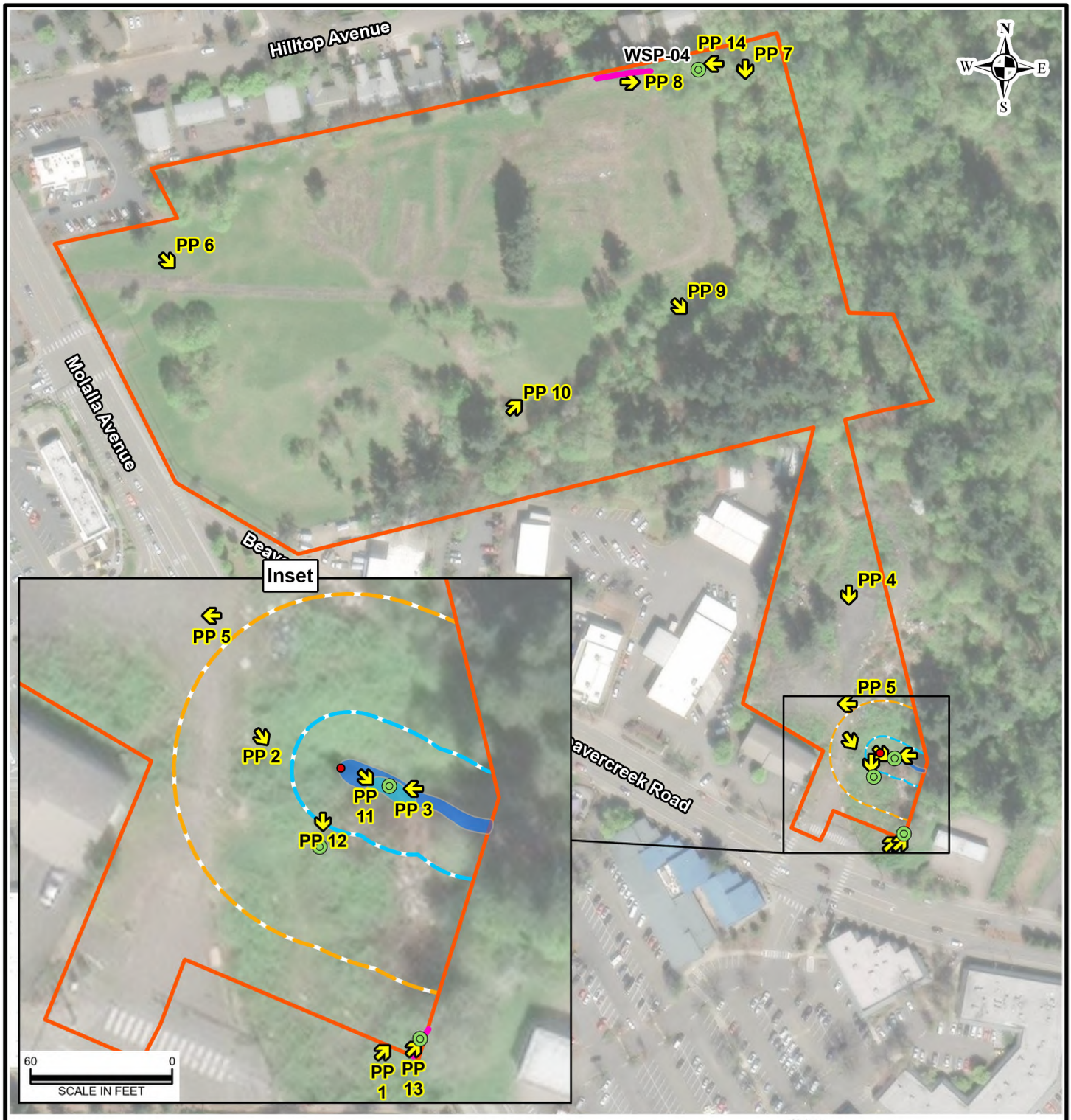

Legend

- Photo Points
- Culvert Outfall
- Wetland Sample Points
- Upland Swale
- Non-Wetland Waters (378.71 sqft.)
- Wetland (130.99 sqft.)
- Study Area (~12.95 ac.)
- Top-of-Bank
- NROD Setback (50 ft. Buffer)

Notes:
1. Aerial imagery provided through Langan's subscription to NearMap.com, flown 04/16/2025.
2. All features shown are approximate.
3. Accuracy within 1 meter.

200 0 200
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Figure Title
WETLAND DELINEATION MAP

Project No. 794002701
Date 10/31/2025
Scale 1" = 200'
Drawn By JM

6a

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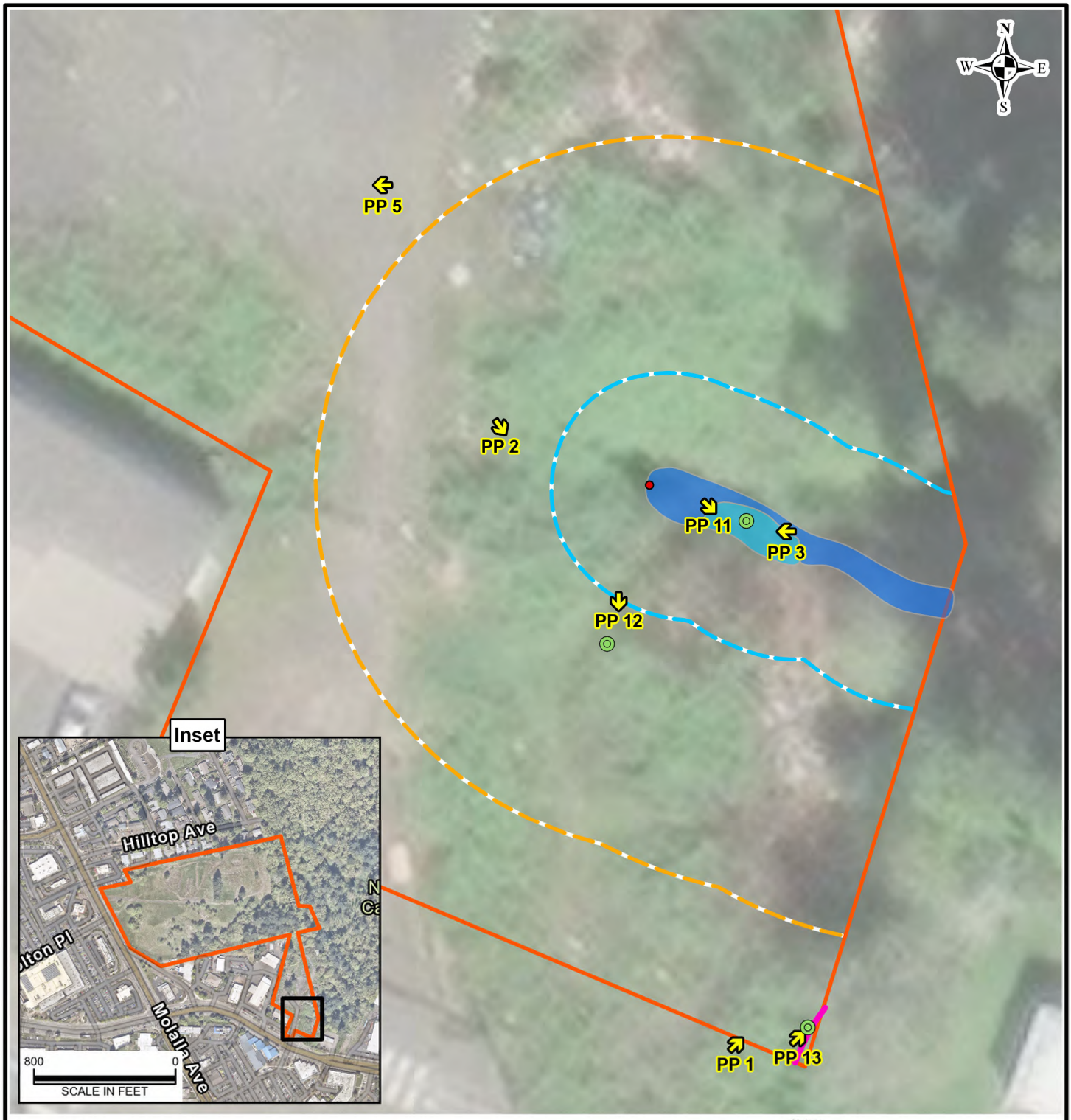

Legend

- Photo Points
- Culvert Outfall
- Wetland Sample Points
- Upland Swale
- Non-Wetland Waters (378.71 sqft.)
- Wetland (130.99 sqft.)
- Area Shown
- Study Area(~12.95 ac.)
- Top-of-Bank
- NROD Setback (50 ft. Buffer)

Notes:
1. Aerial imagery provided through Langan's subscription to NearMap.com, flown 04/16/2025.
2. All features shown are approximate.
3. Accuracy within 1 meter.

30 0 30
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Project
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Figure Title
WETLAND DELINEATION SOUTHEAST DETAIL MAP

Project No.	794002701
Date	10/31/2025
Scale	1" = 30'
Drawn By	JM

6b

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APPENDIX A
Data Forms

Print Form | Save As | E-mail

U.S. Army Corps of Engineers (USACE)

RAPID ORDINARY HIGH WATER MARK (OHWM) FIELD IDENTIFICATION DATA SHEET

The proponent agency is Headquarters USACE CECW-CO-R.

OMB Control No. 0710-XXXX

Approval Expires:

Project ID #: 794002701	Site Name: Oregon City Masterplan	Date and Time: 10/6/25;1230
Location (lat/long): 45.333889, -122.585187	Investigator(s): Steven Neumann, Christy Whitacre	

Step 1 Site overview from remote and online resources
Check boxes for online resources used to evaluate site:

- [ ] gage data
- [ ] LiDAR
- [ ] geologic maps
- [ ] climatic data
- [x] satellite imagery
- [x] land use maps
- [x] aerial photos
- [x] topographic maps
- [ ] Other: _____

Describe land use and flow conditions from online resources.
Were there any recent extreme events (floods or drought)?

Flow from the culvert consists of stormwater from the developed area to the SW. Climatic conditions have been normal for this time of year with no droughts or floods.

Step 2 Site conditions during field assessment

First look for changes in channel shape, depositional and erosional features, and changes in vegetation and sediment type, size, density, and distribution. Make note of natural or man-made disturbances that would affect flow and channel form, such as bridges, riprap, landslides, rockfalls etc.

The channel is characterized by steeply incised banks, mostly unvegetated, with a cobble covered substrate. The channel includes a channelized bench vegetated with reed canary grass. The banks are densely vegetated by Armenian blackberry (Rubus armeniacus). The average width of the channel is approximately 7 feet and the height of the banks are approximately 20 feet.

Step 3 Check the boxes next to the indicators used to identify the location of the OHWM.

OHWM is at a transition point, therefore some indicators that are used to determine location may be just below and above the OHWM. From the drop-down menu next to each indicator, select the appropriate location of the indicator by selecting either just below `b', at `x', or just above `a' the OHWM.

OHWM. Go to page 2 to describe overall rationale for location of OHWM, write any additional observations, and to attach a photo log.

Geomorphic indicators

- [x] **Break in slope:**
  - [x] *on the bank:* x
  - [x] *undercut bank:* x
  - [ ] *valley bottom:*
  - [ ] Other: _____
- [ ] **Shelving:**
  - [ ] *shelf at top of bank:*
  - [ ] *natural levee:*
  - [ ] *man-made berms or levees:*
  - [ ] *other berms:* _____
- [x] **Channel bar:**
  - [ ] *shelving (berms) on bar:*
  - [ ] *unvegetated:*
  - [x] *vegetation transition (go to veg. indicators)*
  - [ ] *sediment transition (go to sed. indicators)*
  - [ ] *upper limit of deposition on bar:*
- [ ] **Instream bedforms and other bedload transport evidence:**
  - [ ] *deposition bedload indicators (e.g., imbricated clasts, gravel sheets, etc.)*
  - [ ] *bedforms (e.g., poofs, riffles, steps, etc.):*
  - [ ] *erosional bedload indicators (e.g., obstacle marks, scour, smoothing, etc.)*
- [ ] **Secondary channels:**

Sediment indicators

- [ ] **Soil development:**
- [ ] **Changes in character of soil:**
- [ ] **Mudcracks:**
- [x] **Changes in particle-sized distribution:** x
  - [x] *transition from* cobble to clay
  - [ ] *upper limit of sand-sized particles*
  - [ ] *silt deposits:*

Vegetation Indicators

- [x] **Change in vegetation type and/or density:**

  Check the appropriate boxes and select the general vegetation change *(e.g., graminoids to woody shrubs).* ***Describe the vegetation transition looking from the middle of the channel, up the banks, and into the floodplain.***

  - [x] *vegetation absent to:* forbs
  - [ ] *moss to:*
  - [ ] *forbs to:*
  - [ ] *graminoids to:*
  - [ ] *woody shrubs to:*
  - [ ] *deciduous trees to:*
  - [ ] *coniferous trees to:*
- [x] **Vegetation matted down and/or bent:** b
- [ ] **Exposed roots below intact soil layer:**

Ancillary indicators

- [ ] **Wracking/presence of organic litter:**
- [ ] **Presence of large wood:**
- [ ] **Leaf litter disturbed or washed away:**
- [ ] **Water staining:**
- [ ] **Weathered clasts or bedrock:**

Other observed indicators?

Describe:

Step 4 Is additional information needed to support this determination?

- [ ] Yes
- [x] No

If yes, describe and attach information to datasheet:

Project ID #: _____

Step 5 Describe rationale for location of OHWM

channel transitions from unvegetated,rocky surface to densely vegetated banks, above a break in slope. The vegetation on the channel bar is matted down and below the break in slope, therefore the bar is below OHWM. Furthermore, undercutting is present at the OHWM, above the bar.

Additional observations or notes

The channel begins at a 48 inch culvert.

Attach a photo log of the site. Use the table below, or attach separately.

Photo log attached? ☒ Yes ☐ No If no, explain why not: Photos are included in Appendix C of the Aquatic Resources Delineation report

List photographs and include descriptions in the table below.

Number photographs in the order that they are taken. Attach photographs and include annotations of features.

Photo Number	Photograph description

OHWM Field Identification Datasheet Instructions and Field Procedure

Step 1 **Site overview from remote and online resources** **Complete Step 1 prior to site visit.**

Online Resources: Identify what information is available for the site. Check boxes on datasheet next to the resources used to assess this site.

a. gage data
b. aerial photos
c. satellite imagery
d. LiDAR
e. topographic maps
f. geologic maps
g. land use maps
h. climatic data (precipitation and temperature)

Landscape context: Use the online resources to put the site in the context of the surrounding landscape.

a. **Note on the datasheet under Step 1:**
   i. Overall land use and change if known
   ii. Recent extreme events if known (e.g., flood, drought, landslides, debris flows, wildfires)
b. Consider the following to inform weighting of evidence observed during field visit.
   i. What physical characteristics are likely to be observed in specific environments?
   ii. Was there a recent flood or drought? Are you expecting to see recently formed or obscured indicators?
   iii. How will land use affect specific stream characteristics? How natural is the hydrologic regime? How stable has the landscape been over the last year, decade, century?

Step 2 Site conditions during the field assessment (assemble evidence)

a. Identify the assessment area.
b. Walk up and down the assessment area noting all the potential OHWM indicators.
c. Note broad trends in channel shape, vegetation, and sediment characteristics.
   i. Is this a single thread or multi-thread system? Is this a stream-wetland complex?
   ii. Are there any secondary and/or floodplain channels?
   iii. Are there obvious man-made alterations to the system?
   iv. Are there man-made (e.g., bridges, dams, culverts) or natural structures (e.g., bedrock outcrops, Large Wood jams) that will influence or control flow?
d. Look for signs of recurring fluvial action.
   i. Where does the flow converge on the landscape?
   ii. Are there signs of fluvial action (sediment sorting, bedforms, etc.) at the convergence zone?
e. Look for indicators on both banks. If the opposite bank is not accessible, then look across the channel at the bank.
f. **In Step 2 of the datasheet** describe any adjacent land use or flow conditions that may influence interpretation of each line of evidence.
   i. What land use and flow conditions may be affecting your ability to observe indicators at the site?
   ii. What recent extreme events may have caused changes to the site and affected your ability to observe indicators?

Step 3a List evidence

Assemble evidence by checking the boxes next to each line of evidence:

a. If needed, use a separate scratch datasheet to check boxes next to possible indicators, or check boxes of possible indicators in pencil and use pen for final decision.
b. If using fillable form, then follow the instructions for filling in the fillable form.

Context is important when assembling evidence. For instance, pool development may be an indicator of interest on the bed of a dry stream, but may not be a useful indicator to take note of in a flowing stream. On the other hand, if the pool is found in a secondary channel adjacent to the main channel, it could provide a line of evidence for a minimum elevation of high flows. Therefore, consider the site context when deciding which indicators provide evidence for identifying the OHWM. Explain reasoning in Step 5.

Questions to consider while making observations and listing evidence at a site:

Geomorphic indicators	**Sediment and soil indicators**	**Vegetation Indicators**	**Ancillary indicators**
Where are the breaks in slope?	Where does evidence of soil formation appear?	Where are the significant transitions in vegetation species, density, and age?	Is there organic litter present?
Are there identifiable banks?		Is there vegetation growing on the channel bed?	
Is there an easily identifiable top of bank?	Are there mudcracks present?	If no, how long does it take for the non-tolerant vegetation to establish relative to how often flows occur in the channel?	Is there any leaf litter disturbed or washed away?
Are the banks actively eroding?			
Are the banks undercut?	Is there evidence of sediment sorting by grain size?	Where are the significant transitions in vegetation?	Is there large wood deposition?
Are the banks armored?			
Is the channel confined by the surrounding hillslopes?		Is the vegetation tolerant of flowing water?	Is there evidence of water staining?
Are there natural or man-made berms and levees?		Has any vegetation been flattened by flowing water?	
Are there fluvial terraces?			
Are there channel bars?			

Are the following features of fluvial transport present?

Evidence of erosion: obstacle marks, scour, armoring
Bedforms; riffles, pools, steps, knickpoints/headcuts
Evidence of deposition: imbricated clasts, gravel sheets, etc.

In some cases, it may be helpful to explain why an indicator was NOT at the OHWM elevation, but found above or below. It can also be useful to note if specific indicators (e.g., vegetation) are NOT present. For instance, note if the site has no clear vegetation zonation.

OHWM Field Identification Datasheet Instructions and Field Procedure

Step 3b Weight each line of evidence and weigh body of evidence

Weight each indicator by considering its importance based upon:

***Landscape context from Step 1 can help determine the relevance, strength, and reliability of the indicators observed in the field.**

a. Relevance:

i. Is this indicator left by low, high, or extreme flows?

Tips on how to assess the indicator relative to type of flow:

Consider the elevation of the indicator relative to the channel bed. What is the current flow level based on season or nearby gages? Consider the elevation of the indicator relative to the current flow. If the stream is currently at baseflow and indicator is adjacent to that, then it is likely a low flow indicator. The difference between high and extreme flow indicators can sometimes be difficult to determine.

***Information in Chapter 2 of the OHWM field manual provides information on specific indicators which can assist in putting these in context and determining relevance, strength, and reliability.**

ii. Did recent extreme events and/or land use affect this indicator?

1. Recent floods may have left many extreme flow indicators, or temporarily altered channel form. Other resources will likely be needed to support any OHWM identification at this site. Field evidence of the OHWM may have to wait for the site to recover from the recent flood.
2. Droughts may cause field evidence of OHWM to be obscured, because there has been an extended time since the last high flow event. There can be overgrowth of vegetation or deposition of material from surrounding landscape that can obscure indicators.
3. Both man-made (e.g., dams, construction, mining activities, urbanization, agriculture, grazing) and natural (e.g., fires, floods, debris flows, beaver dams) disturbances can all alter how indicators are expected to appear at a site. Chapter 6 and Chapter 7 of the OHWM field manual provides specific case-studies that can help in interpreting evidence at these sites.

b. Strength:

i. Is this indicator persistent across the landscape?

1. Look up and downstream and across the channel to see if you see the same indicator at multiple locations.
2. Does the indicator occur at the same elevation as other indicators?

c. Reliability:

i. Is this indicator persistent on the landscape over time? Will this indicator still persist across seasons?

1. This can be difficult to determine for some indicators and may be specific to climatic region (in terms of persistence of vegetation) and history of land use or other natural disturbances.
2. Chapter 2, Chapter 6, and Chapter 7 of the OHWM field manual describes each indicator in detail and provides examples of areas where indicators are difficult to interpret.

d. Weigh body of evidence:

i. Combine weights: integrate the weighted line of evidence (relevance, strength, reliability) of each indicator.

ii. For each of the observed indicators, which are more heavily weighted? Where do high value indicators co-occur along the stream reach? Do they co-occur at a similar elevation along the banks relative to water surface (or channel bed if there is no water).

iii. On datasheet, select the indicators used to identify the OHWM. Information in Chapter 2 of the OHWM field manual provides descriptions of specific indicators which can assist in putting these in context and determining relevance, strength, and relieability.

e. Take photographs of indicators and attach a log using either page 2 of datasheet or another method of logging photos.

i. Annotate photos with descriptions of indicators.

Step 4 Is additional information needed? Are other resources needed to support the lines of evidence observed in the field?

a. If additional resources are needed, then repeat steps 3a and 3b for the resources selected in Step 1 of assembling, weighting, and weighing evidence collected from online resources. Chapter 5 of the OHWM field manual provides information on using online resources.

b. Any data collected from online tools have strengths and weaknesses. Make sure these are clear when determining relevance, strength, and reliability of the remotely collected data. Clearly describe why other resources were needed to support the lines of evidence observed in the field, as well as the relevance, strength, and reliability of the supporting data and/or resources.

c. Attach any remote data and data analysis to the datasheet.

Step 5 Describe rationale for location of OHWM:

a. Why do the combination of indicators represent the OHWM?

b. If there are multiple possibilites for the OHWM, explain why there are two (or more) possibilities. Include any relevant discussion on why specific indicators were not included in the final decision.

c. If needed, add additional site notes on page 2 of the datasheet under Step 5.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Oregon City Masterplan City/County: Oregon City, Clacka,as Sampling Date: 10/6/25

Applicant/Owner: Cypress Equities State: OR Sampling Point: WSP1

Investigator(s): Steven Neumann Section, Township, Range: 3S, 2E, 05

Landform (hillslope, terrace, etc.): channel bar Local relief (concave, convex, none): none Slope (%): 1

Subregion (LRR): A Lat: 45.333889 Long: -122.585187 Datum: NAD84

Soil Map Unit Name: Bernstein silt loam NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ✔, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** Yes ✔ No ____
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	

Remarks:

sample area is located just downstream of a culvert and receives stormwater. channel bar likely developed from storm water deposition.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 5' x 5')	Absolute % Cover	Dominant Species?	Indicator Status
1. None observed			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 5' x 5')			
1. Rubus armeniacus	10	yes	FAC
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5' X 5')			
1. Phalaris arundinacea	90	yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	= Total Cover		
Woody Vine Stratum (Plot size: 5'x5')			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species 90	x 2 =	180
FAC species 10	x 3 =	30
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: 100 (A)		210 (B)

Prevalence Index = B/A = 2.1

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ✔ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No ____

Remarks:

plot size was determined to characterized channel bar

SOIL

Sampling Point: WSP-01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 2/1	100		0			san/cl lm	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☑ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: cobble stone

Depth (inches): 16

Hydric Soil Present? Yes ☑ No ☐

Remarks:
uniform sandy clay loam with cobbles. could not dig beyond restrictive cobble layer.
Problematic soils are present. the sample area is a vegetated bar that was likely recently developed from sediment deposition from the upstream culvert.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ☑ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☑ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches):

Water Table Present? Yes ☑ No ☐ Depth (inches): 14

Saturation Present? (includes capillary fringe) Yes ☑ No ☐ Depth (inches): 14

Wetland Hydrology Present? Yes ☑ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Vegetation is matted down indicating drainage patterns.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Oregon City Masterplan City/County: Oregon City, Clacka,as Sampling Date: 10/6/25

Applicant/Owner: Cypress Equities State: OR Sampling Point: WSP-02

Investigator(s): Steven Neumann Section, Township, Range: 3S, 2E, 05

Landform (hillslope, terrace, etc.): top of bank Local relief (concave, convex, none): convex Slope (%): 1

Subregion (LRR): A Lat: 45.333816 Long: -122.585300 Datum: NAD84

Soil Map Unit Name: Bernstein silt loam NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ✔, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✔	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	

Remarks:

disturbed soils from previous land alterations. soil contains large amount of rocks, likely from fill soils.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. None observed			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 5')			
1. Reynoutria japonica	20	yes	facu
2. Rubus armeniacus	30	yes	fac
3.			
4.			
5.			
	50 = Total Cover		
Herb Stratum (Plot size: 5')			
1. Poa pretensis	25	yes	fac
2. Leontodon saxatilus	3	no	facu
3. Daucus carota	1	no	facu
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	29 = Total Cover		
Woody Vine Stratum (Plot size: 30')			
1. None observed			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 25

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species 55	x 3 = 165
FACU species 24	x 4 = 96
UPL species ____	x 5 = ____
Column Totals: 79 (A)	261 (B)

Prevalence Index = B/A = 3.3

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- ____ 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✔

Remarks:

SOIL

Sampling Point: WSP-02

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	7.5YR 3/4	100					loam	rocky
12-20	7.5Yr 4/4	100					loam	rocky

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✔

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Oregon City Masterplan City/County: Oregon City, Clacka,as Sampling Date: 10/6/25

Applicant/Owner: Cypress Equities State: OR Sampling Point: WSP-03

Investigator(s): Steven Neumann Section, Township, Range: 3S, 2E, 05

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): concave Slope (%): 3

Subregion (LRR): A Lat: 45.333596 Long: -122.585126 Datum: NAD84

Soil Map Unit Name: Bernstein silt loam NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. None observed			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 5')			
1. Rubus armeniacus	98	yes	fac
2.			
3.			
4.			
5.			
	98 = Total Cover		
Herb Stratum (Plot size: 5')			
1. none observed			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	____ = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1. none observed			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 2

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species 98	x 3 = 294
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: 98 (A)	294 (B)

Prevalence Index = B/A = 3

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ✔ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No ____

Remarks:

SOIL

Sampling Point: WSP-03

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-5	7.5YR 3/2	100					loam	
5-16	7.5YR 3/4	100					loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: rocks

Depth (inches): ___

Hydric Soil Present? Yes ___ No ✔

Remarks:
unable to dig below rocky layer

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ✔ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No ✔ Depth (inches): ___

Water Table Present? Yes ___ No ✔ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✔ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Oregon City Masterplan City/County: Oregon City, Clacka,as Sampling Date: 10/6/25

Applicant/Owner: Cypress Equities State: OR Sampling Point: WSP-04

Investigator(s): Steven Neumann Section, Township, Range: 3S, 2E, 05

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): none Slope (%): 2

Subregion (LRR): A Lat: 45.336535 Long: -122.586363 Datum: NAD84

Soil Map Unit Name: Bernstein silt loam NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✔	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer macrophyllum	80	yes	facu
2. Pseudotsuga menziesii	3	no	facu
3.			
4.			
	83	= Total Cover	
Sapling/Shrub Stratum (Plot size: n/a)			
1. Rubus armeniacus	60	yes	fac
2.			
3.			
4.			
5.			
	60	= Total Cover	
Herb Stratum (Plot size: 5')			
1. Lactuca moralis	1	yes	NL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	61	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1. None observed			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum 40

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species 80	x 3 = 240
FACU species 83	x 4 = 332
UPL species 1	x 5 = 5
Column Totals: 164 (A)	577 (B)

Prevalence Index = B/A = 3.52

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- ____ 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✔

Remarks:

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-20	7.5YR 4/3	100					sand loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): _____

Water Table Present? Yes _____ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): _____

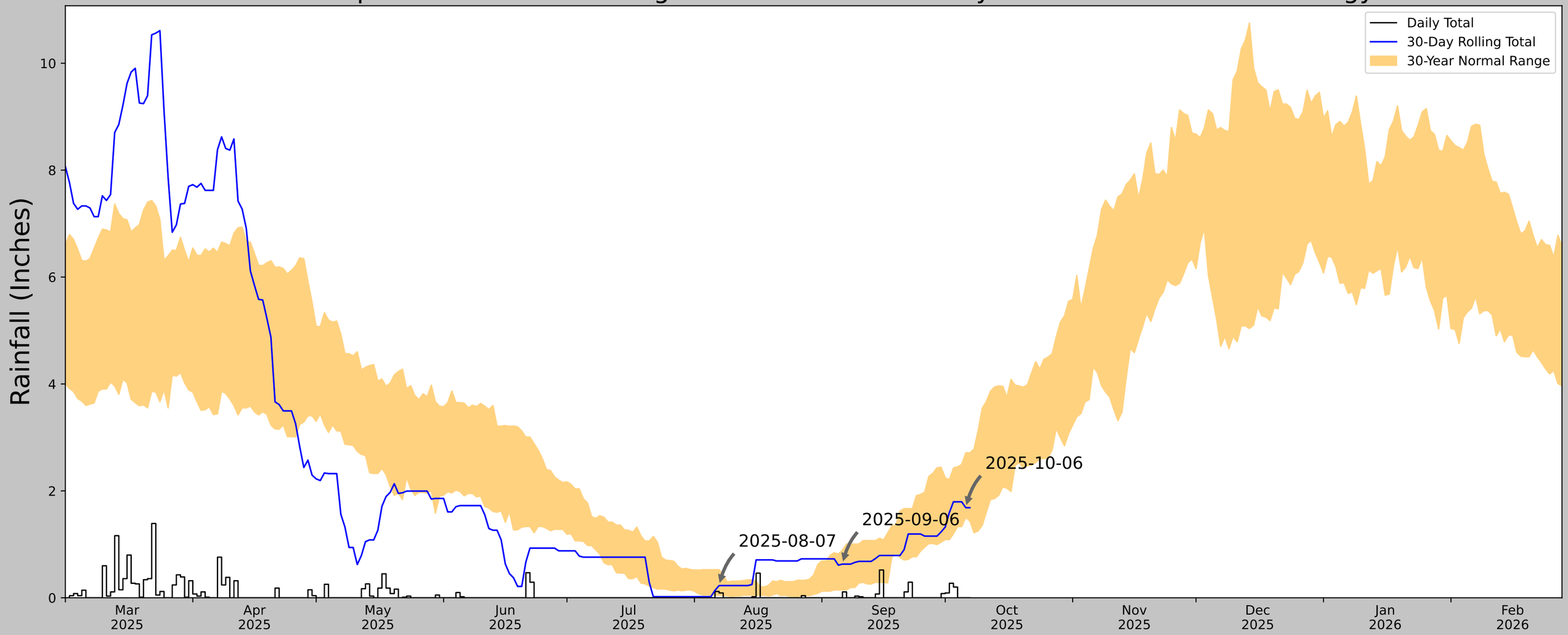
Wetland Hydrology Present? **Yes** _____ **No** ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

APPENDIX B
APT Output

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	45.33561, -122.58638
Observation Date	2025-10-06
Elevation (ft)	443.657
Drought Index (PDSI)	Not available (2025-09)
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2025-10-06	1.504331	2.713386	1.685039	Normal	2	3	6
2025-09-06	0.146063	0.892126	0.629921	Normal	2	2	4
2025-08-07	0.047638	0.525591	0.228346	Normal	2	1	2
Result							Normal Conditions - 12

Figures and tables made by the Antecedent Precipitation Tool Version 3.0

US Army Corps of Engineers

ERDC

Developed by:
U.S. Army Corps of Engineers and
U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
OREGON CITY 5.5 ESE	45.3131, -122.4928	426.837	4.805	16.82	2.243	6036	90
OREGON CITY 2.5 SE	45.315, -122.5675	434.055	3.632	7.218	1.661	14	0
OREGON CITY 1.0 NNW	45.3411, -122.5631	390.092	3.925	36.745	1.91	56	0
ESTACADA 5.2 WNW	45.3321, -122.425	334.974	3.546	91.863	1.921	137	0
OREGON CITY 7.5 SSE	45.2503, -122.522	704.068	4.565	277.231	3.32	13	0
OREGON CITY 2.2 NE	45.3706, -122.5711	261.155	5.499	165.682	3.386	43	0
ESTACADA 3 WNW	45.3108, -122.39	680.118	4.998	253.281	3.515	13	0
CLACKAMAS 1.9 NNE	45.4364, -122.5444	411.089	8.88	15.748	4.136	189	0
MULINO 1.8 SE	45.2041, -122.5536	359.908	8.091	66.929	4.182	1	0
OREGON CITY	45.3558, -122.6047	166.995	6.184	259.842	4.39	4404	0
ESTACADA 2 SE	45.2694, -122.3167	514.108	9.077	87.271	4.877	446	0
N WILLAMETTE EXP STN	45.2817, -122.7517	149.934	12.769	276.903	9.282	1	0

APPENDIX C
SITE PHOTOGRAPHS

LANGAN

Oregon City Commercial Masterplan
Site Photographs

Client Name:	Subject Property Location:	Project No.
Cypress Equities	Oregon City, OR 97045	794002701

Date	Photo No.
10/6/2025	1

Direction Photo Taken:

North

Description:

Vegetated Swale



Date	Photo No.
10/6/2025	2

Direction Photo Taken:

Southeast

Description:

View of the southeast corner, sloping toward the swale in photo 1.



LANGAN

Oregon City Commercial Masterplan
Site Photographs

Client Name:	Subject Property Location:	Project No.
Cypress Equities	Oregon City, OR 97045	794002701

Date	Photo No.
10/6/2025	3

Direction Photo Taken:

West

Description:

Upstream view of the Newell Creek tributary.



Date	Photo No.
10/6/2025	4

Direction Photo Taken:

South

Description:

Disturbed gravel area.



LANGAN

Oregon City Commercial Masterplan
Site Photographs

Client Name:	Subject Property Location:	Project No.
Cypress Equities	Oregon City, OR 97045	794002701

Date	Photo No.
10/6/2025	5

Direction Photo Taken:

West

Description:

Disturbed gravel area.



Date	Photo No.
10/6/2025	6

Direction Photo Taken:

Southeast

Description:

Open space area in the northern portion of the study area.



LANGAN

Oregon City Commercial Masterplan
Site Photographs

Client Name:	Subject Property Location:	Project No.
Cypress Equities	Oregon City, OR 97045	794002701

Date	Photo No.
10/6/2025	7

Direction Photo Taken:

South

Description:

Eastern edge of the study area.



Date	Photo No.
10/6/2025	8

Direction Photo Taken:

East

Description:

Swale along the northern edge of the study area.



LANGAN

Oregon City Commercial Masterplan
Site Photographs

Client Name:	Subject Property Location:	Project No.
Cypress Equities	Oregon City, OR 97045	794002701

Date	Photo No.
10/6/2025	9

Direction Photo Taken:

Southeast

Description:

Woodland area of the northern portion of the study area.



Date	Photo No.
10/6/2025	10

Direction Photo Taken:

Northeast

Description:

Open space area of the northern portion of the study area.



LANGAN

Oregon City Commercial Masterplan
Site Photographs

Client Name:	Subject Property Location:	Project No.
Cypress Equities	Oregon City, OR 97045	794002701

Date	Photo No.
10/6/2025	11

Direction Photo Taken:

West

Description:

WSP-01 and downstream view of the tributary.



Date	Photo No.
10/6/2025	12

Direction Photo Taken:

South

Description:

WSP-02.



LANGAN

Oregon City Commercial Masterplan
Site Photographs

Client Name:	Subject Property Location:	Project No.
Cypress Equities	Oregon City, OR 97045	794002701

Date	Photo No.
10/6/2025	13

Direction Photo Taken:

Northeast

Description:

WSP-03.



Date	Photo No.
10/6/2025	10

Direction Photo Taken:

West

Description:

WSP-04 and the swale along the northern boundary of the study area.



APPENDIX N
2024 Tax Statements

CLACKAMAS COUNTY OREGON
150 BEAVERCREEK RD.
OREGON CITY, OREGON 97045
503-655-8671 www.clackamas.us/at

REAL PROPERTY TAX STATEMENT
7/1/2024 to 6/30/2025

Property Location: 1367 MOLALLA AVE
OREGON CITY, OR 97045

ACCOUNT NO: 00848391
MAP: 32E05DB03200

Tax Code Area: 062-002 Acres: 2.88

111130*340**G50**0.776**1/2*********AUTOMIXED AADC 990
WALMART INC
PROPERTY TAX DEPT
PO BOX 8050 MS 0555
BENTONVILLE AR 72716-0001

VALUES:	LAST YEAR	THIS YEAR
REAL MARKET VALUES (RMV):		
RMV LAND	1,021,180	1,052,440
RMV BLDG	40,580	41,760
RMV TOTAL	**1,061,760**	**1,094,200**
ASSESSED VALUE:	522,749	538,431
PROPERTY TAXES:	9,832.44	10,078.40

If your assessed value has increased more than 3% this year, please reach out to our office at the number provided above.

2024 - 2025 CURRENT TAX BY DISTRICT:

COM COLL CLACK	293.82
ESD CLACKAMAS	194.48
SCH OREGON CITY	2,636.92
EDUCATION TOTAL:	**3,125.22**
CITY OREGON CITY	2,342.61
COUNTY CLACKAMAS C	1,276.73
COUNTY EXTENSION & 4-H	26.44
COUNTY LIBRARY	209.72
COUNTY PUBLIC SAFETY LOC OPT	198.14
COUNTY SOIL CONS	26.44
FD 1 CLACK CO	1,255.51
FD 1 CLACK CO LOC OPT	279.98
PORT OF PTLD	37.04
SRV 2 METRO	50.88
SRV 2 METRO LOC OPT	51.69
URBAN RENEWAL COUNTY	27.72
URBAN RENEWAL OREGON CITY	111.83
VECTOR CONTROL	3.50
VECTOR CONTROL LOC OPT	13.46
GENERAL GOVERNMENT TOTAL:	**5,911.69**
COM COLL CLACK BOND	131.97
COUNTY PUBLIC SFTY RADIO SYS	49.21
FD 1 CLACK CO BOND	43.67
SCH OREGON CITY BOND	611.66
SRV 2 METRO BOND	204.98
EXCLUDED FROM LIMIT TOTAL:	**1,041.49**
2024 - 2025 TAX BEFORE DISCOUNT	**10,078.40**

(See back of statement for instructions)

TAX PAYMENT OPTIONS

Payment Options	Date Due	Discount Allowed	Net Amount Due
FULL	Nov 15, 2024	302.35 3%	9,776.05
2/3	Nov 15, 2024	134.38 2%	6,584.55
1/3	Nov 15, 2024		3,359.46

DELINQUENT TAXES: **0.00**
TOTAL (after discount): **9,776.05**
Delinquent tax amount is included in payment options listed below.

↑ TEAR HERE **PLEASE RETURN THIS PORTION WITH YOUR PAYMENT See back of statement for instructions** TEAR HERE ↑

7-12-24_v1

2024 - 2025 Property Tax Payment Clackamas County, Oregon

ACCOUNT NO: 00848391

DISCOUNT IS LOST AFTER DUE DATE & INTEREST MAY APPLY

FULL PAYMENT	**(Includes 3% Discount)**	**DUE Nov 15, 2024**	**9,776.05**
2/3 PAYMENT	**(Includes 2% Discount)**	**DUE Nov 15, 2024**	**6,584.55**
1/3 PAYMENT	**(No Discount offered)**	**DUE Nov 15, 2024**	**3,359.46**

☐ Mailing address or taxpayer name change on back

Enter Amount Paid

1/1 111130

Please make payment to:

CLACKAMAS COUNTY TAX COLLECTOR
PO BOX 6100
PORTLAND, OR 97228-6100

WALMART INC
PROPERTY TAX DEPT
PO BOX 8050 MS 0555
BENTONVILLE AR 72716-0001

03000008483910000977605000065845500003359463

Payment instructions

Please send only a check or money order with your payment stub. **DO NOT** mail cash. **Your cancelled check is proof of payment.**

Property tax payments MUST be credited to the earliest year that taxes are due.

Tax statements for **less** than $40 must be paid in full.

Discounts/payment schedule (choose one)

To receive a discount, payments **MUST** be delivered, U.S. postmarked, or transmitted by private express carrier on or before November 15. Returned checks may cause a loss of the discount.

To receive any applicable discount you **MUST** make:

- **Full payment—**Receive a three percent (3%) discount on the amount of current year tax, as shown on your tax statement, if full payment is delivered, U.S. postmarked, or transmitted by private express carrier by **November 15.**
- **Two-thirds payment—**Receive a two percent (2%) discount on the amount of current year tax paid, as shown on your tax statement, if two-thirds payment is delivered, U.S. postmarked, or transmitted by private express carrier by **November 15.** Pay the final one-third (with no discount) by **May 15** to avoid interest charges.
- **One-third payment—**No discount allowed. Pay one-third by **November 15,** followed by another one-third payment by **February 15.** Pay the final one-third balance by **May 15.**

Interest is charged at a rate of 1.333% monthly, 16% annually. Interest is accrued on past due installment payments accordingly:

- First one-third installment payment, interest begins accruing on **December 16.**
- Second one-third installment payment, interest begins accruing **February 16.**
- Remaining one-third payment, interest begins accruing on **May 16.**

If the 15th falls on a weekend or legal holiday, the due date will be extended to the next business day.

Delinquent taxes and lien dates

All personal property tax is delinquent when any installment is not paid on time. The responsible taxpayer can be served with a warrant 30 days after delinquency. Personal property can be seized and other financial assets can be garnished.

Real property tax is delinquent if not paid by May 15. Foreclosure proceedings on real property begin when taxes have been delinquent for three years.

(*) Accounts subject to foreclosure

Real property tax accounts with an unpaid balance for any tax year marked with an (*) on the front of this statement are subject to foreclosure if not paid on or before May 15. Payments **MUST** be applied to the oldest tax first.

Review your value

If you think your property value is incorrect or if there has been a change to the value that you did not expect or understand, review it with the county assessor's office. Many assessors provide value information online. Visit your county assessor's website or call them for more details.

Appeal rights

If you think the **VALUE** of your property as shown on this statement is too high, you can appeal. Your appeal is to the county property value appeals board (PVAB), except for state appraised industrial property. To appeal industrial property appraised by the Department of Revenue, you must file a complaint in the Magistrate Division of the Oregon Tax Court.

If you disagree with a **PENALTY** assessed for late filing of a real, personal, or combined property return, you may ask the county PVAB to waive all or a portion of the penalty. See www.oregon.gov/dor/property.

When and where to appeal to PVAB

File your petition by **December 31** with the **county clerk** in the county where the property is located. You can get petition forms and information from your **county clerk,** or at www.oregon.gov/dor/forms.

What to pay if you appeal

Follow the payment schedule to avoid interest charges and to receive applicable discounts. If your tax is reduced after appeal, any overpayment of property tax will be refunded.

Tax statement information is available in alternate formats, in compliance with the Americans with Disabilities Act (ADA). Contact your county tax collector.

7-12-24_v1

Mailing address change request (Mailing address changes only. An address change requires the owner's signature. Additional documentation may be required for name changes.)

Date: _____ Account number(s): _____

Name: _____

New mailing address: _____

_____

Phone: _____

Email: _____

Signature: X _____

1/1 111130

CLACKAMAS COUNTY OREGON
150 BEAVERCREEK RD.
OREGON CITY, OREGON 97045
503-655-8671 www.clackamas.us/at

REAL PROPERTY TAX STATEMENT
7/1/2024 to 6/30/2025

Property Location: 1367 MOLALLA AVE
OREGON CITY, OR 97045

ACCOUNT NO: 00848408
MAP: 32E05DB03201

Tax Code Area: 062-002 Acres: 0.45

111126*340**G50**1.16**1/6*********AUTOMIXED AADC 990
WAL-MART STORES INC
PO BOX 8050
MS 0555
BENTONVILLE AR 72712-8055

2024 - 2025 CURRENT TAX BY DISTRICT:	
COM COLL CLACK	91.84
ESD CLACKAMAS	60.79
SCH OREGON CITY	824.21
EDUCATION TOTAL:	**976.84**
CITY OREGON CITY	732.22
COUNTY CLACKAMAS C	399.07
COUNTY EXTENSION & 4-H	8.26
COUNTY LIBRARY	65.55
COUNTY PUBLIC SAFETY LOC OPT	61.93
COUNTY SOIL CONS	8.26
FD 1 CLACK CO	392.43
FD 1 CLACK CO LOC OPT	87.51
PORT OF PTLD	11.58
SRV 2 METRO	15.90
SRV 2 METRO LOC OPT	16.16
URBAN RENEWAL COUNTY	8.66
URBAN RENEWAL OREGON CITY	34.94
VECTOR CONTROL	1.09
VECTOR CONTROL LOC OPT	4.21
GENERAL GOVERNMENT TOTAL:	**1,847.77**
COM COLL CLACK BOND	41.25
COUNTY PUBLIC SFTY RADIO SYS	15.38
FD 1 CLACK CO BOND	13.65
SCH OREGON CITY BOND	191.18
SRV 2 METRO BOND	64.07
EXCLUDED FROM LIMIT TOTAL:	**325.53**
2024 - 2025 TAX BEFORE DISCOUNT	**3,150.14**

VALUES:	LAST YEAR	THIS YEAR
REAL MARKET VALUES (RMV):		
RMV LAND	173,225	178,528
RMV BLDG	127,660	131,350
RMV TOTAL	**300,885**	**309,878**
ASSESSED VALUE:	163,393	168,294
PROPERTY TAXES:	3,073.27	3,150.14

If your assessed value has increased more than 3% this year, please reach out to our office at the number provided above.

(See back of statement for instructions)

TAX PAYMENT OPTIONS

Payment Options	Date Due	Discount Allowed	Net Amount Due
FULL	Nov 15, 2024	94.50 3%	3,055.64
2/3	Nov 15, 2024	42.00 2%	2,058.09
1/3	Nov 15, 2024		1,050.04

DELINQUENT TAXES: **0.00**
TOTAL (after discount): **3,055.64**
Delinquent tax amount is included in payment options listed below.

TEAR HERE **PLEASE RETURN THIS PORTION WITH YOUR PAYMENT See back of statement for instructions** TEAR HERE

7-12-24_v1

2024 - 2025 Property Tax Payment Clackamas County, Oregon

ACCOUNT NO: 00848408

DISCOUNT IS LOST AFTER DUE DATE & INTEREST MAY APPLY

FULL PAYMENT	**(Includes 3% Discount)**	**DUE Nov 15, 2024**	**3,055.64**
2/3 PAYMENT	**(Includes 2% Discount)**	**DUE Nov 15, 2024**	**2,058.09**
1/3 PAYMENT	**(No Discount offered)**	**DUE Nov 15, 2024**	**1,050.04**

☐ Mailing address or taxpayer name change on back

Enter Amount Paid

1/3 111126

Please make payment to:

CLACKAMAS COUNTY TAX COLLECTOR
PO BOX 6100
PORTLAND, OR 97228-6100

WAL-MART STORES INC
PO BOX 8050
MS 0555
BENTONVILLE AR 72712-8055

030000084840800003055640000205809000010500046

Payment instructions

Please send only a check or money order with your payment stub. **DO NOT** mail cash. **Your cancelled check is proof of payment.**

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Tax statements for **less** than $40 must be paid in full.

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If the 15th falls on a weekend or legal holiday, the due date will be extended to the next business day.

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What to pay if you appeal

Follow the payment schedule to avoid interest charges and to receive applicable discounts. If your tax is reduced after appeal, any overpayment of property tax will be refunded.

Tax statement information is available in alternate formats, in compliance with the Americans with Disabilities Act (ADA). Contact your county tax collector.

7-12-24_v1

Mailing address change request (Mailing address changes only. An address change requires the owner's signature. Additional documentation may be required for name changes.)

Date: _____ Account number(s): _____

Name: _____

New mailing address: _____

_____

Phone: _____

Email: _____

Signature: X _____

1/3 111126

CLACKAMAS COUNTY OREGON
150 BEAVERCREEK RD.
OREGON CITY, OREGON 97045
503-655-8671 www.clackamas.us/at

REAL PROPERTY TAX STATEMENT
7/1/2024 to 6/30/2025

Property Location: 1367 MOLALLA AVE
OREGON CITY, OR 97045

ACCOUNT NO: 00848417
MAP: 32E05DB03300

Tax Code Area: 062-002 Acres: 3.05

111126*340**G50**1.16**3/6*********AUTOMIXED AADC 990
WAL-MART STORES INC
PO BOX 8050
MS 0555
BENTONVILLE AR 72712-8055

2024 - 2025 CURRENT TAX BY DISTRICT:	
COM COLL CLACK	299.51
ESD CLACKAMAS	198.25
SCH OREGON CITY	2,687.99
EDUCATION TOTAL:	**3,185.75**
CITY OREGON CITY	2,387.98
COUNTY CLACKAMAS C	1,301.45
COUNTY EXTENSION & 4-H	26.95
COUNTY LIBRARY	213.78
COUNTY PUBLIC SAFETY LOC OPT	201.98
COUNTY SOIL CONS	26.95
FD 1 CLACK CO	1,279.83
FD 1 CLACK CO LOC OPT	285.41
PORT OF PTLD	37.76
SRV 2 METRO	51.87
SRV 2 METRO LOC OPT	52.69
URBAN RENEWAL COUNTY	28.24
URBAN RENEWAL OREGON CITY	113.99
VECTOR CONTROL	3.57
VECTOR CONTROL LOC OPT	13.72
GENERAL GOVERNMENT TOTAL:	**6,026.17**
COM COLL CLACK BOND	134.53
COUNTY PUBLIC SFTY RADIO SYS	50.17
FD 1 CLACK CO BOND	44.51
SCH OREGON CITY BOND	623.50
SRV 2 METRO BOND	208.95
EXCLUDED FROM LIMIT TOTAL:	**1,061.66**
2024 - 2025 TAX BEFORE DISCOUNT	**10,273.58**

VALUES:	LAST YEAR	THIS YEAR
REAL MARKET VALUES (RMV):		
RMV LAND	1,011,213	1,042,168
RMV BLDG	64,810	66,680
RMV TOTAL	**1,076,023**	**1,108,848**
ASSESSED VALUE:	532,872	548,858
PROPERTY TAXES:	10,022.84	10,273.58

If your assessed value has increased more than 3% this year, please reach out to our office at the number provided above.

(See back of statement for instructions)

TAX PAYMENT OPTIONS

Payment Options	Date Due	Discount Allowed	Net Amount Due
FULL	Nov 15, 2024	308.21 3%	9,965.37
2/3	Nov 15, 2024	136.98 2%	6,712.07
1/3	Nov 15, 2024		3,424.52

DELINQUENT TAXES: **0.00**
TOTAL (after discount): **9,965.37**
Delinquent tax amount is included in payment options listed below.

↑ TEAR HERE **PLEASE RETURN THIS PORTION WITH YOUR PAYMENT See back of statement for instructions** TEAR HERE ↑

7-12-24_v1

2024 - 2025 Property Tax Payment Clackamas County, Oregon

ACCOUNT NO: 00848417

DISCOUNT IS LOST AFTER DUE DATE & INTEREST MAY APPLY

FULL PAYMENT	**(Includes 3% Discount)**	**DUE Nov 15, 2024**	**9,965.37**
2/3 PAYMENT	**(Includes 2% Discount)**	**DUE Nov 15, 2024**	**6,712.07**
1/3 PAYMENT	**(No Discount offered)**	**DUE Nov 15, 2024**	**3,424.52**

☐ Mailing address or taxpayer name change on back

Enter Amount Paid

2/3 111126

Please make payment to:

CLACKAMAS COUNTY TAX COLLECTOR
PO BOX 6100
PORTLAND, OR 97228-6100

WAL-MART STORES INC
PO BOX 8050
MS 0555
BENTONVILLE AR 72712-8055

030000084841700009965370000671207000034245 22

Payment instructions

Please send only a check or money order with your payment stub. **DO NOT** mail cash. **Your cancelled check is proof of payment.**

Property tax payments MUST be credited to the earliest year that taxes are due.

Tax statements for **less** than $40 must be paid in full.

Discounts/payment schedule (choose one)

To receive a discount, payments **MUST** be delivered, U.S. postmarked, or transmitted by private express carrier on or before November 15. Returned checks may cause a loss of the discount.

To receive any applicable discount you **MUST** make:

- **Full payment—**Receive a three percent (3%) discount on the amount of current year tax, as shown on your tax statement, if full payment is delivered, U.S. postmarked, or transmitted by private express carrier by **November 15.**
- **Two-thirds payment—**Receive a two percent (2%) discount on the amount of current year tax paid, as shown on your tax statement, if two-thirds payment is delivered, U.S. postmarked, or transmitted by private express carrier by **November 15.** Pay the final one-third (with no discount) by **May 15** to avoid interest charges.
- **One-third payment—**No discount allowed. Pay one-third by **November 15,** followed by another one-third payment by **February 15.** Pay the final one-third balance by **May 15.**

Interest is charged at a rate of 1.333% monthly, 16% annually. Interest is accrued on past due installment payments accordingly:

- First one-third installment payment, interest begins accruing on **December 16.**
- Second one-third installment payment, interest begins accruing **February 16.**
- Remaining one-third payment, interest begins accruing on **May 16.**

If the 15th falls on a weekend or legal holiday, the due date will be extended to the next business day.

Delinquent taxes and lien dates

All personal property tax is delinquent when any installment is not paid on time. The responsible taxpayer can be served with a warrant 30 days after delinquency. Personal property can be seized and other financial assets can be garnished.

Real property tax is delinquent if not paid by May 15. Foreclosure proceedings on real property begin when taxes have been delinquent for three years.

(*) Accounts subject to foreclosure

Real property tax accounts with an unpaid balance for any tax year marked with an (*) on the front of this statement are subject to foreclosure if not paid on or before May 15. Payments **MUST** be applied to the oldest tax first.

Review your value

If you think your property value is incorrect or if there has been a change to the value that you did not expect or understand, review it with the county assessor's office. Many assessors provide value information online. Visit your county assessor's website or call them for more details.

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When and where to appeal to PVAB

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What to pay if you appeal

Follow the payment schedule to avoid interest charges and to receive applicable discounts. If your tax is reduced after appeal, any overpayment of property tax will be refunded.

Tax statement information is available in alternate formats, in compliance with the Americans with Disabilities Act (ADA). Contact your county tax collector.

7-12-24_v1

Mailing address change request (Mailing address changes only. An address change requires the owner's signature. Additional documentation may be required for name changes.)

Date: _____ Account number(s): _____

Name: _____

New mailing address: _____

_____

Phone: _____

Email: _____

Signature: X _____

2/3 111126

CLACKAMAS COUNTY OREGON
150 BEAVERCREEK RD.
OREGON CITY, OREGON 97045
503-655-8671 www.clackamas.us/at

REAL PROPERTY TAX STATEMENT
7/1/2024 to 6/30/2025

Property Location: 1367 MOLALLA AVE
OREGON CITY, OR 97045

ACCOUNT NO: 00848408
MAP: 32E05DB03201

Tax Code Area: 062-002 Acres: 0.45

111126*340**G50**1.16**1/6*********AUTOMIXED AADC 990
WAL-MART STORES INC
PO BOX 8050
MS 0555
BENTONVILLE AR 72712-8055

2024 - 2025 CURRENT TAX BY DISTRICT:	
COM COLL CLACK	91.84
ESD CLACKAMAS	60.79
SCH OREGON CITY	824.21
EDUCATION TOTAL:	**976.84**
CITY OREGON CITY	732.22
COUNTY CLACKAMAS C	399.07
COUNTY EXTENSION & 4-H	8.26
COUNTY LIBRARY	65.55
COUNTY PUBLIC SAFETY LOC OPT	61.93
COUNTY SOIL CONS	8.26
FD 1 CLACK CO	392.43
FD 1 CLACK CO LOC OPT	87.51
PORT OF PTLD	11.58
SRV 2 METRO	15.90
SRV 2 METRO LOC OPT	16.16
URBAN RENEWAL COUNTY	8.66
URBAN RENEWAL OREGON CITY	34.94
VECTOR CONTROL	1.09
VECTOR CONTROL LOC OPT	4.21
GENERAL GOVERNMENT TOTAL:	**1,847.77**
COM COLL CLACK BOND	41.25
COUNTY PUBLIC SFTY RADIO SYS	15.38
FD 1 CLACK CO BOND	13.65
SCH OREGON CITY BOND	191.18
SRV 2 METRO BOND	64.07
EXCLUDED FROM LIMIT TOTAL:	**325.53**
2024 - 2025 TAX BEFORE DISCOUNT	**3,150.14**

VALUES:	LAST YEAR	THIS YEAR
REAL MARKET VALUES (RMV):		
RMV LAND	173,225	178,528
RMV BLDG	127,660	131,350
RMV TOTAL	**300,885**	**309,878**
ASSESSED VALUE:	163,393	168,294
PROPERTY TAXES:	3,073.27	3,150.14

If your assessed value has increased more than 3% this year, please reach out to our office at the number provided above.

(See back of statement for instructions)

TAX PAYMENT OPTIONS

Payment Options	Date Due	Discount Allowed	Net Amount Due
FULL	Nov 15, 2024	94.50 3%	3,055.64
2/3	Nov 15, 2024	42.00 2%	2,058.09
1/3	Nov 15, 2024		1,050.04

DELINQUENT TAXES: **0.00**
TOTAL (after discount): **3,055.64**
Delinquent tax amount is included in payment options listed below.

TEAR HERE **PLEASE RETURN THIS PORTION WITH YOUR PAYMENT See back of statement for instructions** TEAR HERE

7-12-24_v1

2024 - 2025 Property Tax Payment Clackamas County, Oregon

ACCOUNT NO: 00848408

DISCOUNT IS LOST AFTER DUE DATE & INTEREST MAY APPLY

FULL PAYMENT	**(Includes 3% Discount)**	**DUE Nov 15, 2024**	**3,055.64**
2/3 PAYMENT	**(Includes 2% Discount)**	**DUE Nov 15, 2024**	**2,058.09**
1/3 PAYMENT	**(No Discount offered)**	**DUE Nov 15, 2024**	**1,050.04**

☐ Mailing address or taxpayer name change on back

Enter Amount Paid

1/3 111126

Please make payment to:

CLACKAMAS COUNTY TAX COLLECTOR
PO BOX 6100
PORTLAND, OR 97228-6100

WAL-MART STORES INC
PO BOX 8050
MS 0555
BENTONVILLE AR 72712-8055

03000008484080000305564000020580900001050046

Payment instructions

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- **Two-thirds payment—**Receive a two percent (2%) discount on the amount of current year tax paid, as shown on your tax statement, if two-thirds payment is delivered, U.S. postmarked, or transmitted by private express carrier by **November 15.** Pay the final one-third (with no discount) by **May 15** to avoid interest charges.
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When and where to appeal to PVAB

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Follow the payment schedule to avoid interest charges and to receive applicable discounts. If your tax is reduced after appeal, any overpayment of property tax will be refunded.

Tax statement information is available in alternate formats, in compliance with the Americans with Disabilities Act (ADA). Contact your county tax collector.

7-12-24_v1

Mailing address change request (Mailing address changes only. An address change requires the owner's signature. Additional documentation may be required for name changes.)

Date: _____ Account number(s): _____

Name: _____

New mailing address: _____

_____

Phone: _____

Email: _____

Signature: X _____

1/3 111126

CLACKAMAS COUNTY OREGON
150 BEAVERCREEK RD.
OREGON CITY, OREGON 97045
503-655-8671 www.clackamas.us/at

REAL PROPERTY TAX STATEMENT
7/1/2024 to 6/30/2025

Property Location: No Address

ACCOUNT NO: 00847864
MAP: 32E05D 00500

Tax Code Area: 062-002 Acres: 1.94

55042*170**G50**0.968**1/4*********AUTO5-DIGIT 97045
ROCKY MOUNTAIN DEV CO
PO BOX 1337
OREGON CITY OR 97045-0096

VALUES:	LAST YEAR	THIS YEAR
REAL MARKET VALUES (RMV):		
RMV LAND	769,836	793,402
RMV TOTAL	**769,836**	**793,402**
ASSESSED VALUE:	375,121	386,374
PROPERTY TAXES:	7,055.69	7,232.19

If your assessed value has increased more than 3% this year, please reach out to our office at the number provided above.

2024 - 2025 CURRENT TAX BY DISTRICT:

COM COLL CLACK	210.84
ESD CLACKAMAS	139.56
SCH OREGON CITY	1,892.24
EDUCATION TOTAL:	**2,242.64**
CITY OREGON CITY	1,681.05
COUNTY CLACKAMAS C	916.17
COUNTY EXTENSION & 4-H	18.97
COUNTY LIBRARY	150.49
COUNTY PUBLIC SAFETY LOC OPT	142.19
COUNTY SOIL CONS	18.97
FD 1 CLACK CO	900.95
FD 1 CLACK CO LOC OPT	200.91
PORT OF PTLD	26.58
SRV 2 METRO	36.51
SRV 2 METRO LOC OPT	37.09
URBAN RENEWAL COUNTY	19.90
URBAN RENEWAL OREGON CITY	80.25
VECTOR CONTROL	2.51
VECTOR CONTROL LOC OPT	9.66
GENERAL GOVERNMENT TOTAL:	**4,242.20**
COM COLL CLACK BOND	94.70
COUNTY PUBLIC SFTY RADIO SYS	35.31
FD 1 CLACK CO BOND	31.33
SCH OREGON CITY BOND	438.92
SRV 2 METRO BOND	147.09
EXCLUDED FROM LIMIT TOTAL:	**747.35**
2024 - 2025 TAX BEFORE DISCOUNT	**7,232.19**

(See back of statement for instructions)

TAX PAYMENT OPTIONS

Payment Options	Date Due	Discount Allowed	Net Amount Due
FULL	Nov 15, 2024	216.97 3%	7,015.22
2/3	Nov 15, 2024	96.43 2%	4,725.03
1/3	Nov 15, 2024		2,410.73

DELINQUENT TAXES: **0.00**
TOTAL (after discount): **7,015.22**
Delinquent tax amount is included in payment options listed below.

TEAR HERE **PLEASE RETURN THIS PORTION WITH YOUR PAYMENT See back of statement for instructions** TEAR HERE

7-12-24_v1

2024 - 2025 Property Tax Payment Clackamas County, Oregon

ACCOUNT NO: 00847864

DISCOUNT IS LOST AFTER DUE DATE & INTEREST MAY APPLY

FULL PAYMENT	**(Includes 3% Discount)**	**DUE Nov 15, 2024**	**7,015.22**
2/3 PAYMENT	**(Includes 2% Discount)**	**DUE Nov 15, 2024**	**4,725.03**
1/3 PAYMENT	**(No Discount offered)**	**DUE Nov 15, 2024**	**2,410.73**

☐ Mailing address or taxpayer name change on back

Enter Amount Paid

1/2 55042

Please make payment to:

ROCKY MOUNTAIN DEV CO
PO BOX 1337
OREGON CITY OR 97045-0096

CLACKAMAS COUNTY TAX COLLECTOR
PO BOX 6100
PORTLAND, OR 97228-6100

03000008478640000701522000047250300002410730

Payment instructions

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Tax statements for **less** than $40 must be paid in full.

Discounts/payment schedule (choose one)

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- **Two-thirds payment—**Receive a two percent (2%) discount on the amount of current year tax paid, as shown on your tax statement, if two-thirds payment is delivered, U.S. postmarked, or transmitted by private express carrier by **November 15.** Pay the final one-third (with no discount) by **May 15** to avoid interest charges.
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7-12-24_v1

Mailing address change request (Mailing address changes only. An address change requires the owner's signature. Additional documentation may be required for name changes.)

Date: _____ Account number(s): _____

Name: _____

New mailing address: _____

_____

Phone: _____

Email: _____

Signature: X _____

1/2 55042

CLACKAMAS COUNTY OREGON
150 BEAVERCREEK RD.
OREGON CITY, OREGON 97045
503-655-8671 www.clackamas.us/at

REAL PROPERTY TAX STATEMENT
7/1/2024 to 6/30/2025

Property Location: 1653 BEAVERCREEK RD
OREGON CITY, OR 97045

ACCOUNT NO: 00847873
MAP: 32E05D 00501

Tax Code Area: 062-002 Acres: 0.08

55042*170**G50**0.968**3/4*********AUTO5-DIGIT 97045
ROCKY MOUNTAIN DEV CO
PO BOX 1337
OREGON CITY OR 97045-0096

VALUES:	LAST YEAR	THIS YEAR
REAL MARKET VALUES (RMV):		
RMV LAND	73,597	75,850
RMV TOTAL	**73,597**	**75,850**
ASSESSED VALUE:	40,969	42,198
PROPERTY TAXES:	770.59	789.87

If your assessed value has increased more than 3% this year, please reach out to our office at the number provided above.

2024 - 2025 CURRENT TAX BY DISTRICT:

COM COLL CLACK	23.03
ESD CLACKAMAS	15.24
SCH OREGON CITY	206.67
EDUCATION TOTAL:	**244.94**
CITY OREGON CITY	183.60
COUNTY CLACKAMAS C	100.06
COUNTY EXTENSION & 4-H	2.07
COUNTY LIBRARY	16.44
COUNTY PUBLIC SAFETY LOC OPT	15.53
COUNTY SOIL CONS	2.07
FD 1 CLACK CO	98.40
FD 1 CLACK CO LOC OPT	21.94
PORT OF PTLD	2.90
SRV 2 METRO	3.99
SRV 2 METRO LOC OPT	4.05
URBAN RENEWAL COUNTY	2.16
URBAN RENEWAL OREGON CITY	8.78
VECTOR CONTROL	0.27
VECTOR CONTROL LOC OPT	1.05
GENERAL GOVERNMENT TOTAL:	**463.31**
COM COLL CLACK BOND	10.34
COUNTY PUBLIC SFTY RADIO SYS	3.86
FD 1 CLACK CO BOND	3.42
SCH OREGON CITY BOND	47.94
SRV 2 METRO BOND	16.06
EXCLUDED FROM LIMIT TOTAL:	**81.62**
2024 - 2025 TAX BEFORE DISCOUNT	**789.87**

(See back of statement for instructions)

TAX PAYMENT OPTIONS

Payment Options	Date Due	Discount Allowed	Net Amount Due
FULL	Nov 15, 2024	23.70 3%	766.17
2/3	Nov 15, 2024	10.53 2%	516.05
1/3	Nov 15, 2024		263.29

DELINQUENT TAXES: **0.00**
TOTAL (after discount): **766.17**
Delinquent tax amount is included in payment options listed below.

↑ TEAR HERE **PLEASE RETURN THIS PORTION WITH YOUR PAYMENT See back of statement for instructions** TEAR HERE ↑

7-12-24_v1

2024 - 2025 Property Tax Payment Clackamas County, Oregon

ACCOUNT NO: 00847873

DISCOUNT IS LOST AFTER DUE DATE & INTEREST MAY APPLY

FULL PAYMENT	**(Includes 3% Discount)**	**DUE Nov 15, 2024**	**766.17**
2/3 PAYMENT	**(Includes 2% Discount)**	**DUE Nov 15, 2024**	**516.05**
1/3 PAYMENT	**(No Discount offered)**	**DUE Nov 15, 2024**	**263.29**

☐ Mailing address or taxpayer name change on back

Enter Amount Paid

2/2 55042

Please make payment to:

ROCKY MOUNTAIN DEV CO
PO BOX 1337
OREGON CITY OR 97045-0096

CLACKAMAS COUNTY TAX COLLECTOR
PO BOX 6100
PORTLAND, OR 97228-6100

03000008478730000076617000005160500000263298

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7-12-24_v1

Mailing address change request (Mailing address changes only. An address change requires the owner's signature. Additional documentation may be required for name changes.)

Date: _____ Account number(s): _____

Name: _____

New mailing address: _____

_____

Phone: _____

Email: _____

Signature: X _____

2/2 55042

CLACKAMAS COUNTY OREGON
150 BEAVERCREEK RD.
OREGON CITY, OREGON 97045
503-655-8671 www.clackamas.us/at

REAL PROPERTY TAX STATEMENT
7/1/2024 to 6/30/2025

Property Location: 1625 BEAVERCREEK RD
OREGON CITY, OR 97045

ACCOUNT NO: 00847917
MAP: 32E05D 00602

Tax Code Area: 062-002 Acres: 1.72

134081*425**G50**0.574**1/4*********AUTOALL FOR AADC 974
SFP-F LLC
PO BOX 5350
BEND OR 97708-5350

VALUES:	LAST YEAR	THIS YEAR
REAL MARKET VALUES (RMV):		
RMV LAND	939,445	968,203
RMV BLDG	435,960	448,570
RMV TOTAL	**1,375,405**	**1,416,773**
ASSESSED VALUE:	727,623	749,451
PROPERTY TAXES:	13,685.93	14,028.30

If your assessed value has increased more than 3% this year, please reach out to our office at the number provided above.

2024 - 2025 CURRENT TAX BY DISTRICT:

COM COLL CLACK	408.98
ESD CLACKAMAS	270.70
SCH OREGON CITY	3,670.37
EDUCATION TOTAL:	**4,350.05**
CITY OREGON CITY	3,260.71
COUNTY CLACKAMAS C	1,777.10
COUNTY EXTENSION & 4-H	36.80
COUNTY LIBRARY	291.91
COUNTY PUBLIC SAFETY LOC OPT	275.80
COUNTY SOIL CONS	36.80
FD 1 CLACK CO	1,747.57
FD 1 CLACK CO LOC OPT	389.71
PORT OF PTLD	51.56
SRV 2 METRO	70.82
SRV 2 METRO LOC OPT	71.95
URBAN RENEWAL COUNTY	38.57
URBAN RENEWAL OREGON CITY	155.67
VECTOR CONTROL	4.87
VECTOR CONTROL LOC OPT	18.74
GENERAL GOVERNMENT TOTAL:	**8,228.58**
COM COLL CLACK BOND	183.69
COUNTY PUBLIC SFTY RADIO SYS	68.50
FD 1 CLACK CO BOND	60.78
SCH OREGON CITY BOND	851.38
SRV 2 METRO BOND	285.32
EXCLUDED FROM LIMIT TOTAL:	**1,449.67**
2024 - 2025 TAX BEFORE DISCOUNT	**14,028.30**

(See back of statement for instructions)

TAX PAYMENT OPTIONS

Payment Options	Date Due	Discount Allowed	Net Amount Due
FULL	Nov 15, 2024	420.85 3%	13,607.45
2/3	Nov 15, 2024	187.04 2%	9,165.16
1/3	Nov 15, 2024		4,676.10

DELINQUENT TAXES: **0.00**
TOTAL (after discount): **13,607.45**
Delinquent tax amount is included in payment options listed below.

TEAR HERE **PLEASE RETURN THIS PORTION WITH YOUR PAYMENT See back of statement for instructions** TEAR HERE

7-12-24_v1

2024 - 2025 Property Tax Payment Clackamas County, Oregon

ACCOUNT NO: 00847917

DISCOUNT IS LOST AFTER DUE DATE & INTEREST MAY APPLY

FULL PAYMENT	**(Includes 3% Discount)**	**DUE Nov 15, 2024**	**13,607.45**
2/3 PAYMENT	**(Includes 2% Discount)**	**DUE Nov 15, 2024**	**9,165.16**
1/3 PAYMENT	**(No Discount offered)**	**DUE Nov 15, 2024**	**4,676.10**

☐ Mailing address or taxpayer name change on back

Enter Amount Paid

1/2 134081

Please make payment to:

SFP-F LLC
PO BOX 5350
BEND OR 97708-5350

CLACKAMAS COUNTY TAX COLLECTOR
PO BOX 6100
PORTLAND, OR 97228-6100

03000008479170001360745000091651600004676104

Payment instructions

Please send only a check or money order with your payment stub. **DO NOT** mail cash. **Your cancelled check is proof of payment.**

Property tax payments MUST be credited to the earliest year that taxes are due.

Tax statements for **less** than $40 must be paid in full.

Discounts/payment schedule (choose one)

To receive a discount, payments **MUST** be delivered, U.S. postmarked, or transmitted by private express carrier on or before November 15. Returned checks may cause a loss of the discount.

To receive any applicable discount you **MUST** make:

- **Full payment—**Receive a three percent (3%) discount on the amount of current year tax, as shown on your tax statement, if full payment is delivered, U.S. postmarked, or transmitted by private express carrier by **November 15.**
- **Two-thirds payment—**Receive a two percent (2%) discount on the amount of current year tax paid, as shown on your tax statement, if two-thirds payment is delivered, U.S. postmarked, or transmitted by private express carrier by **November 15.** Pay the final one-third (with no discount) by **May 15** to avoid interest charges.
- **One-third payment—**No discount allowed. Pay one-third by **November 15,** followed by another one-third payment by **February 15.** Pay the final one-third balance by **May 15.**

Interest is charged at a rate of 1.333% monthly, 16% annually. Interest is accrued on past due installment payments accordingly:

- First one-third installment payment, interest begins accruing on **December 16.**
- Second one-third installment payment, interest begins accruing **February 16.**
- Remaining one-third payment, interest begins accruing on **May 16.**

If the 15th falls on a weekend or legal holiday, the due date will be extended to the next business day.

Delinquent taxes and lien dates

All personal property tax is delinquent when any installment is not paid on time. The responsible taxpayer can be served with a warrant 30 days after delinquency. Personal property can be seized and other financial assets can be garnished.

Real property tax is delinquent if not paid by May 15. Foreclosure proceedings on real property begin when taxes have been delinquent for three years.

(*) Accounts subject to foreclosure

Real property tax accounts with an unpaid balance for any tax year marked with an (*) on the front of this statement are subject to foreclosure if not paid on or before May 15. Payments **MUST** be applied to the oldest tax first.

Review your value

If you think your property value is incorrect or if there has been a change to the value that you did not expect or understand, review it with the county assessor's office. Many assessors provide value information online. Visit your county assessor's website or call them for more details.

Appeal rights

If you think the **VALUE** of your property as shown on this statement is too high, you can appeal. Your appeal is to the county property value appeals board (PVAB), except for state appraised industrial property. To appeal industrial property appraised by the Department of Revenue, you must file a complaint in the Magistrate Division of the Oregon Tax Court.

If you disagree with a **PENALTY** assessed for late filing of a real, personal, or combined property return, you may ask the county PVAB to waive all or a portion of the penalty. See www.oregon.gov/dor/property.

When and where to appeal to PVAB

File your petition by **December 31** with the **county clerk** in the county where the property is located. You can get petition forms and information from your **county clerk,** or at www.oregon.gov/dor/forms.

What to pay if you appeal

Follow the payment schedule to avoid interest charges and to receive applicable discounts. If your tax is reduced after appeal, any overpayment of property tax will be refunded.

Tax statement information is available in alternate formats, in compliance with the Americans with Disabilities Act (ADA). Contact your county tax collector.

7-12-24_v1

Mailing address change request (Mailing address changes only. An address change requires the owner's signature. Additional documentation may be required for name changes.)

Date: _____ Account number(s): _____

Name: _____

New mailing address: _____

_____

Phone: _____

Email: _____

Signature: X _____

1/2 134081

APPENDIX O
Cultural Resources

LANGAN

Memorandum

10135 SE Sunnyside Road, Suite 200 Clackamas, OR 97015 T: 503.659.9500 F: 503.659.2227

To: Kirk Williams - Cypress Acquisitions, LLC

From: Heather McDaniel McDevitt, RPA - Langan Engineering and Environmental

Copied: Scott Franklin - Langan Engineering and Environmental

Date: November 14, 2025

Re: Cultural Resources Assessment and Agency/Tribal Notification Documentation
Oregon City Mixed-Use
Oregon City, Clackamas County
Langan Project No.: 794002701

This letter summarizes our cultural resources assessment and agency/tribal notification for the Oregon City Mixed-Use Project (Project or proposed Project), located in Oregon City, Clackamas County. The purposes of this study are to, based on available data: 1) consider project and site information in context of data relevant to cultural resources; 2) provide the potential cultural sensitivity of the project site; 3) assess the likelihood of development to negatively impact cultural resources; 4) outline recommendations for additional cultural resource studies, if appropriate; and 5) provide a cursory review of regulatory involvement. Regarding the latter, the Oregon State Historic Preservation Office (SHPO) reviewed the project and determined that they have "no concerns with the project proceeding as planned". Additionally, information regarding the Oregon SHPO's response is provided in Section 5.

1.0 PROJECT DESCRIPTION

The Project proposes mixed-use development consisting of multi-family residential units, a specialty grocery store and a quick service restaurant, with supporting grading, storm drainage, sanitary sewer, water and dry utility infrastructure. Access to the Project site is achieved via the existing Molalla Ave signalized intersection to the west, as well as via a proposed public accessway from the southeast corner of the site south connecting to Beavercreek Rd traffic signal. Newell Creek Canyon is located east of the site and is a designated natural area as described in the *Newell Creek Canyon Access Master Plan* (March 2016) and the Oregon City Natural Resource Overlay District. Grading and development improvements on the site are set back from the top of the slope to Newell Creek Canyon to the east.

2.0 EXISTING SITE CONDITIONS

The proposed Project site is located within Oregon City, Clackamas County. The proposed Project site is currently free of structures and is generally bound by residential and commercial development to the north, commercial development and Beavercreek Road to the south, Molalla Avenue to the west, and Newell Creek and undeveloped land to the east.

Geotechnical Report Review

The geotechnical report, *Geotechnical Engineering Report, Oregon City Development* (Terracon Consultants, Inc. 2022) summarizes the results of subsurface testing conducted within the proposed Project site. Between 2001 and 2022, thirty (30) borings were drilled, and sixty-eight (68) test pits were excavated within the proposed Project site. The subsurface conditions were characterized as: 1) Existing Fill characterized as topsoil, asphalt, silty sand fill, clayey silt fill, poorly graded gravel fill, gravelly silt fill placed during previous grading at the Project site; 2) Residual Soil (Native) characterized as silt with trace clay, clayey sand with gravel, containing a variable amount of basaltic andesite boulders and cobbles; and 3) Boring Lava characterized as basaltic andesite, fresh to slightly weathered, slightly fractured to very fractured. Fill soils were observed within multiple areas across the Project site, extending from the surface to up to ten (10) feet below the ground surface.

3.0 BACKGROUND RESEARCH

3.1 Oregon Archaeological Records Remote Access (OARRA) Search Results

Langan conducted a search of the Oregon Archaeological Records Remote Access (OARRA) records. The search included all cultural resource studies conducted within a 0.5-mile radius of the proposed Project site and any previously recorded cultural resources identified within a 0.5-mile radius of the proposed Project site.

Results of the OARRA database records search indicate that four (4) previously submitted cultural resource studies have been conducted within the records search area. Of these studies, one (1) addresses the proposed Project site. Report #20, *Cultural Resources Survey of the Revised Tri-City Area Comprehensive Sewerage Plan*, by Ronald Kent (1977) overlaps less than 10 percent of the Project site.

The OARRA records indicate that no cultural resources have been previously recorded within a 0.5-mile radius of the proposed Project site. The closest cultural resource is an aboveground (non-archaeological) resource, the Oregon Electric Willamette Valley Southern Railroad Line, located approximately 0.6-miles east of the Project site.

3.2 Oregon Historic Sites Database

A review of the Oregon Historic Sites Database was conducted and no historic sites, aboveground (non-archaeological) resources, are located within or directly adjacent to the proposed Project site. The closest historic sites are located approximately 0.14-miles northwest of the proposed Project site, along Gales Lane.

3.3 National Register of Historic Places (NRHP)

A review of the National Register of Historic Places (NRHP) was conducted to determine if cultural resources included on the NRHP are present within the proposed Project site and surrounding area. No resources listed on the NRHP are located within or adjacent to the proposed Project site. The closest listed resource is the Holmes House, located approximately 0.70-miles northwest of the Project site.

3.4 Historic Aerial Photographs and Topographic Map Review

Langan reviewed both historical aerial photographs and topographic maps employing the Nationwide Environmental Title Research, LLC (NETR) database. A review of all available historical aerial photographs was conducted and includes the following years: 1952, 1956, 1960, 1970, 1981, 1994, 2000, 2002, 2005, 2009, 2011, 2012, 2014, 2016, 2018, 2020, and 2022 (NETR 2025). A review of available topographic maps was conducted and includes the following years: 1914, 1920, 1937, 1941, 1945, 1956, 1958, 1961, 1963, 1972, 1985, 2014, 2017, and 2020 (NETR 2025). Based on review of historic photographic aerials and topographic maps, small structures occupied the western portion of the proposed Project site as early as 1914. From at least 1970 to 2002 the proposed Project site was in use as a laydown yard. Development of the areas north, south, and west of the proposed Project site took place sometime between 1970 and 1981.

4.0 FIELD SURVEY

4.1 Objectives and Methods

The intensive-level survey methods consisted of a pedestrian survey conducted in parallel transects, spaced no more than 5 meters apart (approximately 15 feet). The ground surface was inspected for prehistoric artifacts (e.g., flaked stone tools, tool-making debris, groundstone tools, ceramics, fire-affected rock, subsistence materials, etc.), soil discoloration that might indicate the presence of a cultural midden; soil depressions; features indicative of structures and/or buildings (e.g., standing exterior walls, post holes, foundations); and historical artifacts (e.g., metal, glass, ceramics, building materials). To overcome visibility issues, small surface/boot scrapes were conducted in 10-meter intervals, or subjectively as needed. Ground disturbances such as rodent burrows, ephemeral trails and areas of barren ground were given specific attention to provide the best opportunity to observe soils and any potential exposed subsurface materials. No artifacts, if found, were to be collected.

All fieldwork was documented using field notes and an Apple Generation 14 iPhone equipped with ESRI Collector with close-scale georeferenced field maps of the prosed Project site, and aerial photographs. Location-specific photographs were taken using the iPhone 14-mega-pixel resolution camera. Cultural resources identified during this inventory within the proposed Project were, if discovered, to be recorded in accordance with the State of Oregon Guideline for

Reporting on Archaeological Investigations (2015). All field notes, photographs, and records related to the current study are on file with Langan. All field practices met the Secretary of Interior's standards and guidelines for a cultural resources inventory.

4.2 Pedestrian Survey Results

An intensive pedestrian survey was conducted by an archaeological technician under the direction of this study's Principal Investigator, Heather McDaniel McDevitt, and according to the methods previously stated (see Figure 2). At the time the survey was conducted, the proposed Project was minimally vegetated and had been recently cut. Exposed soils within periodic barren patches accounted for approximately 80 percent of the Project site and provided very good to excellent ground surface visibility (80-100 percent). Areas covered by vegetation and fill soil piles accounted for approximately 20 percent of the proposed parcel and provided non-existent to fair ground surface visibility (0-50 percent). Modern trash was found in sporadic locations on the surface of the ground, but no cultural materials of a prehistoric or historic nature or any evidence of the same were observed.

5.0 OREGON STATE HISTORIC PRESERVATION OFFICE (SHPO) CONSULTATION

On August 15, 2025, Langan submitted a First Initiation of Consultation to the Oregon State Historic Preservation Office (SHPO), for their consideration of potential impacts to both built environment (above ground) resources and archaeological (below ground) resources. The Oregon SHPO responded on September 10, 2025, stating, "there are no identified archaeological objects or sites (Oregon Revised Statute [ORS] 358.905), and no Native American cairn, burial, human remains, sacred objects and objects of cultural patrimony (ORS 97.740-760) in or adjacent to the project area". As a result, the Oregon SHPO's findings were as follows: "Oregon SHPO does not have any concerns with the project proceeding as planned" and provided direction should the project result in an inadvertent discovery of cultural resources (see section

6.0 TRIBAL OUTREACH

As required, Langan sent notification of the Project, via email, on September 24, 2025, to the following tribes:

- Confederated Tribes of the Grand Ronde
- Confederated Tribes of the Siletz
- Confederated Tribes of the Umatilla
- Confederated Tribes of the Warm Springs
- Confederated Tribes of the Yakama Nation

Follow-up phone calls were conducted by Langan between September 25, 2025 and October 1, 2025. No formal response has been received as of the date of this memorandum. A full summary

of all communication with the above-mentioned tribes is provided in Attachment C - Tribal Notification Summary.

7.0 RECOMMENDATIONS

Based on the findings of the background research, pedestrian survey, and consultation with Oregon SHPO and local tribes, no known resources are present within or adjacent to the proposed Project site. As such, the likelihood of known historic properties or significant cultural resources being adversely impacted by project implementation is null and the potential presence of unknown historic properties or significant cultural resources being adversely impacted by project implementation is low. Additionally, the Oregon SHPO expressly stated that "no concerns with the project proceeding as planned".

According to state law (ORS 358.920 and ORS 97.745), archaeological sites, objects and human remains are protected on both state public and private lands. In the event of inadvertent discovery of archaeological resources during construction or ground disturbance of any kind, such activity should cease within 50 feet of the discovery. To support appropriate treatment and response, it is recommended that an Inadvertent Discovery Plan (IDP) be developed by a qualified archaeologist. The purpose of the IDP is to outline a program of treatment and mitigation in the case of an inadvertent discovery of cultural resources and to provide for their proper identification, evaluation, treatment, and protection in accordance with Oregon laws throughout the duration of the Project. It is also recommended that existence of and importance of adherence to this Plan should be stated on all Project construction plans intended for use by those conducting the ground disturbing activities.

Sincerely,

Langan Engineering and Environmental Services, LLC



Heather McDaniel McDevitt, RPA
Cultural Resources Practice Director

Enclosure(s): Attachment A - Figure 1 Project Vicinity; Figure 2 Project Location
Attachment B - Oregon SHPO Response Letter
Attachment C - Tribal Notification Summary

References

Kent, Ronald. 1977. *Cultural Resources Survey of the Revised Tri-City Area Comprehensive Sewerage Plan*. On File at Oregon Archaeological Records Remote Access Database. Accessed September 24, 2025.

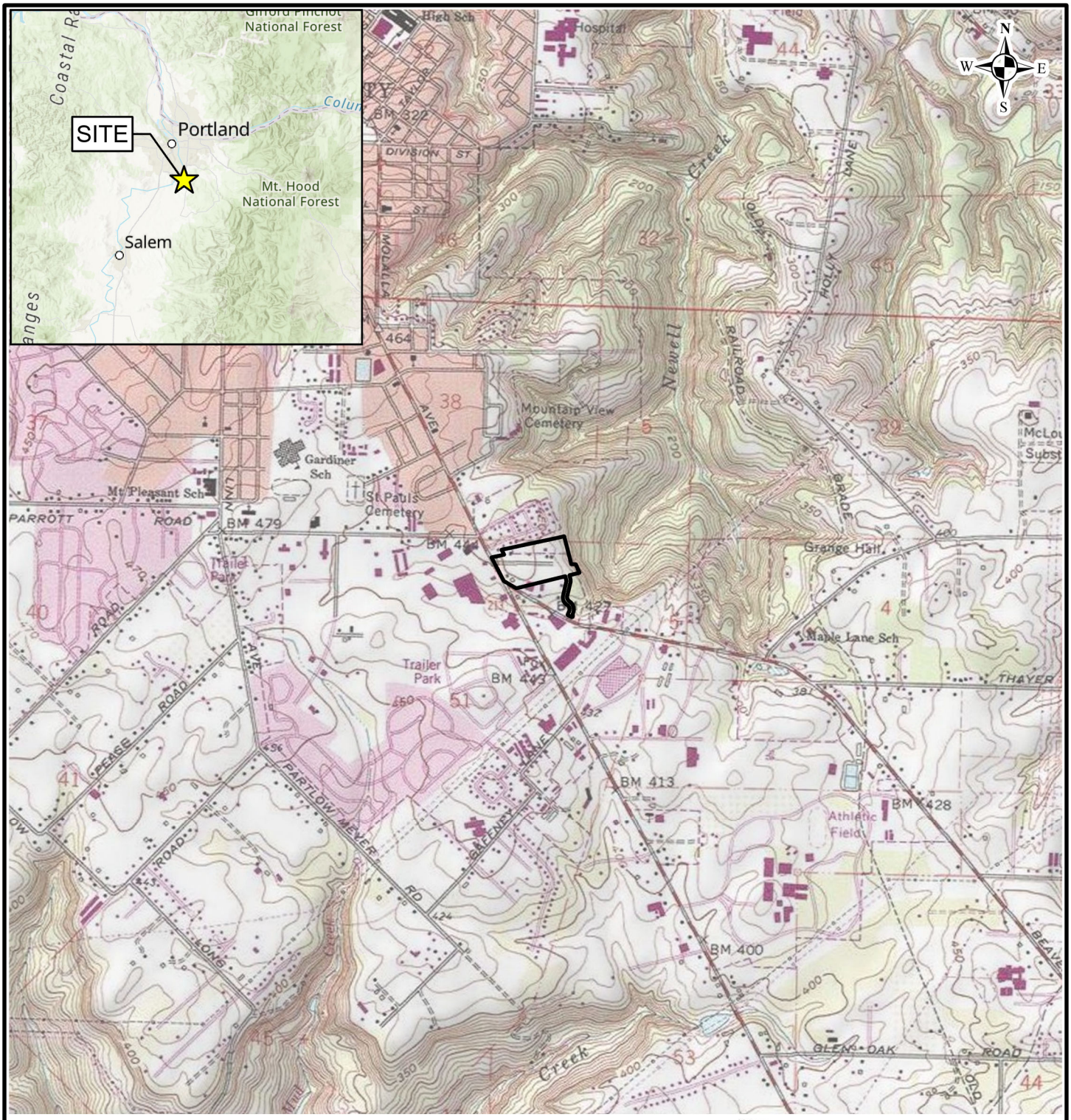
Metro Parks and Nature. 2016. *Newell Creek Canyon Access Master Plan*. Prepared for Oregon Metro.

Nationwide Environmental Title Research LLC (NETR). 2025. Historical Aerial Photographs dating 1952-2022, and Topographic Maps dating 1914-2020. Accessed October 3, 2025. https://www.historicaerials.com/viewer

OCWebMaps. 2025. Oregon City GIS Map; NROD – Natural Resource Overlay District. Accessed October 7, 2025. https://maps.orcity.org/Html5Viewer/index.html?viewer=OCWebMaps.OCWebMaps

Terracon Consultants, Inc. 2022. *Geotechnical Engineering Report, Oregon City Development*. Prepared for The Wolf Company LLC.

Attachment A - Figure 1 Project Vicinity; Figure 2 Project Location



Legend

Approximate Site Boundary (~12.95 acres)

Notes:
1. Oregon City USGS Quadrangle Map Topographic basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online.
2. All features shown are approximate.
3. Site located in Oregon City Quadrangle, Township 03S, Range 02E, Section 05.

0 2,000 4,000 Feet

0 500 1,000 Meters

LANGAN
Langan Engineering and Environmental Services, LLC
10135 SE Sunnyside Rd, Suite 200
Clackamas, OR 97015
T: 971.486.1400 F: 971.486.1401 www.langan.com

Project
OREGON CITY MIXED-USE
APN: 3-2E-05DB-03200, 3-2E-05DB-03201, 3-2E-05DB-03300, & 3-2E-05DB-03400
OREGON CITY
CLACKAMAS COUNTY OREGON

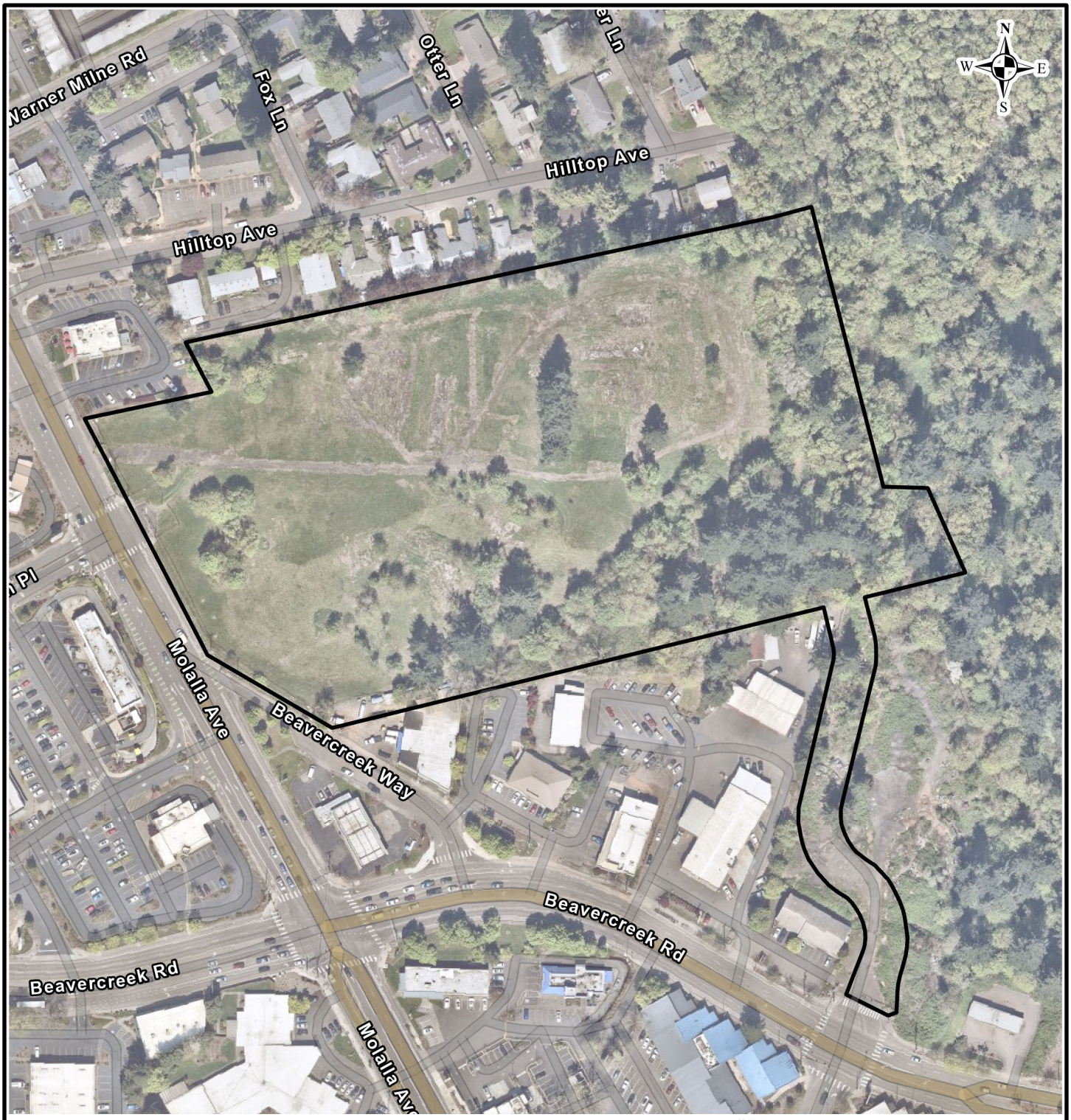
Figure Title
PROJECT VICINITY

Project No.	794002701
Date	8/19/2025
Scale	1" = 2,000'
Drawn By	GS

1

© 2025 Langan

Path: \\langan.com\data\PDX\data7\794002701\Project Data\ArcGIS\APRX\794002701\794002701.aprx



Legend

Approximate Site Boundary (~12.95 acres)

Notes:
1. Aerial imagery provided through Langan's subscription to NearMap.com, flown 4/16/2025.
2. All features shown are approximate.

0 200 400 Feet
0 50 100 Meters

LANGAN
Langan Engineering and Environmental Services, LLC
10135 SE Sunnyside Rd, Suite 200
Clackamas, OR 97015
T: 971.486.1400 F: 971.486.1401 www.langan.com

Project
OREGON CITY MIXED-USE
APN: 3-2E-05DB-03200, 3-2E-05DB-03201, 3-2E-05DB-03300, & 3-2E-05DB-03400
OREGON CITY
CLACKAMAS COUNTY OREGON

Figure Title
PROJECT LOCATION

Project No.	794002701
Date	8/19/2025
Scale	1" = 200'
Drawn By	GS

2

© 2025 Langan

Path: \\langan.com\data\PDX\data7\794002701\Project Data\ArcGIS\APRX\794002701\794002701.aprx

Attachment B - Oregon SHPO Response Letter

Oregon
Tina Kotek, Governor

Parks and Recreation Department
Oregon Heritage/
State Historic Preservation Office
725 Summer St. NE, Suite C
Salem, OR 97301-1266
(503) 986-0690
Fax (503) 986-0793
oregonheritage.org

September 10, 2025

Heather McDaniel McDevitt
Langan
104 W Anapamu, St # 204B
Santa Barbara, CA 93101

RE: SHPO Case No. 25-1149
City of Oregon City, Langan Engineering and Environmental, Langan Project Number 794002701, Oregon City Mixed Use
Proposed mixed use development
35S 2E 5, Oregon City, Clackamas County

Dear Heather McDaniel McDevitt:

Thank you for submitting information for the project referenced above. According to our records there are no identified archaeological objects or sites (Oregon Revised Statute [ORS] 358.905), and no Native American cairn, burial, human remains, sacred objects and objects of cultural patrimony (ORS 97.740-760) in or adjacent to the project area. Based on the information provided, Oregon SHPO does not have any concerns with the project proceeding as planned.

Under ORS 358.920 and ORS 97.745, archaeological sites, objects and human remains are protected on both state public and private lands in Oregon. Please know that if any archaeological artifacts are found during construction all activity in the area should cease and our office should be contacted. We also advise having an Inadvertent Discovery Plan (IDP) in place during construction. A template is available on our website (https://www.oregon.gov/oprd/OH/pages/projectreviewresources.aspx). The IDP explains what to do in the event of a discovery and provides examples of archaeological materials. Using this form can reduce confusion, risk, and liability.

If the project has a federal nexus (lands, funding, permitting, or oversight) coordinate with the lead federal agency to ensure compliance with Section 106 of the National Historic Preservation Act.

If you have not already done so, be sure to consult with all appropriate Native American tribes regarding the proposed project. Additional consultation regarding this case must be sent through Go Digital. In order to help us track the project accurately, reference the SHPO case number above in all correspondence.

Please contact our office if you have any questions, comments or need additional assistance.

Sincerely,

Aspen Kemmerlin
Special Projects Archaeologist

Aspen.Kemmerlin@oprd.oregon.gov

cc: Jennifer De Alba, Langan Engineering and Environmental

Attachment C - Tribal Notification Summary

Tribe	Representative Contacted	Contact Method	Response
Confederated Tribes of the Grand Ronde	Christopher Bailey, Cultural Protection Specialist	9/24/2025: Email 9/25/2025: Phone Call 9/30/2025: Phone Call 10/6/2025: Phone Call	10/6/2025: Mr. Bailey asked if and fieldwork had done. He informally recommended an archaeological survey be performed, but he did not specify they type of survey. Mr. Bailey stated a formal response would be sent at a later date. No formal response has been received to date.
	David Harrelson, Program Manager and THPO	9/24/2025: Email 9/25/2025: Phone Call 9/30/2025: Phone Call 10/6/2025: Phone Call	No response received.
	Cheryle Kennedy, Chairwoman	9/24/2025: Email 9/25/2025: Phone Call 9/30/2025: Phone Call 10/6/2025: Phone Call	No response received.
Confederated Tribes of the Umatilla Indian Reservation	Gary Burke, Board of Trustees Chair	9/24/2025: Email 9/25/2025: Phone Call 10/1/2025: Phone Call 10/6/2025: Phone Call 10/21/2025: Phone Call	10/21/2025: Mr. Burke returned Langan's call and commented that he had not yet read the email that was sent on 9/24/2025. He was informed that Teara Ferman had called Langan and was forwarded the original email that was sent to Mr. Burke. He said he would reach out to Ms. Ferman.
	Teara Ferman, Cultural Resources Protection Program Manager	10/8/2025: Phone Call 10/8/2025: Email	10/8/2025: Ms. Ferman returned Langan's call and provided her email address. Ms. Ferman was forwarded the email that was sent to Mr. Burke on 9/24/2025.
	Carey Miller, THPO	9/24/2025: Email 9/25/2025: Phone Call 9/30/2025: Phone Call 10/6/2025: Phone Call	No response received.

Tribe	Representative Contacted	Contact Method	Response
Confederated Tribes of the Siletz	Delores Pigsley, Chairwoman	9/24/2025: Email 9/25/2025: Phone Call 9/30/2025: Phone Call 10/6/2025: Phone Call	No response received.
Confederated Tribes of the Yakama Nation	Rose Ferri, THPO	9/24/2025: Email 9/25/2025: Phone Call 9/30/2025: Phone Call	9/30/2025: Ms. Ferri instructed Langan to reach out to Jessica Lally regarding the project.
	Jessica Lally, Lead Archaeologist	9/30/2025: Phone Call 10/6/2025: Email	No response received.
	Gerald Lewis, Chairman	9/24/2025: Email 9/25/2025: Phone Call	No response received.
Confederated Tribes of the Warm Springs	Robert Brunoe, THPO (former)	9/24/2025: Email 9/25/2025: Phone Call 9/30/2025: Phone Call 10/6/2025: Phone Call	10/6/2025: Langan was informed Mr. Brunoe is no longer the THPO and was directed to Mr. Squiemphen.
	Lawrence Squiemphen, THPO	10/6/2025: Phone Call 10/6/2025: Email	10/6/2025: Mr. Squiemphen informed Langan that he was taking over the duties for Mr. Brunoe. The original email that was sent to Mr. Brunoe was forwarded to Mr. Squiemphen. No response has been received.
	Jonathan Smith, Chairman	9/24/2025: Email 9/25/2025: Phone Call 10/1/2025: Phone Call	10/1/2025: Langan spoke to an administrator who took a message and informed Langan they had received the notification email. No response has been received.

Oregon
Tina Kotek, Governor

Parks and Recreation Department
Oregon Heritage/
State Historic Preservation Office
725 Summer St. NE, Suite C
Salem, OR 97301-1266
(503) 986-0690
Fax (503) 986-0793
oregonheritage.org

September 10, 2025

Heather McDaniel McDevitt
Langan
104 W Anapamu, St # 204B
Santa Barbara, CA 93101

RE: SHPO Case No. 25-1149
City of Oregon City, Langan Engineering and Environmental, Langan Project Number 794002701, Oregon City Mixed Use
Proposed mixed use development
35S 2E 5, Oregon City, Clackamas County

Dear Heather McDaniel McDevitt:

Thank you for submitting information for the project referenced above. According to our records there are no identified archaeological objects or sites (Oregon Revised Statute [ORS] 358.905), and no Native American cairn, burial, human remains, sacred objects and objects of cultural patrimony (ORS 97.740-760) in or adjacent to the project area. Based on the information provided, Oregon SHPO does not have any concerns with the project proceeding as planned.

Under ORS 358.920 and ORS 97.745, archaeological sites, objects and human remains are protected on both state public and private lands in Oregon. Please know that if any archaeological artifacts are found during construction all activity in the area should cease and our office should be contacted. We also advise having an Inadvertent Discovery Plan (IDP) in place during construction. A template is available on our website (https://www.oregon.gov/oprd/OH/pages/projectreviewresources.aspx). The IDP explains what to do in the event of a discovery and provides examples of archaeological materials. Using this form can reduce confusion, risk, and liability.

If the project has a federal nexus (lands, funding, permitting, or oversight) coordinate with the lead federal agency to ensure compliance with Section 106 of the National Historic Preservation Act.

If you have not already done so, be sure to consult with all appropriate Native American tribes regarding the proposed project. Additional consultation regarding this case must be sent through Go Digital. In order to help us track the project accurately, reference the SHPO case number above in all correspondence.

Please contact our office if you have any questions, comments or need additional assistance.

Sincerely,

Aspen Kemmerlin
Special Projects Archaeologist

Aspen.Kemmerlin@oprd.oregon.gov

cc: Jennifer De Alba, Langan Engineering and Environmental

Traffic Impact Analysis

OREGON CITY MIXED-USE

Prepared for:
Langan

March 2026

Prepared by:

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EXPIRES: 12/31/26

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Introduction

This traffic impact analysis (TIA) identifies potential transportation-related impacts associated with the proposed Mixed-Use Development in Oregon City, Oregon. As necessary, mitigation measures are identified that would reduce or offset significant transportation related impacts that the project may have on the surrounding transportation system.

Project Description

The proposed project site is located at 1367 Molalla Avenue in Oregon City, as shown in the vicinity map included in Figure 1.[1] The site is comprised of 4 parcels (3 parcels with land use development and 1 for right-of-way) in which the proposed mixed-use development is anticipated to include the following:

- Parcel A: 14,600 square feet (sf) retail
- Parcel B: up to 210 multi-family apartment units
- Parcel C: *No land use - right-of-way*
- Parcel D: 4,900 sf fast food restaurant with drive-through

The existing site is vacant. With the development of the site, a new roadway connection would be completed between the existing signalized intersections along Molalla Avenue at the west side of the site and Beavercreek Road south of the site. The preliminary site plan is illustrated in Figure 2. The proposed project is anticipated to be fully constructed and operational by 2030.

Study Scope and Study Area

The following off-site intersections surrounding the project site were identified for analysis following coordination with City of Oregon City and Oregon Department of Transportation (ODOT) staff:

1. Molalla Ave/Pearl St
2. Molalla Ave/Holmes Ln
3. Molalla Ave/Warner Milne Rd
4. Molalla Ave/Safeway access/Future site access
5. Molalla Ave/Beavercreek Rd
6. Molalla Ave/Clairmont Way
7. Molalla Ave/ OR-213
8. Commercial Access/Beavercreek Rd/Future site access
9. OR-213/Beavercreek Rd

The analysis includes a review of existing conditions in the vicinity of the project site, including the transportation network, planned improvements, existing and future without-project AM and PM[2] peak hour traffic volumes, traffic operations, and traffic safety. Future with-project conditions are evaluated by adding site-generated traffic to future without-project volumes. Future without and with-project conditions are compared to identify the impacts the proposed project has on the surrounding transportation system.

[1] The proposed land use and overall site plan is revised relative to the previously completed October 2025 TIA.

[2] Note that review of additional time periods is included in the TIA below, but as discussed in greater detail below, the operational analysis is limited to the AM and PM peak hours.



Site Vicinity and Study Intersections

FIGURE 1

OR City Mixed-Use

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Preliminary Site Plan

FIGURE 2

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Existing & Future Without-Project Conditions

This section describes both existing and future (2030) without-project conditions within the identified study area. Study area characteristics are provided for the transportation system, planned improvements, existing and future forecast without-project traffic volumes, traffic operations, and traffic safety.

Roadway Network

The following sections describe the existing street network within the vicinity of the proposed project and anticipated planned improvements.

Existing

The primary roadways within the study area and their characteristics near the study intersections are described below.

Molalla Avenue is a five-lane roadway functionally classified by the City of Oregon City as a minor arterial and has a speed limit of 30 mph. Molalla Avenue is a 2 to 3 lane roadway north of Warner Milne Road and south of Beavercreek Road, and five lane roadway Warner Milne Road and Beavercreek Road. Sidewalks are provided on both sides of Molalla Avenue through the entirety of the study area. Bike lanes are available on both sides north of Gales Lane, and south of the Safeway access driveway.

Beavercreek Road is a 5-lane roadway functionally classified as a minor arterial west of Molalla Avenue and a major arterial east of Molalla Avenue. Beavercreek Road has a speed limit of 35 mph in the vicinity of the project site. Beavercreek Road is a 3 to 5 lane roadway west of Molalla Avenue and a 5 to 6 lane road east of Molalla Avenue with additional urn lanes present surrounding its intersection with OR-213. Sidewalks and bicycle lanes are provided on both sides of the roadway between Molalla Avenue and OR-213.

OR-213 (Cascade Highway South) is a State Highway Route classified as a principal arterial. OR-213 is a four-lane roadway with a wide median north and south of its intersection with S Beavercreek Road, which transitions to a 6-lane roadway south of Beavercreek Road, and a 7-lane roadway north of Beavercreek Road. The speed limit along OR-213 in the study area is 55 mph. Sidewalks and bike lanes are available on the east side of OR-213 south of Beavercreek Road and wide painted shoulders are present where sidewalks are not within the study area.

Pearl Street is classified by the City of Oregon City as a major collector with 2 travel lanes. The speed limit is 25 mph. West of the intersection with Molalla Avenue, a sidewalk is present on the north side of Pearl Street. East of the intersection, sidewalks are present for approximately 230 feet.

Holmes Lane is classified as a collector west of Molalla Avenue, and continues into Hilda Street, which is a local road, east of Molalla Avenue. Holmes Lane is a 2 to 3 lane roadway with a speed limit of 25 mph. Sidewalks, bike lanes, and/or paved shoulders are present on both sides of Holmes Lane.

Warner Milne Road is classified as a minor arterial with a speed limit of 30 mph. Warner Milne Roadis a two-lane roadway with additional turn lanes provided surrounding its intersection with Molalla Avenue. Sidewalks and bicycle lanes are present along both sides of the roadway within the study area.

Clairmont Way is functionally classified by the City of Oregon City as a collector with a speed limit of 25 mph. Clairmont Way is a two-lane roadway with additional turn lanes

provided surrounding its intersection with Molalla Avenue. Sidewalks and bicycle lanes are present along both sides of the roadway within the study area.

Planned Improvements

A review of local plans was conducted to identify any changes in the study area that should be accounted for in the analysis. The local plans reviewed included the following: *City of Oregon City's Comprehensive Plan Project List (November 2022)*, *Oregon City's Transportation System Plan* (TSP), Yamhill County's *2015-2035 Transportation System Plan* (TSP)*, and Oregon Department of Transportation's (ODOT) 2024-2027 Statewide Transportation Improvement Program (STIP).* Planned improvements within the study area predominantly included maintenance and resurfacing projects; not impacting intersection capacity. This included the following projects:

- Warner Milne Road resurfacing near Molalla Avenue which was recently completed.
- Holmes Lane will be undergoing resurfacing in 2026.
- Molalla Avene will be undergoing resurfacing in 2027.
- Beavercreek Road will be undergoing microsurfacing in 2026, with more resurfacing planned for 2032.
- Water transmission pipes under Molalla Avenue will be upgraded in 2026.

In addition to the above projects, Beavercreek Road has also been undergoing safety improvements since 2023, including signal modifications and improved signage at the intersection with OR-213 which have since been completed. The Beavercreek Road/OR-213 intersection has an Alternative Mobility Target as the City's TSP identified it would not meet the state's required Oregon Highway Plan Mobility Standards by 2035. An additional project that has been identified as part of the Alternative Mobility Targets in the TSP includes project D95, the Beavercreek Road/OR-213 westbound right turn lane with northbound merge lane on OR 213. The City is collecting a pro-rata share to fund the D95 project; however, this project was not assumed in the future operational conditions.

Non-Motorized Facilities

Dedicated pedestrian and bicycle facilities are provided on roadways surrounding the project site as noted above. Sidewalks are available on both sides of Molalla Avenue, Beavercreek Road, and Holmes Lane. A sidewalk is available on the east side of OR-213 south of the intersection with Beavercreek Lane and on the north side of Pearl Street west of Molalla Avenue.

Transit Service

Transit service in the vicinity of the project site is provided by TriMet's Route 32. The closest transit stops to the site are located at the two site access intersections along Molalla Avenue and Beavercreek Road, directly adjacent to the project site. Additional transit stops served by TriMet's Route 33 are located approximately 0.25 miles west of the project site at the intersection of Beavercreek Road/Danielson Drive. Route 32 provides service 7-days per week between Milwaukie and Clackamas Community College in Oregon City with service between approximately 6:15 a.m. and 7:00 p.m. on weekdays with headways of approximately 30 minutes during peak periods. Route 33 provides service between the Oregon City Transit Center, Milwaukie and Clackamas Town Center 7-days per week between approximately 5:20 a.m. and 12:00 a.m. with peak period headways of approximately 15 minutes.

Traffic Volumes

The existing and future (2030) without-project traffic volumes forecasts are summarized in the sections below.

Existing

Existing weekday AM (7 to 9 a.m.) and PM (4 to 6 p.m.) peak period traffic counts were collected at each study intersection in September 2025.[3] The detailed traffic counts are included in Appendix A. Volumes are rounded to the nearest 5 vehicles to account for the daily fluctuations in traffic volumes. Figure 4 illustrates the existing weekday AM and PM peak hour traffic volumes at the study intersections.

In addition to the weekday peak hours, the traffic volumes throughout the week were also reviewed to confirm the time periods for analysis. Traffic volumes were collected along Molalla Avenue, north of Beavercreek Road in the project vicinity for one week in September 2025. The detailed volumes throughout the week are included in Appendix A and the volumes are illustrated in Figure 3.

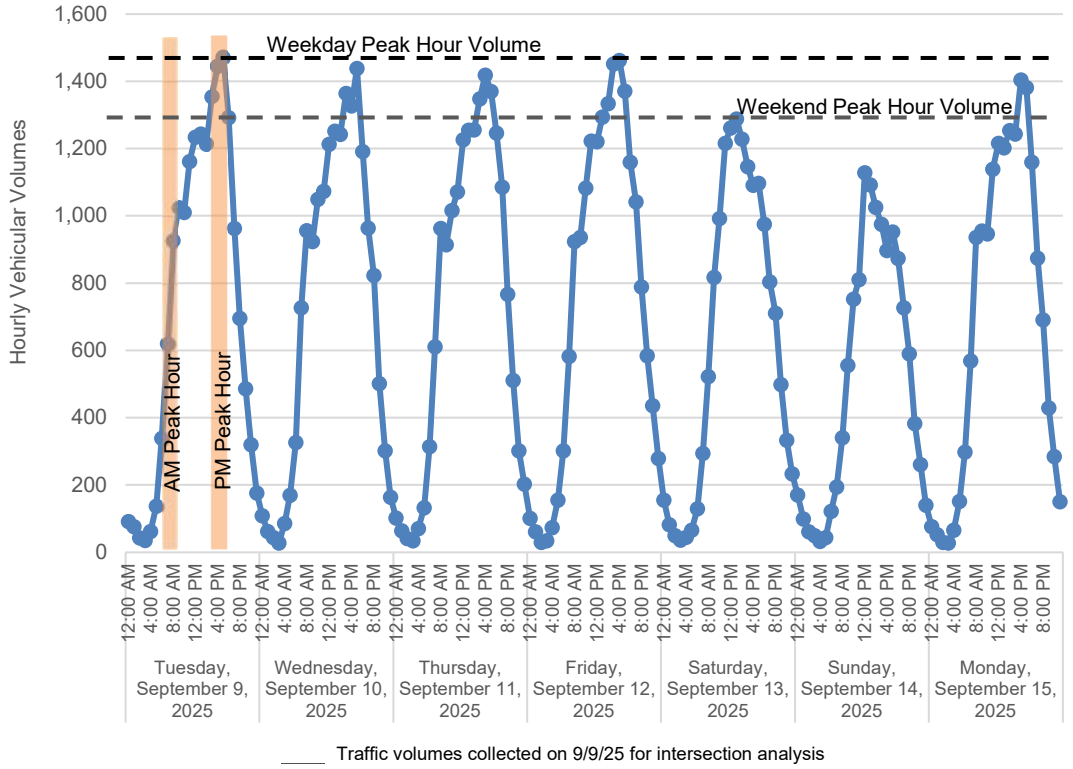
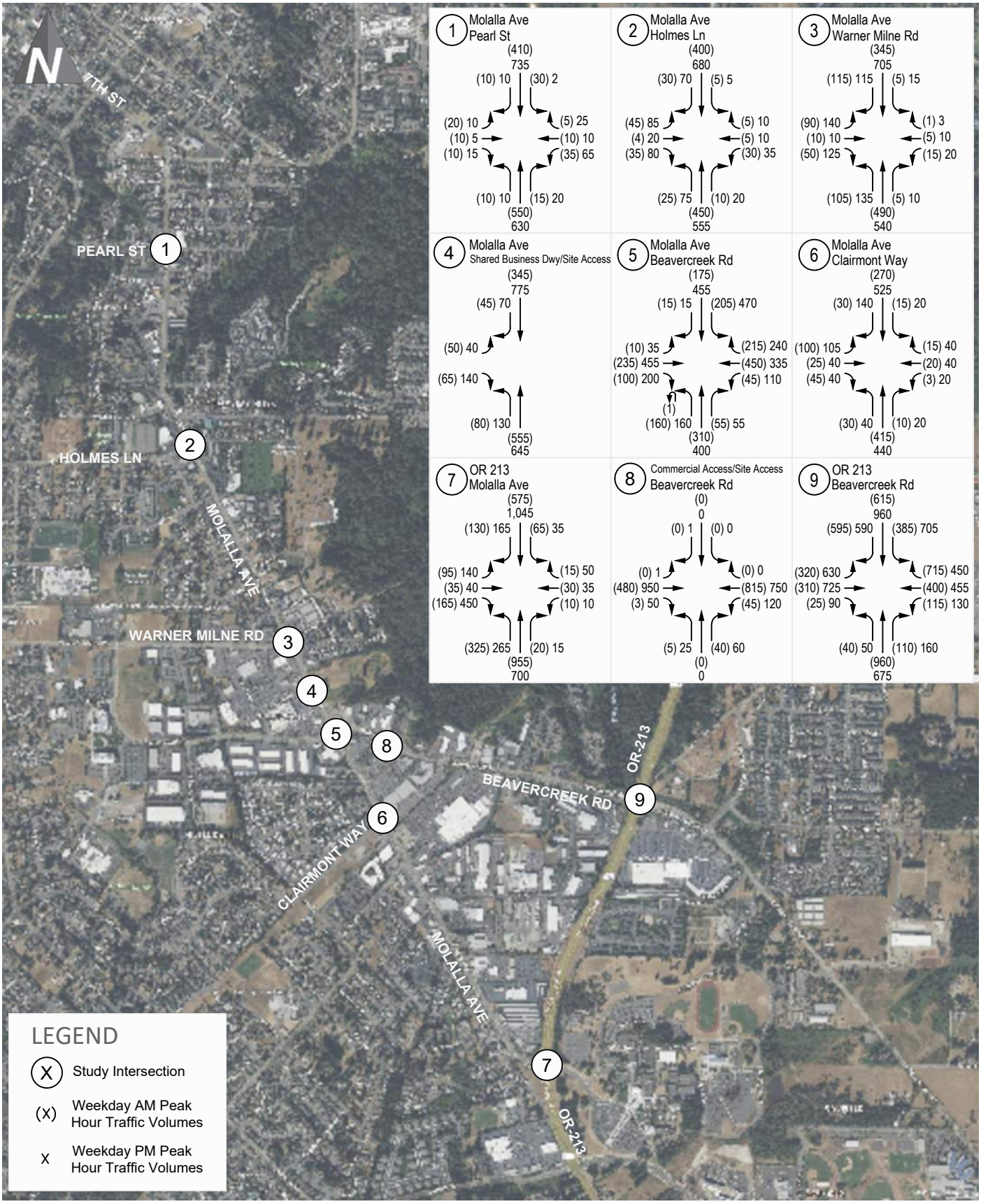


Figure 3. Existing Weekly volumes along Molalla Avenue, north of Beavercreek Road

As shown in the figure, the weekday AM and PM peak hours being studied as part of the project capture the peak traffic volumes that are occurring within the study area throughout the week. The weekend peak hourly volumes are approximately 12 percent less than the weekday peak volumes which occur during the studied PM peak hour.

[3] It was confirmed with City and ODOT staff that given the counts were conducted in September when school was in session, no seasonal adjustment to the volumes was needed.



Existing Weekday Peak Hour Traffic Volumes

FIGURE 4

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Future Without-Project Traffic Volumes

Future (2030) without-project traffic volumes are comprised of background traffic growth and traffic from "in-process developments" in the vicinity of the project site. An annual growth rate of 2.0 percent was applied, as provided by the City. Ten in-process developments in the vicinity of the proposed project site are listed below and were included in the analysis as identified by City staff.

1. 770 Pleasant Townhomes
2. Abernethy Place
3. Canemah Road Subdivision
4. Central Point Subdivision
5. Clackamas Heights Redevelopment
6. Downtown North End Development
7. Park Place Crossing Phase 1
8. Serres Farms Master Plan
9. Thimble Creek South
10. White Lane Subdivision

The forecast future (2030) without-project weekday AM and PM peak hour traffic volumes are shown on Figure 5.

Traffic Operations

The following section summarizes the traffic operations for existing and future without-project conditions for the study intersections.

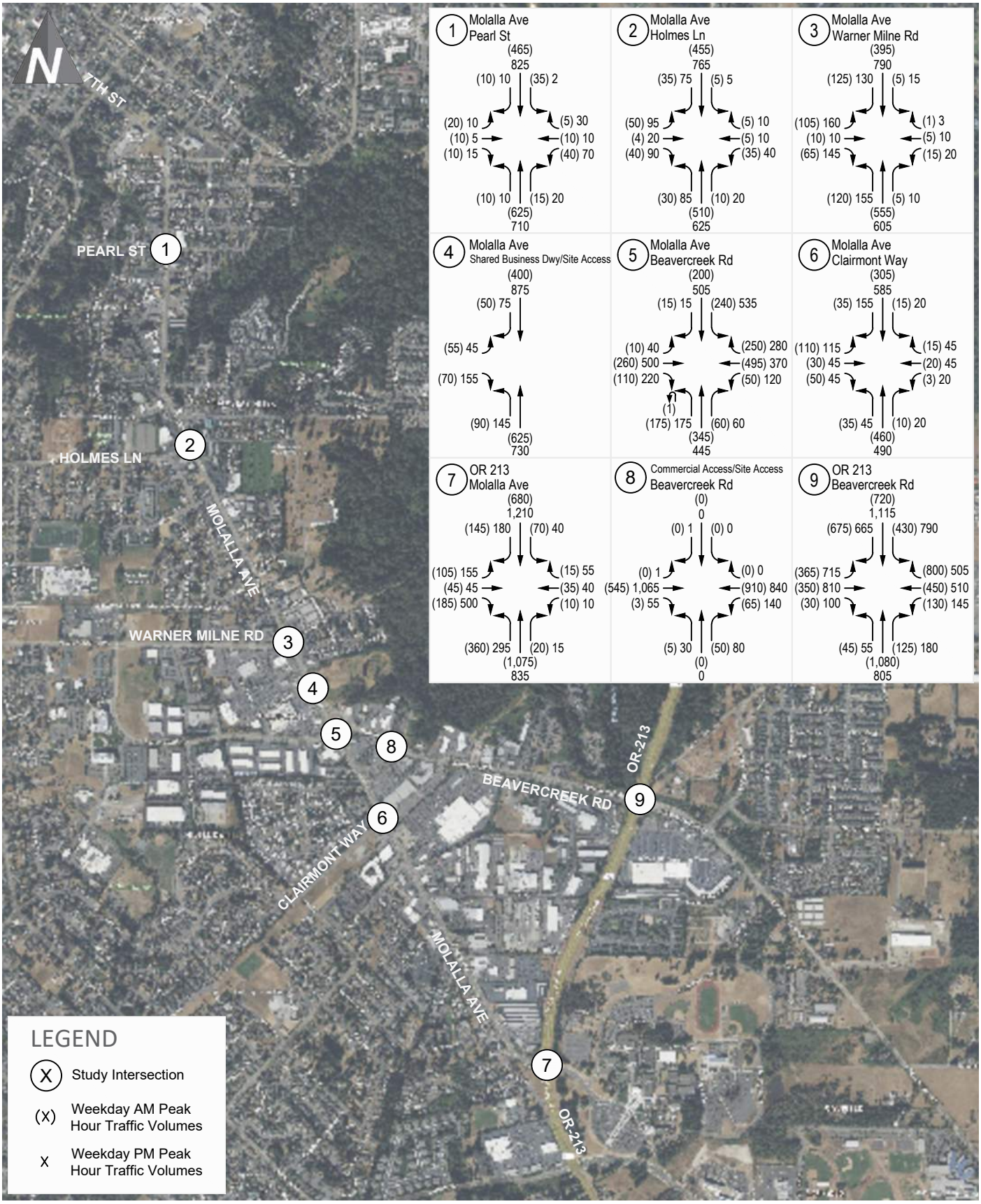
An operational analysis was conducted for the study area intersections for the weekday AM and PM peak hours. Existing and future without-project volume-to-capacity (v/c) ratios and delay were calculated at study intersections based on the methodologies contained in the *Highway Capacity Manual* 7th Edition (HCM 7). The software program *Synchro* 12 was used to evaluate intersection operations.

ODOT's targets were applied to the signalized intersections along Cascade Highway South (OR 213), while the City of Oregon City's standards were applied to the remaining study intersections along Molalla Avenue and Beavercreek Road.

The City of Oregon City's operational targets are defined in the *City of Oregon City Guidelines for Transportation Impact Analyses* (2021), Section 7.9.1 for *Intersection Level of Service Standards.* The City identified a v/c ratio of 0.99 or less for the overall intersection at signalized intersections with the exception of the intersection of OR 213/Beavercreek Road, which is noted to have a maximum v/c ratio of 1.00. ODOT operational targets are defined in the 1999 *Oregon Highway Plan* (June 2017). Within the study area, Cascade Highway South (OR 213) is functionally classified as a principal arterial route inside the Portland Metro Area's Metropolitan Planning Organization (MPO) requiring a v/c ratio of 0.99 or less for the overall intersections. The Oregon Transportation Commission amended the *Oregon Highway Plan* in November 2018 to approve an alternative mobility target at the intersection of OR 213/Beavercreek Road to align with the City of Oregon City's recommendation of a 1.0 v/c target. Note that OHP identifies that *"ODOT recognizes that there are many variables and levels of uncertainty in calculating volume-to-capacity ratios…ODOT considers calculated values for v/c ratios that are within 0.03 of the adopted target in the OHP to be considered in compliance with the target."*

Signal timing at the study intersections was provided by Clackamas County and ODOT staff. Analysis parameters such as lane channelization, traffic control type, and signal timing were maintained for future (2030) without-project conditions consistent with existing conditions.

Results for the existing and future without-project operations analyses are summarized in Table 1. Detailed operations worksheets for the existing and future without-project analysis are included in Appendix B. The overall intersection v/c for signalized intersections was calculated per ODOT's *Analysis Procedures Manual* (Version 2, July 2025) Section 13.4.4 using Synchro.



Future (2030) Without-Project Peak Hour Traffic Volumes

FIGURE 5

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Table 1. Existing & Future Without-Project Peak Hour Intersection Operations

Intersection	Traffic Control	Existing		Future (2030) Without-Project	
		v/c[1]	Delay[2]	v/c	Delay
Weekday AM Peak Hour					
1. Molalla Ave/Pearl St	Signal	0.41	4.7	0.46	4.9
2. Molalla Ave/Holmes Ln/Hilda St	Signal	0.36	7.8	0.40	8.1
3. Molalla Ave/Warner Milne Rd	Signal	0.24	10.3	0.27	10.5
4. Molalla Ave/Shared Business Dwy (Safeway)	Signal	0.45	10.6	0.51	10.8
5. Molalla Ave/Beavercreek Rd	Signal	0.46	17.3	0.51	17.9
6. Molalla Ave/Clairmont Way	Signal	0.40	10.4	0.44	10.8
7. OR 213/Molalla Ave	Signal	0.57	27.0	0.64	28.7
8. Shared Business Dwy (South Ridge)/ Beavercreek Rd	Signal	0.65	4.4	0.72	4.8
9. OR 213/Beavercreek Rd	Signal	0.72	35.9	0.81	47.1
Weekday PM Peak Hour					
1. Molalla Ave/Pearl St	Signal	0.54	5.5	0.60	5.9
2. Molalla Ave/Holmes Ln/Hilda St	Signal	0.59	9.6	0.66	10.7
3. Molalla Ave/Warner Milne Rd	Signal	0.39	11.2	0.44	12.2
4. Molalla Ave/Shared Business Dwy (Safeway)	Signal	0.52	13.4	0.58	14.5
5. Molalla Ave/Beavercreek Rd	Signal	0.69	24.7	0.76	28.1
6. Molalla Ave/Clairmont Way	Signal	0.61	13.1	0.68	16.4
7. OR 213/Molalla Ave	Signal	0.68	33.9	0.78	36.3
8. Shared Business Dwy (South Ridge)/ Beavercreek Rd	Signal	0.59	7.6	0.67	8.5
9. OR 213/Beavercreek Rd	Signal	0.82	52.2	0.94	75.4

Note: **Bold** indicates the required V/C standard is not met.
1. Volume to capacity (v/c) ratio reported for the overall intersection at signalized intersections.
2. Average delay per vehicle in seconds reported for the overall intersection delay at signalized intersections.

Table 1 shows that under both existing and future (2030) without project conditions, the study intersections operate acceptably per the respective v/c target during both the existing AM and PM peak hours, operating with a v/c ratio of 0.94 or less.

Traffic Safety

The five most recent years of collision records (January 1, 2019, to December 31, 2023) provided by the Oregon Department of Transportation (ODOT) were reviewed to identify existing traffic safety issues at the study intersections. A summary of the total and average annual number of reported collisions as well as the observed crash rates at the study intersections are provided in Table 2.

Table 2. Study Intersection Collision Data Summary (2019 – 2023)

Intersection	Number of Reported Collisions					Total	Annual Average	Crash Rate per MEV
	2019	2020	2021	2022	2023			
1. Molalla Ave/Pearl St	4	2	0	2	3	11	2.20	0.39
2. Molalla Ave/Holmes Ln/Hilda St	3	2	3	3	1	12	2.40	0.40
3. Molalla Ave/Warner Milne Rd	6	3	6	2	3	20	4.00	0.60
4. Molalla Ave/Shared Business Dwy (Safeway)	4	3	3	0	0	10	2.00	0.30
5. Molalla Ave/Beavercreek Rd	13	9	5	8	10	45	9.00	0.84
6. Molalla Ave/Clairmont Way	4	2	1	4	3	14	2.80	0.52
7. OR 213/Molalla Ave	10	4	2	5	0	21	4.20	0.39
8. Shared Business Dwy (South Ridge)/ Beavercreek Rd	0	0	1	0	0	1	0.20	0.03
9. OR 213/Beavercreek Rd	29	27	23	16	33	128	25.60	1.25

Source: ODOT 2025.
Note: MEV = million entering vehicles

As shown in Table 2, the most collisions that occurred within the study area over the last five-year review period occurred along Beavercreek Road at Molalla Avenue and OR 213 with an annual average of 9 collisions per year and approximately 2 collisions per year, respectively. The most common collision types experienced at the study intersections were rear-end collisions followed by approach turn collisions, primarily resulting in property damage only and minor injury. There were five collisions over the last five-year review period at the study intersections of Molalla Avenue/Pearl Street, Molalla Avenue/Warner Milne Road and Molalla Avenue/Clairmont Way involving a pedestrian, two of which resulting in fatality at Molalla Avenue/Pearl Street and Molalla Avenue/Warner Milne Road, occurring in 2019 and 2022, respectively. Both intersections are signalized with crosswalks provided across all legs of the intersections. No other fatalities were reported within the study area. Based on the review of existing collisions in the study area, no patterns of safety concerns were identified.

The intersections of Molalla Avenue and Beavercreek Road are located along OR 213, a state highway classified as principal arterial. According to the ODOT CAR Unit Crash Rate Table II, the crash rate along the state highway system principal arterial roadways was observed to range from 1.25 in 2022 to 1.40 in 2019. The statewide 90th percentile intersection crash rates detailed in Exhibit 4-1 of ODOT's *Analysis Procedures Manual* (Version 2, October 2024) show a rate of 0.86 for urban four-legged signalized intersections. As shown in Table 2, the crash rate at OR 213/Molalla Avenue is below both the statewide observed crash rates and less than the 90th percentile crash rates. The OR 213/Beavercreek Road intersection is identified within the top 5 percent of sites in the ODOT's *Safety Priority Index System* (SPIS) sites and the crash rate during the study period exceeds the 90th percentile crash rates but is consistent with the lower of the observed crash rates along a principal arterial. As identified above, the City has been undergoing safety improvements at the OR 213/Beavercreek Road intersection since 2023 including signal modifications and improved signage at the intersection with OR-213 which have since been completed.

Project Impacts

This section of the report documents project-generated impacts within the study area. First, peak hour traffic volumes are estimated, distributed, and assigned to adjacent roadways and intersections within the study area. Next, future (2030) traffic volumes including project traffic are developed and the potential impact to traffic volumes and traffic operations are identified.

Trip Generation

Trip generation for the proposed project was calculated based on trip rates using the Institute of Transportation Engineers (ITE) *Trip Generation Manual* (11th Edition, 2021) as coordinated and approved with City and ODOT staff through scoping of the traffic analysis. The trip generation was adjusted for pass-by and internal trips. Pass-by trips reflect traffic already on streets in the vicinity of the project site that would visit the commercial components of the project while driving by the site on the way to its final destination. The land use assumptions and pass-by rates per parcel are summarized below based on ITE's *Trip Generation Manual* (11th Edition, 2021):

- Parcel A: 14,600 square feet (sf) retail – A drive-through window is planned for the northern side of the retail building with the drive-through lane circulating on the eastern side of the building. For purposes of the traffic analysis, one quarter of the building was assumed as ITE's Coffee Shop with Drive Through Window (LU #937) with the remaining as ITEs Strip Retail Plaza (<40k) (LU #822). Pass-by rates for the retail and drive through land uses are assumed to be 40 percent and up to 55 percent, respectively.
- Parcel B: up to 210 multi-family apartment units – ITE's Multifamily Housing (Mid-Rise) (LU #221). No pass-by is associated with residential.
- Parcel C: No land use - right-of-way
- Parcel D: 4,900 sf fast food restaurant with drive-through – ITE's Fast-Food Restaurant with Drive-Through Window (LU #934). Pass-by rates for the drive through restaurant land use is assumed to be 55 percent.

The inclusion of internal capture was assumed consistent with the methodology per ITE's *Trip Generation Handbook* (3rd Edition, 2017) resulting in an estimated overall internal capture rate for the full development of 5 percent and 25 percent in the AM and PM peak hours, respectively.

Table 3 shows the weekday vehicle trips generated by the proposed project. The detailed trip generation calculations are included in Appendix C.

Table 3. Estimated Weekday Vehicle Trip Generation

Land Use[1]	Size	Daily Trips	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Mid-Rise Apartments (LU #221)	210 du	710	18	49	67	33	21	54
Retail	14,600 sf	2,174	166	161	327	77	76	153
Pass-by		*-1,092*	*-81*	*-81*	*-162*	*-40*	*-40*	*-80*
Restaurant (LU #934)	4,900 sf	2,096	107	106	213	75	64	139
Pass-by		*-1,100*	*-53*	*-53*	*-106*	*-38*	*-38*	*-76*
Total Primary		**2,788**	**157**	**182**	**339**	**107**	**83**	**190**

Note: du = dwelling units, sf = square feet
1. Average trip rates from ITE *Trip Generation Manual*, 11th Edition (2021).

As shown in Table 3, the proposed project is estimated to generate 2,788 new weekday daily trips with 339 trips occurring in the AM peak hour and 190 trips occurring in the PM peak hour.

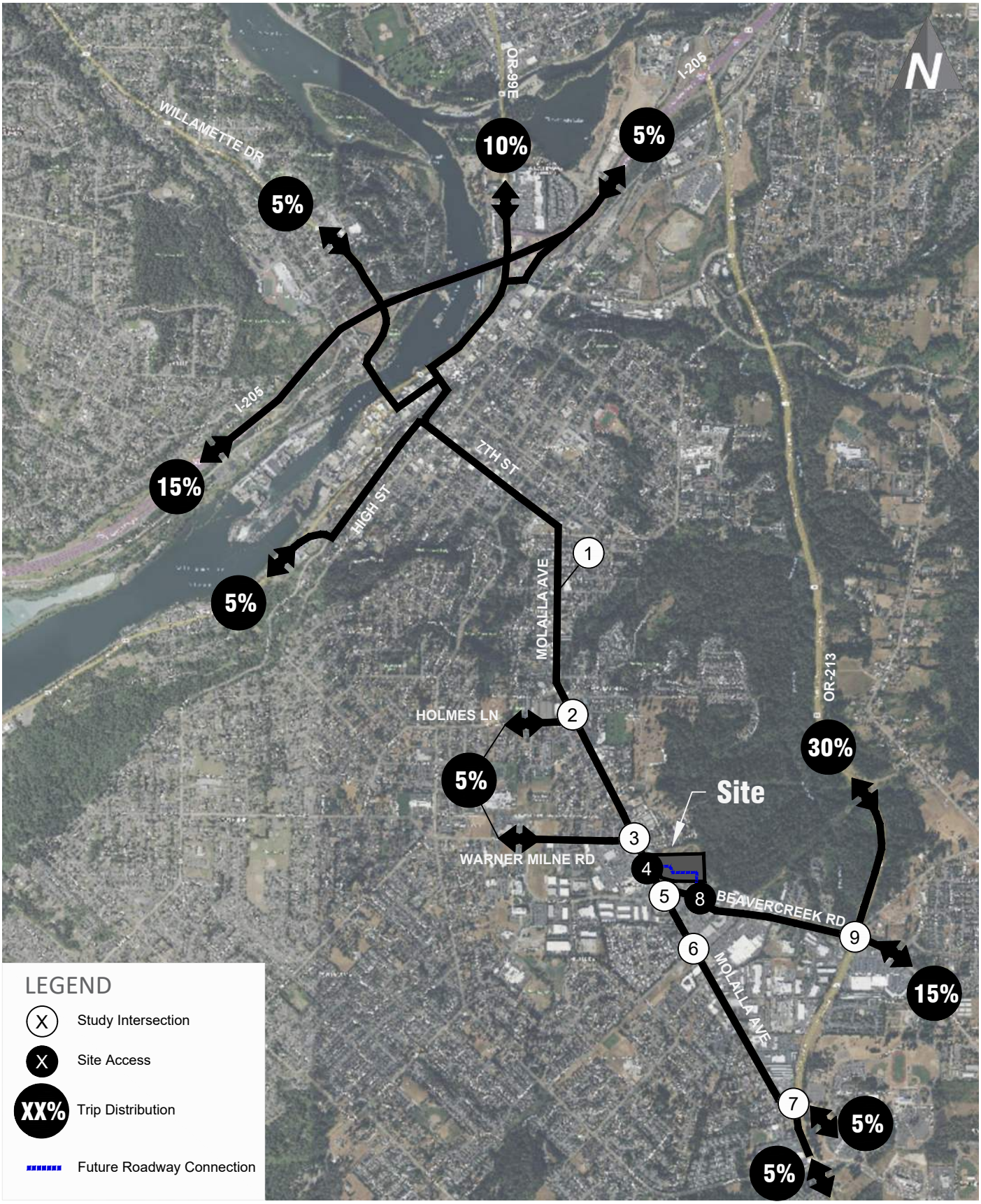
Trip Distribution and Assignment

Individual trip distribution patterns for the residential and commercial uses were estimated to and from the project site and were coordinated with City staff.

The residential trip distribution pattern was estimated based on U.S. Census Bureau's *OnTheMap* tool. *OnTheMap* is a web-based mapping and reporting application, which shows where workers are employed and where they live based on census data. The *OnTheMap* census data was translated to the number of people that live within a quarter-mile radius of the proposed project and where they work. The residential use project trip distribution for vehicle trips is shown in Figure 6.

Trip distribution patterns assumed for the commercial uses to and from the project site were generally assumed to be local and are based on the existing travel patterns in the vicinity of the project. The commercial use project trip distribution for vehicle trips is shown in Figure 7.

The weekday peak hour primary project trips were assigned to the study area based on the respective anticipated project trip distribution patterns. The commercial pass-by trips were assigned via the adjacent intersections of Molalla Avenue/Shared Business (Safeway) Driveway Shared Business (South Ridge) Driveway/Beavercreek Road. The resulting AM and PM peak hour trip assignment is illustrated in Figures 8 and 9, respectively.



Weekday Peak Hour Residential Project Trip Distribution

FIGURE 6

OR City Mixed-Use

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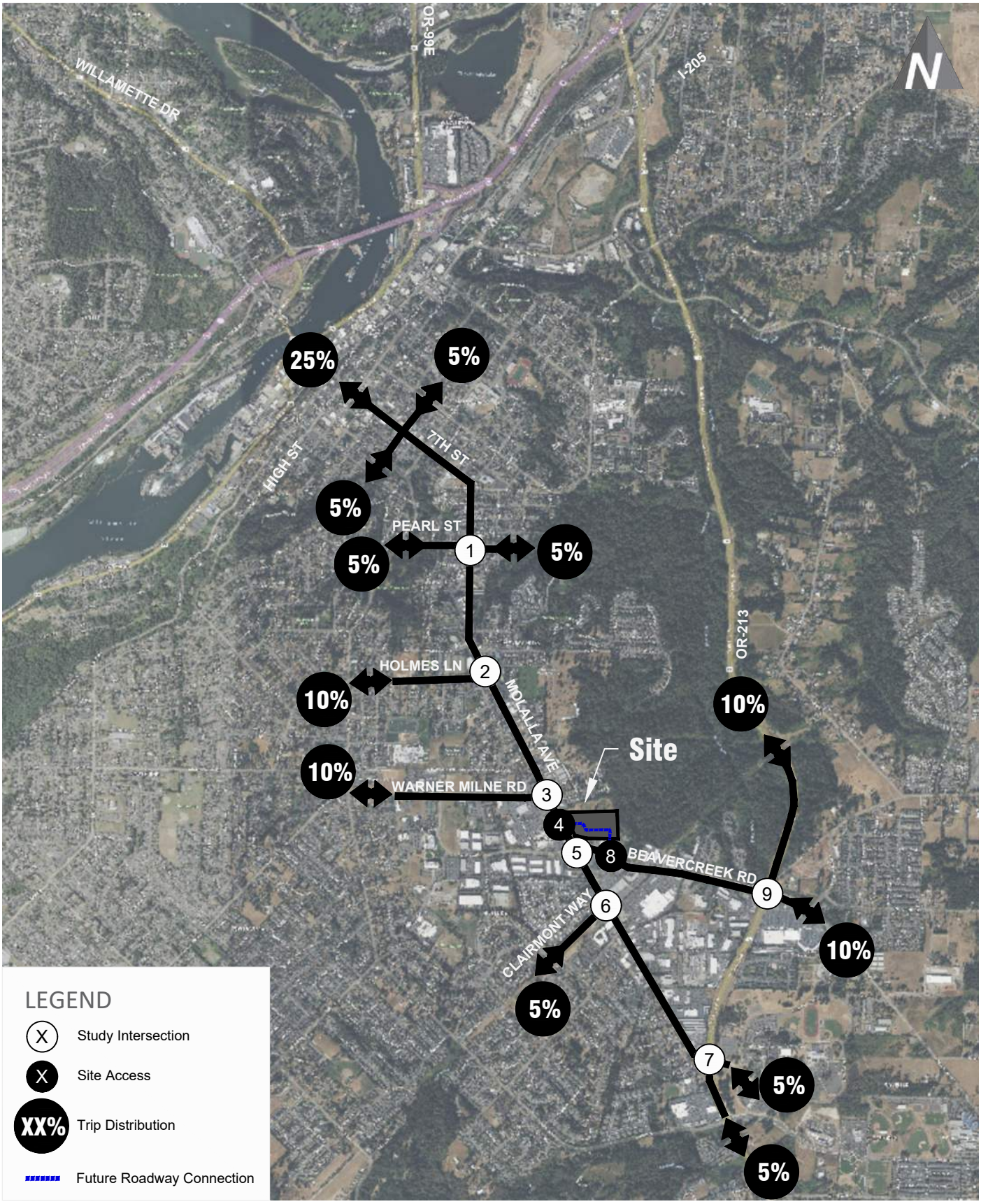

Weekday Peak Hour Commercial Project Trip Distribution

FIGURE 7

OR City Mixed-Use

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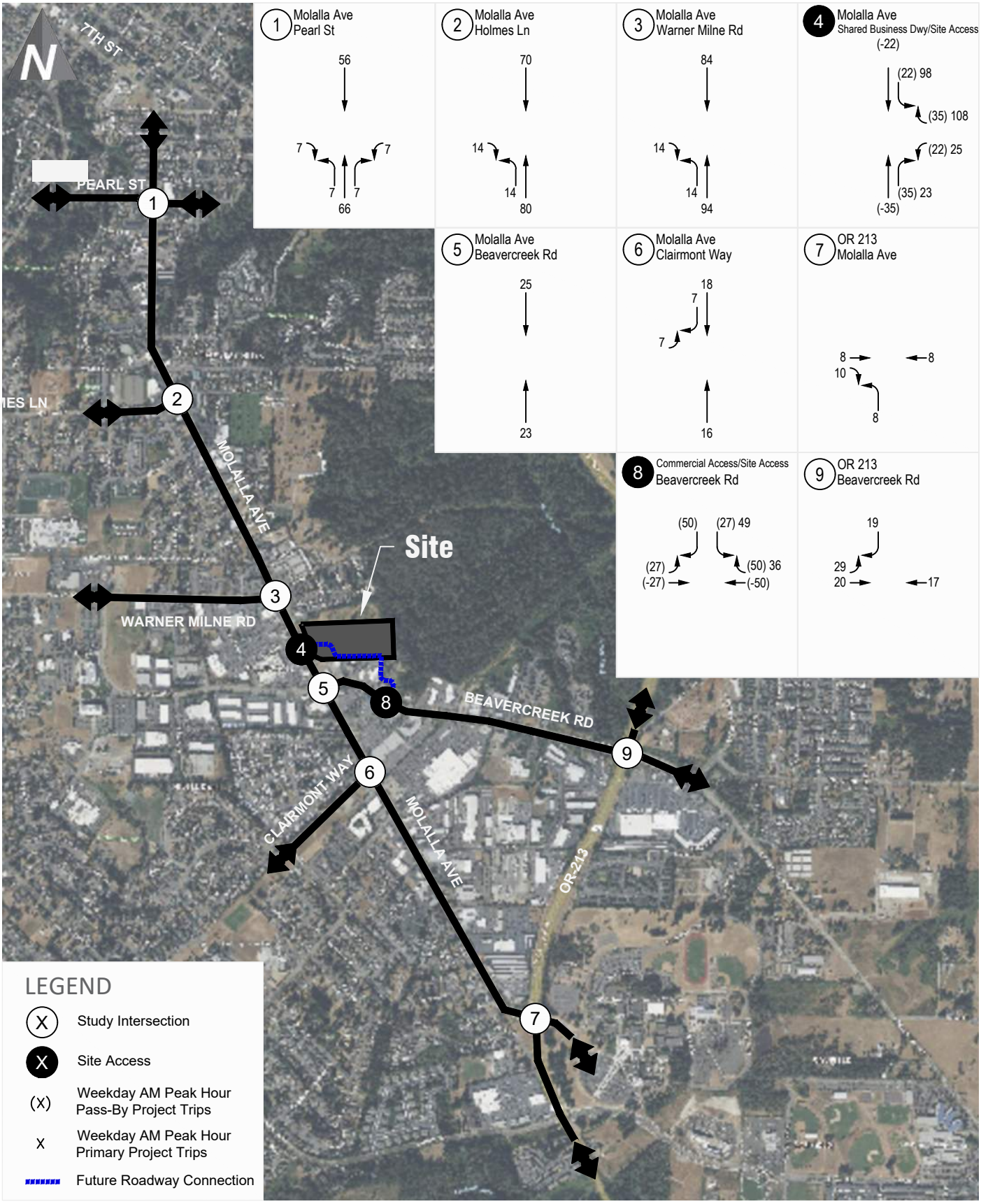

Weekday AM Peak Hour Project Trip Assignment

FIGURE 8

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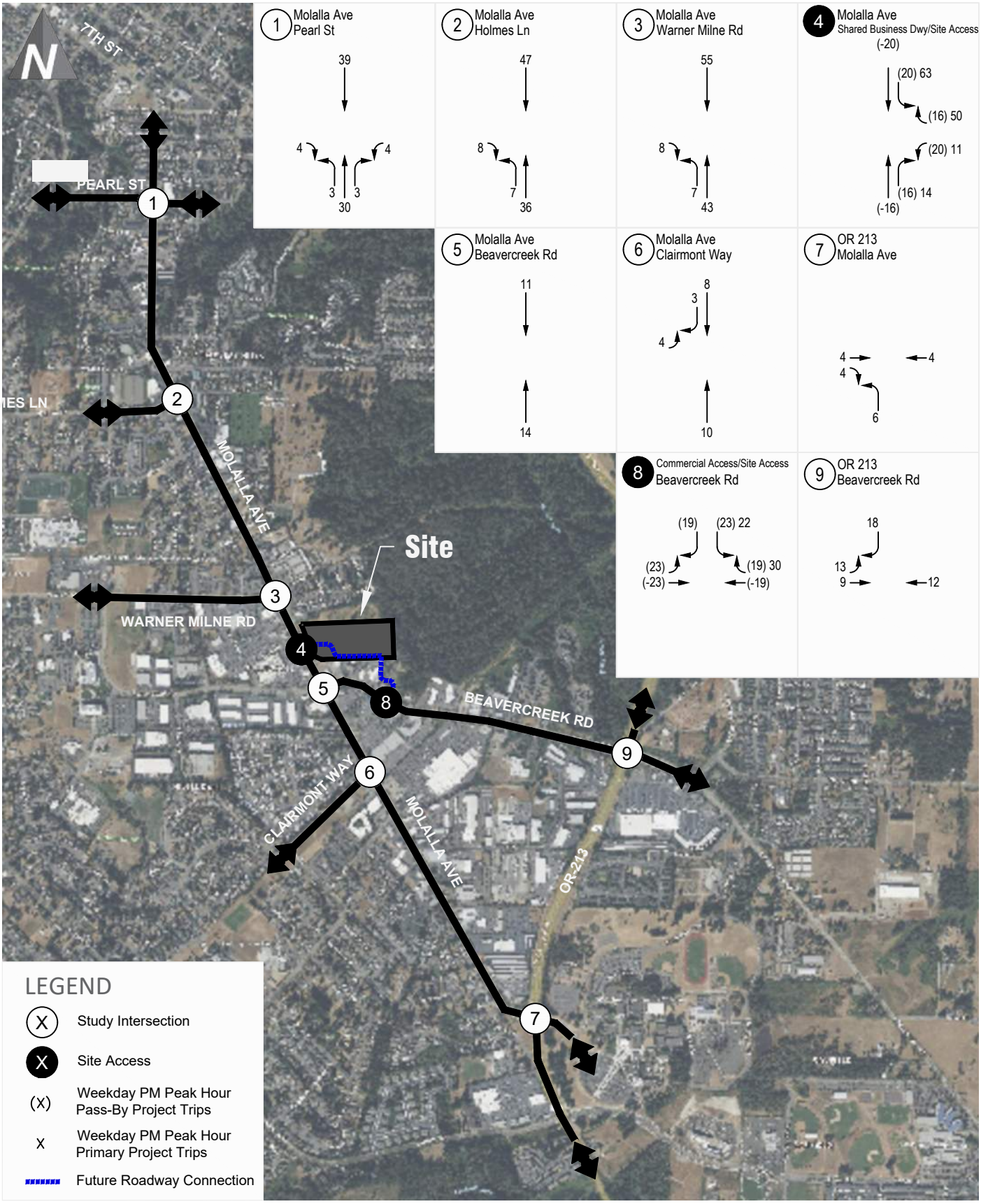

Weekday PM Peak Hour Project Trip Assignment

FIGURE 9

OR City Mixed-Use

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Future With-Project Traffic Volumes

Site-generated weekday peak hour traffic volumes were added to the future without-project traffic volumes at the study intersections. Additionally, with the new roadway connection between the existing signalized intersections along Molalla Avenue and Beavercreek Road, driveways are proposed for the project as well as a new driveway serving the existing commercial uses northeast of the Molalla Avenue/Beavercreek Road intersection. A portion of the estimated existing commercial uses were assumed to utilize the proposed driveway. The resulting future (2030) with-project peak hour traffic volumes are illustrated on Figure 10.

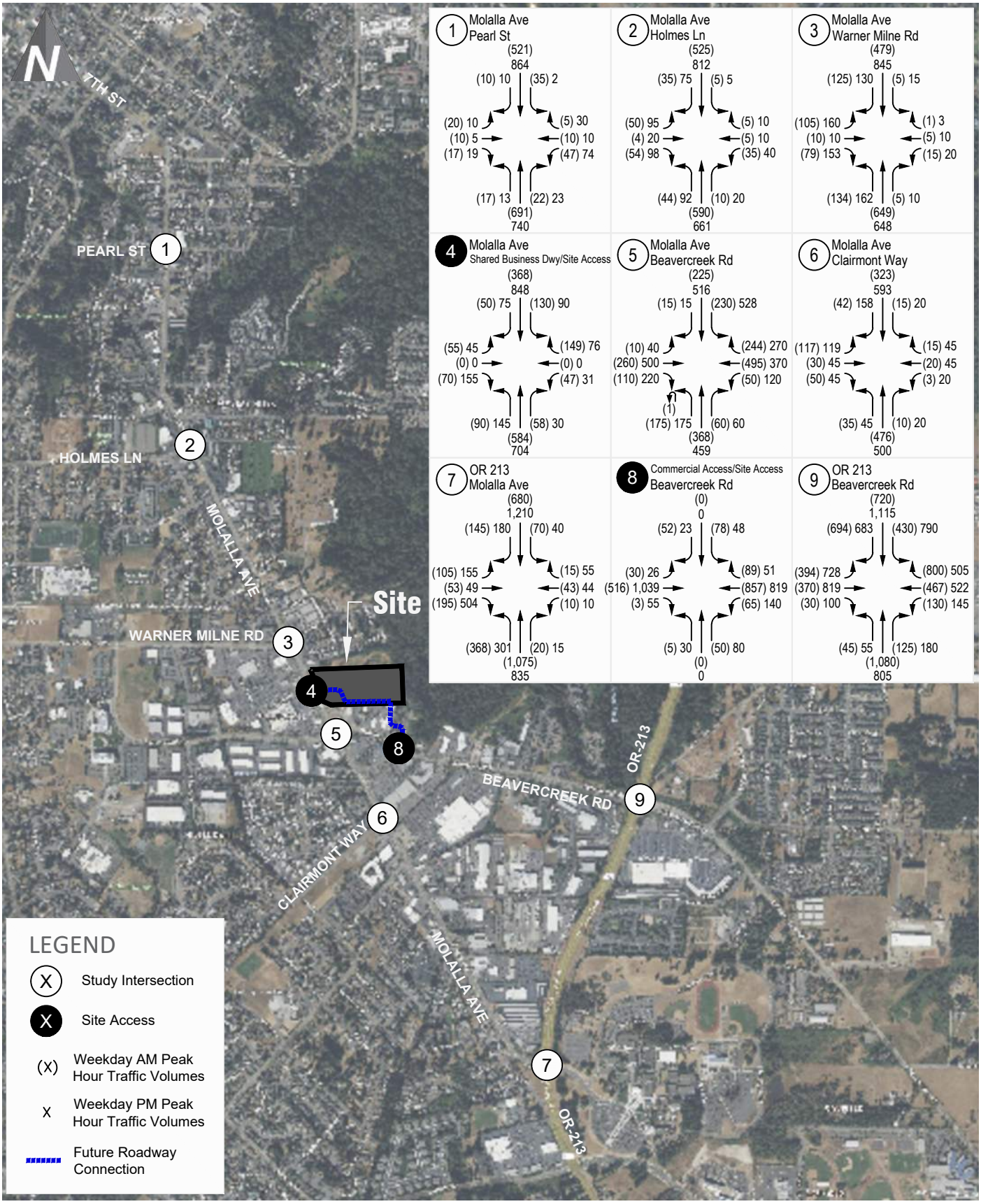
Table 4 summarizes the anticipated increase in total entering traffic at the off-site study intersections as well as the percent of future with-project traffic volumes attributable to the proposed project.

Table 4. Peak Hour Traffic Volume Impacts at Study Intersections

Intersection	Future (2030) Without-Project TEV	Project Trips TEV[1]	Shift of Existing Commercial	Future (2030) With-Project TEV	Percent Share
AM Peak Hour					
1. Molalla Ave/Pearl St	1,255	150	-	1.405	10.7%
2. Molalla Ave/Holmes Ln/Hilda St	1,184	178	-	1,362	13.1%
3. Molalla Ave/Warner Milne Rd	1,406	206	-	1,612	12.8%
4. Molalla Ave/Shared Business Dwy (Safeway)	1,290	311	0	1,601	19.4%
5. Molalla Ave/Beavercreek Rd	2,211	48	-16	2,243	1.4%
6. Molalla Ave/Clairmont Way	1,088	48	-	1,136	4.2%
7. OR 213/Molalla Ave	2,745	34	-	2,779	1.2%
8. Shared Business Dwy (South Ridge)/ Beavercreek Rd	1,578	162	5	1,745	9.6%
9. OR 213/Beavercreek Rd	5,200	85	-	5,285	1.6%
PM Peak Hour					
1. Molalla Ave/Pearl St	1,717	83	-	1,800	4.6%
2. Molalla Ave/Holmes Ln/Hilda St	1,840	98	-	1,938	5.1%
3. Molalla Ave/Warner Milne Rd	2,053	113	-	2,166	5.2%
4. Molalla Ave/Shared Business Dwy (Safeway)	2,025	174	0	2,199	7.9%
5. Molalla Ave/Beavercreek Rd	3,265	25	-17	3,273	0.3%
6. Molalla Ave/Clairmont Way	1,630	25	-	1,655	1.5%
7. OR 213/Molalla Ave	3,380	18	-	3,398	0.5%
8. Shared Business Dwy (South Ridge)/ Beavercreek Rd	2,212	94	6	2,311	4.3%
9. OR 213/Beavercreek Rd	6,395	52	-	6,447	0.8%

Note: TEV = Total Entering Vehicles
1. TEV project trips are inclusive of both primary and pass-by trips at the intersection as applicable.

As shown in Table 4, the project share in future (2030) traffic volumes is estimated to be approximately 8 percent or less during the weekday PM peak hours and up to 19 percent during the weekday AM peak hours at all of the study intersections.



Future (2030) With-Project Peak Hour Traffic Volumes

FIGURE 10

OR City Mixed-Use

transpogroup

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Future With-Project Traffic Operations

Future (2030) with-project study intersection operations were evaluated during both the weekday AM and PM peak hours. The v/c ratio and delay were calculated for with-project conditions consistent with the methodology described for existing and without-project conditions. Analysis parameters such as lane channelization and signal timing were assumed to be consistent with the future without-project conditions. Table 5 compares the future (2030) without- and with-project intersection operations for the weekday AM and PM peak hours. Operational worksheets are included in Appendix B.

Note that the intersections of Molalla Avenue/Shared Business Driveway (Safeway) and Shared Business Driveway (South Ridge)/Beavercreek Road both assume the added legs to accommodate the new road connection between the intersections to be constructed with the proposed project. The new leg at each of the existing traffic signals was analyzed as a three-lane section with a separate left turn lane and shared through-right turn lane. The signal timing at each intersection was assumed to be permissive for the added approaches, consistent with the current timing. Additional discussion of the new roadway segment between Molalla Avenue and Beavercreek Road is provided in the site access section in the subsequent section.

Table 5. Future (2030) Without & With-Project Peak Hour Intersection Operations

Intersection	Traffic Control	Future (2030) Without-Project		Future (2030) With-Project	
		v/c[1]	Delay[2]	v/c	Delay
Weekday AM Peak Hour					
1. Molalla Ave/Pearl St	Signal	0.46	4.9	0.52	5.3
2. Molalla Ave/Holmes Ln/Hilda St	Signal	0.40	8.1	0.46	8.5
3. Molalla Ave/Warner Milne Rd	Signal	0.27	10.5	0.30	10.6
4. Molalla Ave/Shared Business Dwy (Safeway)	Signal	0.51	10.8	0.58	13.4
5. Molalla Ave/Beavercreek Rd	Signal	0.51	17.9	0.52	18.1
6. Molalla Ave/Clairmont Way	Signal	0.44	10.8	0.45	11.0
7. OR 213/Molalla Ave	Signal	0.64	28.7	0.65	29.2
8. Shared Business Dwy (South Ridge)/ Beavercreek Rd	Signal	0.72	4.8	0.45	8.5
9. OR 213/Beavercreek Rd	Signal	0.81	47.1	0.83	50.1
Weekday PM Peak Hour					
1. Molalla Ave/Pearl St	Signal	0.60	5.9	0.63	6.1
2. Molalla Ave/Holmes Ln/Hilda St	Signal	0.66	10.7	0.70	11.5
3. Molalla Ave/Warner Milne Rd	Signal	0.44	12.2	0.48	12.7
4. Molalla Ave/Shared Business Dwy (Safeway)	Signal	0.58	14.5	0.50	15.5
5. Molalla Ave/Beavercreek Rd	Signal	0.76	28.1	0.77	28.5
6. Molalla Ave/Clairmont Way	Signal	0.68	16.4	0.69	17.0
7. OR 213/Molalla Ave	Signal	0.78	36.3	0.78	36.6
8. Shared Business Dwy (South Ridge)/ Beavercreek Rd	Signal	0.67	8.5	0.55	9.5
9. OR 213/Beavercreek Rd	Signal	0.94	75.4	0.94	77.8

Note: **Bold** indicates the required V/C standard is not met.
1. Volume to capacity (v/c) ratio reported for the overall intersection at signalized intersections.
2. Average delay per vehicle in seconds reported for the overall intersection delay at signalized intersections.

As shown in Table 5, with the addition of the project, the study intersections are forecast to continue meeting the required v/c standards with a v/c ratio of 0.94 or less during the weekday AM and PM peak hour conditions. The v/c ratio is forecast to increase by 0.04 or less during both the weekday AM and PM peak hours relative to future (2030) without project conditions with the exception of at the

2 intersections of the added roadway segment between Molalla Avenue and Beavercreek Road due to the added legs of the intersection and resulting in a reduction in the v/c ratio.

Site Access Analysis

Access to and from the site will be provided via the new roadway constructed between the existing signalized intersections of Molalla Avenue/Shared Business (Safeway) Driveway Shared Business (South Ridge) Driveway/Beavercreek Road. The proposed road section between Molalla Avenue and Beavercreek Road is illustrated in Figure 2. As shown in the figure, a three-lane section is proposed along the project frontage extending from Molalla Avenue beyond the commercial accesses which then transitions to a two lane section to Beavercreek Road.

The traffic operational review for the site focused on the following key aspects as requested by City staff which are reviewed in the sections below.

- **Modified Traffic Signals** – The operations at the modified signals were evaluated both in terms of v/c of the intersections as well as 95th percentile queues.
- **Left-turn lane warrants** – A three lane section providing a two-way left turn lane is proposed through the project's commercial driveways but then is proposed to transition to a two-lane section. A warrant review is conducted to confirm if left turn lanes are recommended at the two driveways further to the east of this section. The two known driveway locations are illustrated in Figure 2.
- **On-site queueing** – The on-site queuing associated with the proposed drive-throughs.

Modified Traffic Signals

The traffic operations at the intersections of Molalla Avenue/Shared Business (Safeway) Driveway and Shared Business (South Ridge) Driveway/Beavercreek Road intersections were evaluated under future (2030) with-project conditions for the weekday AM and PM peak hours. As noted above, the new leg at each of the existing traffic signals is assumed to be a three-lane section with a separate left turn lane and shared through-right turn lane. The signal timing at each intersection was assumed to be permissive for the added approaches, consistent with the current timing. The resulting operations are summarized in Table 5 above. As shown in the table, both intersections are forecast to meet the required operational standards, operating with a v/c of 0.58 or lower during the weekday AM and PM peak hours.

The 95th percentile queues (the queues that are only exceeded 5% of the time) at the signalized access intersections along Molalla Avenue and Beavercreek Road were also evaluated using synchro, consistent with the operational analysis and are summarized in Table 6.

The 95th percentile queues of the westbound approach at the Molalla Avenue signal and the southbound approach at the Beavercreek Road signal (i.e. the approaches of the new roadway added with the project) are forecast to be approximately 3 vehicles or less. These forecast queues will be able to be accommodated within the provided storage at each intersection. These queues correspond with the forecast weekday AM and PM peak hour volumes along the proposed roadway section with the opening of the project of approximately 630 trips (in/out) split between the 2 accesses as illustrated in Figure 10 above.

The queues of the other approaches are anticipated to have minimal change with the project relative to without project conditions (i.e. approximately 1 car length or less increase in 95th percentile queues with the project compared to without the project). Additionally, all 95th percentile queues at the two signals are forecast to be accommodated within the available storage with the exception of the northbound left-turn queue at the Molalla Avenue signal during the PM peak hour.

Table 6. Future (2030) Molalla Ave & Beavercreek Rd Intersection 95th Percentile Queues

Movement	4. Molalla Ave/Shared Business Dwy (Safeway)					8. Shared Business Dwy (South Ridge)/ Beavercreek Rd				
	Available Storage[2]	AM Peak Hour		PM Peak Hour		Available Storage	AM Peak Hour		PM Peak Hour	
		Without-Project	With-Project	Without-Project	With-Project		Without-Project	With-Project	Without-Project	With-Project
Eastbound Left-Turn	110'	25'	30'	30'	30'	115'	<25'	<25'	<25'	<25'
Eastbound through/right	110'	30'	35'	105'	110'	715'	35'	50'	160'	160'
Westbound Left-Turn	-[1]	-	25'	-	25'	115'	<25'	<25'	25'	25'
Westbound through/right	-[1]	-	80'	-	50'	630'	<25'	95'	60'	85'
Northbound Left-Turn	100'	45'	60'	**110'**	**115'**	50'	<25'	<25'	25'	25'
Northbound through/right	530'	60'	95'	95'	110'	50'	25'	25'	40'	40'
Southbound Left-Turn	-[1]	<25'	60'	<25'	40'	-[1]	-	35'	-	25'
Southbound through/right	500'	75'	85'	225'	230'	-[1]	-	<25'	-	<25'

Note: **Bold** indicates the 95th percentile queues exceeds the available storage. Shading indicates the approaches of the new roadway added with the project.
1. Intersection movement being added and/or modified with project.
2. Available queueing storage distance to the adjacent intersection. Turn lane storage assumes storage plus full width opening (not including the taper).

The northbound left-turn 95th percentile queue at the Molalla Avenue signal is forecast to have up to 1 vehicle extending beyond the available storage under both future (2030) without-project and with-project conditions. The table shows that the 95th percentile queue is forecast to increase by 5' (less than 1 vehicle) with the project as compared to without project conditions, even though the project does not add any trips to the northbound left-turn movement. This minimal increase in 95th percentile queue is due to the actuated signal timing of the intersection, which adapts phasing time allocations to movements based on volumes of the intersection. Due to the addition of the east leg added with the project, the phase time at the actuated signal adjusts accordingly, resulting in the slight added forecast 95th percentile queue of the northbound left-turn movement. Although the 95th northbound left-turn percentile queue is forecast to exceed the storage, the average queue is forecast to be accommodated within the available storage under both future (2030) without- and with-project conditions at approximately 65 feet or less during the PM peak hour.

Left-Turn Lane Warrants

Left-turn lane warrants have been reviewed for the proposed Les Schwab Access and the eastern residential access located on the east side of the project site along the proposed Public Access Road. Based on the City of Oregon City's Turn Lane Warrant guidelines defined in the Transportation Impact Analysis Guidelines (July 2021), Section 7.14.2, the "Engineer shall exercise professional judgement in evaluating the need for, and benefit of, providing dedicated left-turn lanes". The City provided references to consider include the AASHTO *Policy on Geometric Design of Highways and Streets* and the National Cooperative Highway Research Program (NCHRP) Report 457 *Evaluating Intersection Improvements.* The left turn warrants from both sources were evaluated assuming the future (2030) with-project weekday peak hour traffic volumes. The left-turn warrant evaluation is included in Appendix D. As shown in the appendix, no left-turn lanes are warranted at any of the site access intersections under the future (2030) weekday AM or PM peak hours.

In addition to the driveways associated with the project, additional accesses are anticipated on the south side of the internal roadway in the future as identified as part of the Beavercreek Road Access Management Plan as illustrated in Figure 2. These access points would serve the existing commercial development adjacent to Les Schwab located between the commercial and residential driveways within the proposed two-lane roadway section. The turn lane needs associated with that potential future development would be evaluated as part of that future project and if shown to be warranted, the widening to accommodate a turn lane could be provided to the south of the proposed road.

On-Site Queueing

Additionally, on-site queuing associated with the proposed drive-through uses on both Parcels A and D were evaluated. The drive-through queuing was estimated using the Poisson queuing distribution. The total external inbound vehicle trips (inclusive of pass-by trips) were assumed to utilize the drive through for purposes of providing a conservative queueing analysis. The average service time for a fast-food restaurant drive-through window is approximately 4 minutes based on the annual study conducted by QSR[6]. This service time was assumed for both the drive-through uses proposed. The resulting queueing for each is summarized below with detailed Poisson queuing worksheets provided in Appendix E.

- Parcel A – The drive-through proposed along the northern side of the retail building includes approximately 335 feet of storage with dual lanes allowing for approximately 500 feet of total storage or at least 20 vehicles. The weekday AM and PM peak hour anticipated drive-through 95th-percentile queue lengths are estimated to be 17 vehicles which would be accommodated within the proposed drive-through storage.

- Parcel D – The weekday AM and PM peak hour anticipated drive-through 95th-percentile queue lengths are estimated to be 13 vehicles or less or up to 7 vehicles per lane. The proposed site plan illustrates each drive lane can accommodate a queue of at least 275’ or 11 vehicles per lane; therefore, the queues are anticipated to be accommodated within the proposed driveway storage.

[6] *25th Anniversary Edition Drive-Thru Study (Intouch Insight and QSR).*

Mitigation Measures

Based on the operational review above for both without and with-project conditions, all off-site study intersections are forecast to continue to meet the established v/c thresholds with the addition of project generated traffic.

Based on coordination with City staff, a pro-rata share contribution is required for the TSP project #D95, Beavercreek Road/OR-213 added westbound right turn merge lane as noted above. The City has indicated the current rate is $404 per weekday PM peak hour trip. As shown in Table 4 above, the project is forecast to contribute 52 project trips to the intersection during the PM peak hour. This results in an estimated fee of $21,008 at this location as pro-rata share contribution to the planned improvement project.

Additionally, a Transportation System Development Charge (TSDC) will be required associated with the development of the project's land uses.[7] The project site is located inside the Molalla Avenue Corridor SDC Special Location Discount Area. Based on the current TSDC rates (Effective July 1, 2018), multi-family developments are required to pay a fee of $6,474 per multi-family dwelling unit constructed. Non-residential developments are required to submit a *System Development Charges Request Form* to the City to determine the fee required. The residential portion of the project proposed to construct 210 multifamily dwelling units will require a fee of $1,359,540. The TSDC associated with the non-residential uses proposed on site will be determined by the City of Oregon City following the submittal of the *System Development Charges Request Form*.

[7] Each of the pad users will pay their own fees when they proceed with their own pad development.

Findings and Recommendations

This traffic impact analysis summarizes the project traffic impacts of the proposed Oregon City Mixed-Use project located at 1367 Molalla Avenue in Oregon City. General findings and recommendations include:

- **Project Description** – The proposed project will construct a 14,600 sf retail, a 4,900 sf fast food restaurant with drive through, and up to 210 multifamily apartment units on 3 parcels in Oregon City along with a 4th parcel being used for right-of-way.

- **Trip Generation** – Accounting for internal capture of trips that will occur between the proposed uses and pass-by trips associated with the commercial uses of the project, the proposed project is estimated to generate 2,788 new weekday daily trips with 339 trips occurring in the AM peak hour and 190 trips occurring in the PM peak hour.

- **Traffic Operations** – With the addition of project generated traffic, all of the study intersections are forecast to continue meeting the required v/c standards with a v/c ratio of 0.94 or less during the weekday AM and PM peak hour conditions. The v/c ratio is forecast to increase by 0.04 or less during both the weekday AM and PM peak hours relative to future (2030) without project conditions.

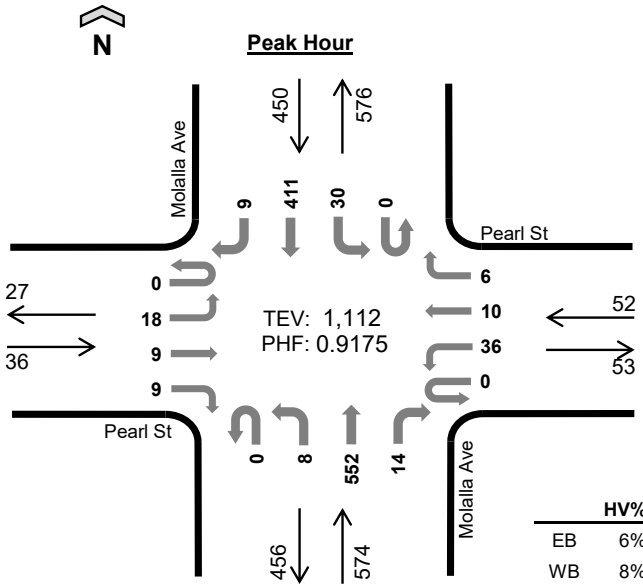
- **Site Access** – Access to and from the site will be provided via the new roadway constructed between the existing signalized intersections of Molalla Avenue/Shared Business (Safeway) Driveway Shared Business (South Ridge) Driveway/Beavercreek Road.
    - The two signalized intersections are forecast to operate acceptably.
    - The 95th percentile queues of the westbound approach at the Molalla Avenue signal and the southbound approach at the Beavercreek Road signal (i.e. the approaches of the new roadway added with the project) are forecast to be approximately 3 vehicles or less. Additionally, the queues of the other approaches at the two signalized intersections are anticipated to have minimal change with the project relative to without project conditions (i.e. approximately 1 car length or less increase in 95th percentile queues with the project compared to without the project).
    - The proposed road section is three-lane through the commercial area and then transitions to a two-lane section further east. This proposed section was confirmed through a warrant analysis for current uses. Any future development and associated need for widening to accommodate turn lanes would be assessed and could be provided to the south of the proposed road.

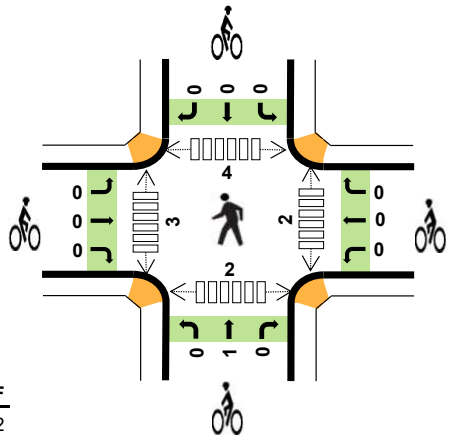
- **Mitigation** – The total TSDC associated with the land uses of the proposed project will be determined by the City of Oregon City following the submittal of the *System Development Charges Request Form*. Additionally, the project would contribute its pro-rata share at the Beavercreek Road/OR-213 intersection toward TSP project #D95, Beavercreek Road/OR-213 added westbound right turn merge lane.

Appendix A: Traffic Counts

Molalla Ave
Pearl St

Date: 9/9/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM





	HV%	PHF
EB	6%	0.82
WB	8%	0.76
NB	4%	0.91
SB	4%	0.92
TOTAL	4%	0.92

Peak Hour Count Summaries

Peak Hour Interval Start		Pearl St Eastbound				Pearl St Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:45 AM		**0**	**3**	**4**	**4**	**0**	**11**	**1**	**2**	**0**	**3**	**147**	**7**	**0**	**11**	**108**	**2**	**303**	**0**
8:00 AM		**0**	**4**	**3**	**1**	**0**	**8**	**6**	**1**	**0**	**1**	**125**	**2**	**0**	**14**	**105**	**3**	**273**	**0**
8:15 AM		**0**	**6**	**0**	**1**	**0**	**4**	**2**	**0**	**0**	**2**	**137**	**2**	**0**	**4**	**87**	**3**	**248**	**0**
8:30 AM		**0**	**5**	**2**	**3**	**0**	**13**	**1**	**3**	**0**	**2**	**143**	**3**	**0**	**1**	**111**	**1**	**288**	**1,112**
Pk Hr	All	**0**	**18**	**9**	**9**	**0**	**36**	**10**	**6**	**0**	**8**	**552**	**14**	**0**	**30**	**411**	**9**	**1,112**	
	HV	**0**	**1**	**0**	**1**	**0**	**2**	**2**	**0**	**0**	**0**	**22**	**0**	**0**	**0**	**16**	**1**	**45**	
	HV%	-	**6%**	**0%**	**11%**	-	**6%**	**20%**	**0%**	-	**0%**	**4%**	**0%**	-	**0%**	**4%**	**11%**	**4%**	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:45 AM	**1**	**1**	**5**	**4**	***11***	**0**	**0**	**0**	**0**	***0***	**1**	**1**	**0**	**2**	***4***
8:00 AM	**0**	**2**	**5**	**6**	***13***	**0**	**0**	**0**	**0**	***0***	**1**	**2**	**1**	**0**	***4***
8:15 AM	**1**	**0**	**6**	**2**	***9***	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**1**	**0**	***1***
8:30 AM	**0**	**1**	**6**	**5**	***12***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**2**	**0**	***2***
Peak Hour	**2**	**4**	**22**	**17**	***45***	**0**	**0**	**1**	**0**	***1***	**2**	**3**	**4**	**2**	***11***

Kyle Campbell
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Count Summaries - All Vehicles

Interval Start	Pearl St Eastbound				Pearl St Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	7	4	2	0	4	1	0	0	1	140	2	0	0	46	2	209	0
7:15 AM	0	2	1	2	0	5	0	0	0	2	158	3	0	2	66	3	244	0
7:30 AM	0	4	7	3	0	3	0	1	0	4	161	3	0	5	79	0	270	0
7:45 AM	**0**	**3**	**4**	**4**	**0**	**11**	**1**	**2**	**0**	**3**	**147**	**7**	**0**	**11**	**108**	**2**	**303**	**1,026**
8:00 AM	**0**	**4**	**3**	**1**	**0**	**8**	**6**	**1**	**0**	**1**	**125**	**2**	**0**	**14**	**105**	**3**	**273**	**1,090**
8:15 AM	**0**	**6**	**0**	**1**	**0**	**4**	**2**	**0**	**0**	**2**	**137**	**2**	**0**	**4**	**87**	**3**	**248**	**1,094**
8:30 AM	**0**	**5**	**2**	**3**	**0**	**13**	**1**	**3**	**0**	**2**	**143**	**3**	**0**	**1**	**111**	**1**	**288**	**1,112**
8:45 AM	0	4	1	6	0	14	2	1	0	3	131	5	0	1	130	1	299	1,108
Count Total	0	35	22	22	0	62	13	8	0	18	1,142	27	0	38	732	15	2,134	
Pk Hr All	**0**	**18**	**9**	**9**	**0**	**36**	**10**	**6**	**0**	**8**	**552**	**14**	**0**	**30**	**411**	**9**	**1,112**	
Pk Hr HV	**0**	**1**	**0**	**1**	**0**	**2**	**2**	**0**	**0**	**0**	**22**	**0**	**0**	**0**	**16**	**1**	**45**	
Pk Hr HV%	**-**	**6%**	**0%**	**11%**	**-**	**6%**	**20%**	**0%**	**-**	**0%**	**4%**	**0%**	**-**	**0%**	**4%**	**11%**	**4%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	1	0	7	3	*11*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	0	0	7	2	*9*	0	0	2	1	*3*	1	0	1	0	*2*
7:30 AM	0	0	3	4	*7*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	**1**	**1**	**5**	**4**	**11**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**2**	**4**
8:00 AM	**0**	**2**	**5**	**6**	**13**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**1**	**0**	**4**
8:15 AM	**1**	**0**	**6**	**2**	**9**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**1**	**0**	**1**
8:30 AM	**0**	**1**	**6**	**5**	**12**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**
8:45 AM	1	1	6	2	*10*	0	0	0	1	*1*	0	2	0	0	*2*
Count Total	4	5	45	28	*82*	0	0	3	2	*5*	3	5	5	2	*15*
Peak Hour	**2**	**4**	**22**	**17**	***45***	**0**	**0**	**1**	**0**	***1***	**2**	**3**	**4**	**2**	**11**

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Count Summaries - Heavy Vehicles

Interval Start	Pearl St				Pearl St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	1	0	0	0	0	0	1	5	1	0	0	3	0	11	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	7	0	0	0	2	0	9	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	4	0	7	0
7:45 AM	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**4**	**0**	**11**	**38**
8:00 AM	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**6**	**0**	**13**	**40**
8:15 AM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**2**	**0**	**9**	**40**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**4**	**1**	**12**	**45**
8:45 AM	0	1	0	0	0	0	1	0	0	1	5	0	0	0	2	0	10	44
Count Total	0	2	0	2	0	2	3	0	0	2	42	1	0	0	27	1	82	
Pk Hr Heavy	**0**	**1**	**0**	**1**	**0**	**2**	**2**	**0**	**0**	**0**	**22**	**0**	**0**	**0**	**16**	**1**	**45**	

Count Summaries - Bikes

Interval Start	Pearl St				Pearl St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	3	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**1**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
Count Total	0	0	0	0	0	0	0	0	0	0	3	0	0	0	2	0	5	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	

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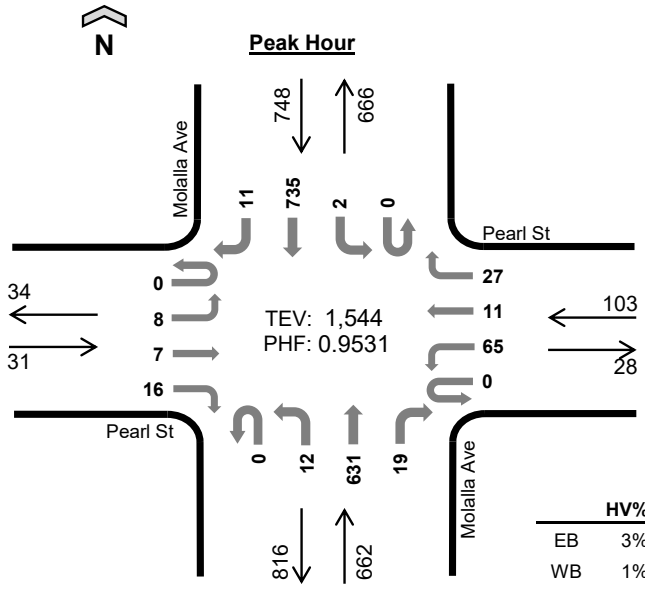
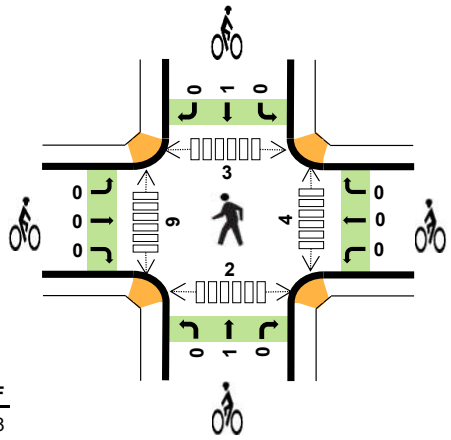
Molalla Ave
Pearl St



Date: 9/9/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM



	HV%	PHF
EB	3%	0.78
WB	1%	0.74
NB	2%	0.93
SB	1%	0.87
TOTAL	1%	0.95

Peak Hour Count Summaries

Peak Hour Interval Start		Pearl St Eastbound				Pearl St Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:30 PM		**0**	**3**	**2**	**3**	**0**	**14**	**4**	**5**	**0**	**3**	**151**	**6**	**0**	**2**	**207**	**5**	**405**	**0**
4:45 PM		**0**	**0**	**4**	**3**	**0**	**18**	**2**	**3**	**0**	**6**	**148**	**3**	**0**	**0**	**204**	**4**	**395**	**0**
5:00 PM		**0**	**1**	**1**	**4**	**0**	**16**	**5**	**14**	**0**	**2**	**170**	**6**	**0**	**0**	**166**	**0**	**385**	**0**
5:15 PM		**0**	**4**	**0**	**6**	**0**	**17**	**0**	**5**	**0**	**1**	**162**	**4**	**0**	**0**	**158**	**2**	**359**	**1,544**
Pk Hr	All	**0**	**8**	**7**	**16**	**0**	**65**	**11**	**27**	**0**	**12**	**631**	**19**	**0**	**2**	**735**	**11**	**1,544**	
	HV	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**10**	**0**	**0**	**0**	**8**	**0**	**20**	
	HV%	-	**0%**	**0%**	**6%**	-	**0%**	**9%**	**0%**	-	**0%**	**2%**	**0%**	-	**0%**	**1%**	**0%**	**1%**	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:30 PM	**0**	**1**	**3**	**1**	***5***	**0**	**0**	**1**	**0**	***1***	**1**	**3**	**0**	**2**	***6***
4:45 PM	**0**	**0**	**5**	**2**	***7***	**0**	**0**	**0**	**1**	***1***	**1**	**3**	**0**	**0**	***4***
5:00 PM	**1**	**0**	**1**	**3**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**3**	**3**	**0**	***6***
5:15 PM	**0**	**0**	**1**	**2**	***3***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**0**	**0**	***2***
Peak Hour	**1**	**1**	**10**	**8**	***20***	**0**	**0**	**1**	**1**	**2**	**4**	**9**	**3**	**2**	***18***

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Count Summaries - All Vehicles

Interval Start	Pearl St Eastbound				Pearl St Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	3	3	0	23	1	2	0	3	158	2	0	0	189	4	388	0
4:15 PM	0	0	2	6	0	17	3	2	0	1	144	1	0	0	138	5	319	0
4:30 PM	**0**	**3**	**2**	**3**	**0**	**14**	**4**	**5**	**0**	**3**	**151**	**6**	**0**	**2**	**207**	**5**	**405**	**0**
4:45 PM	**0**	**0**	**4**	**3**	**0**	**18**	**2**	**3**	**0**	**6**	**148**	**3**	**0**	**0**	**204**	**4**	**395**	**1,507**
5:00 PM	**0**	**1**	**1**	**4**	**0**	**16**	**5**	**14**	**0**	**2**	**170**	**6**	**0**	**0**	**166**	**0**	**385**	**1,504**
5:15 PM	**0**	**4**	**0**	**6**	**0**	**17**	**0**	**5**	**0**	**1**	**162**	**4**	**0**	**0**	**158**	**2**	**359**	**1,544**
5:30 PM	0	6	3	2	0	14	0	8	0	2	153	6	0	1	141	2	338	1,477
5:45 PM	0	3	0	4	0	9	2	3	0	2	126	3	0	1	149	1	303	1,385
Count Total	0	17	15	31	0	128	17	42	0	20	1,212	31	0	4	1,352	23	2,892	
Pk Hr All	**0**	**8**	**7**	**16**	**0**	**65**	**11**	**27**	**0**	**12**	**631**	**19**	**0**	**2**	**735**	**11**	**1,544**	
Pk Hr HV	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**10**	**0**	**0**	**0**	**8**	**0**	**20**	
Pk Hr HV%	**-**	**0%**	**0%**	**6%**	**-**	**0%**	**9%**	**0%**	**-**	**0%**	**2%**	**0%**	**-**	**0%**	**1%**	**0%**	**1%**	

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) E	W	N	S	Total
4:00 PM	1	0	2	3	*6*	0	0	1	0	*1*	1	1	0	0	*2*
4:15 PM	0	0	3	4	*7*	0	0	1	2	*3*	3	0	4	0	*7*
4:30 PM	**0**	**1**	**3**	**1**	**5**	**0**	**0**	**1**	**0**	**1**	**1**	**3**	**0**	**2**	**6**
4:45 PM	**0**	**0**	**5**	**2**	**7**	**0**	**0**	**0**	**1**	**1**	**1**	**3**	**0**	**0**	**4**
5:00 PM	**1**	**0**	**1**	**3**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**3**	**0**	**6**
5:15 PM	**0**	**0**	**1**	**2**	**3**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**2**
5:30 PM	1	0	0	1	*2*	0	0	1	1	*2*	2	0	1	4	*7*
5:45 PM	0	0	2	0	*2*	0	0	0	0	*0*	0	2	0	0	*2*
Count Total	3	1	17	16	*37*	0	0	4	4	*8*	10	12	8	6	*36*
Peak Hour	**1**	**1**	**10**	**8**	***20***	**0**	**0**	**1**	**1**	***2***	**4**	**9**	**3**	**2**	**18**

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Count Summaries - Heavy Vehicles

Interval Start	Pearl St				Pearl St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	1	0	0	0	0	0	0	0	2	0	0	0	3	0	6	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	1	7	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**1**	**0**	**5**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**2**	**0**	**7**	**25**
5:00 PM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**3**	**0**	**5**	**24**
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**3**	**20**
5:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	17
5:45 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	12
Count Total	0	1	1	1	0	0	1	0	0	0	17	0	0	0	15	1	37	
Pk Hr Heavy	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**10**	**0**	**0**	**0**	**8**	**0**	**20**	

Count Summaries - Bikes

Interval Start	Pearl St				Pearl St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	3	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**6**
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
5:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2	3
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Count Total	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	0	8	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**2**	

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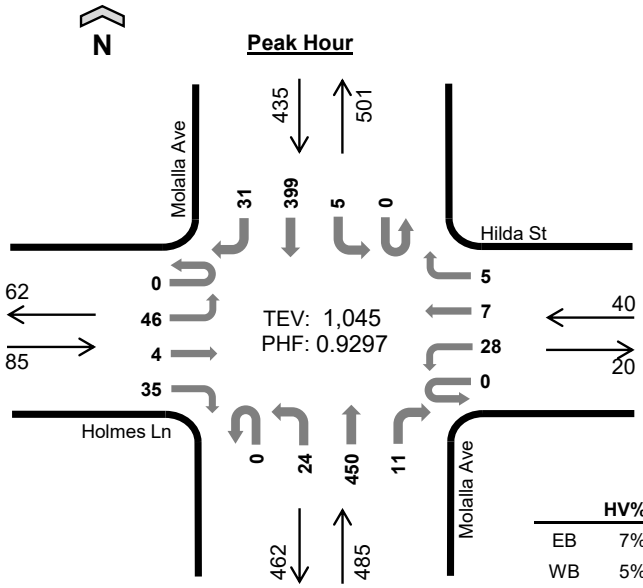
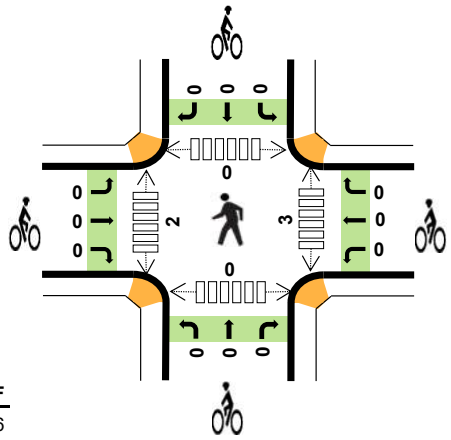
Molalla Ave
Holmes Ln

Date: 9/9/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 8:00 AM to 9:00 AM





	HV%	PHF
EB	7%	0.76
WB	5%	0.63
NB	4%	0.90
SB	4%	0.81
TOTAL	4%	0.93

Peak Hour Count Summaries

Peak Hour Interval Start		Holmes Ln Eastbound				Hilda St Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
8:00 AM		0	8	0	9	0	6	2	2	0	6	102	3	0	3	97	10	248	0
8:15 AM		0	10	2	7	0	12	3	1	0	5	115	2	0	0	77	5	239	0
8:30 AM		0	19	0	9	0	5	1	1	0	10	122	2	0	2	98	8	277	0
8:45 AM		0	9	2	10	0	5	1	1	0	3	111	4	0	0	127	8	281	1,045
Pk Hr	All	0	46	4	35	0	28	7	5	0	24	450	11	0	5	399	31	1,045	
	HV	0	3	0	3	0	2	0	0	0	3	16	0	0	0	12	4	43	
	HV%	-	7%	0%	9%	-	7%	0%	0%	-	13%	4%	0%	-	0%	3%	13%	4%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
8:00 AM	3	2	3	7	*15*	0	0	0	0	*0*	0	1	0	0	*1*
8:15 AM	2	0	6	2	*10*	0	0	0	0	*0*	1	0	0	0	*1*
8:30 AM	1	0	7	3	*11*	0	0	0	0	*0*	1	1	0	0	*2*
8:45 AM	0	0	3	4	*7*	0	0	0	0	*0*	1	0	0	0	*1*
Peak Hour	6	2	19	16	*43*	0	0	0	0	*0*	3	2	0	0	*5*

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Count Summaries - All Vehicles

Interval Start	Holmes Ln				Hilda St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	10	0	9	0	2	0	3	0	2	92	3	0	0	31	4	156	0
7:15 AM	0	16	0	3	0	2	3	7	0	2	107	1	0	1	65	4	211	0
7:30 AM	0	15	2	4	0	7	3	2	0	2	118	2	0	1	76	4	236	0
7:45 AM	0	23	5	7	0	9	1	3	0	3	106	2	0	2	99	2	262	865
8:00 AM	**0**	**8**	**0**	**9**	**0**	**6**	**2**	**2**	**0**	**6**	**102**	**3**	**0**	**3**	**97**	**10**	**248**	**957**
8:15 AM	**0**	**10**	**2**	**7**	**0**	**12**	**3**	**1**	**0**	**5**	**115**	**2**	**0**	**0**	**77**	**5**	**239**	**985**
8:30 AM	**0**	**19**	**0**	**9**	**0**	**5**	**1**	**1**	**0**	**10**	**122**	**2**	**0**	**2**	**98**	**8**	**277**	**1,026**
8:45 AM	**0**	**9**	**2**	**10**	**0**	**5**	**1**	**1**	**0**	**3**	**111**	**4**	**0**	**0**	**127**	**8**	**281**	**1,045**
Count Total	0	110	11	58	0	48	14	20	0	33	873	19	0	9	670	45	1,910	
Pk Hr All	**0**	**46**	**4**	**35**	**0**	**28**	**7**	**5**	**0**	**24**	**450**	**11**	**0**	**5**	**399**	**31**	**1,045**	
Pk Hr HV	**0**	**3**	**0**	**3**	**0**	**2**	**0**	**0**	**0**	**3**	**16**	**0**	**0**	**0**	**12**	**4**	**43**	
Pk Hr HV%	**-**	**7%**	**0%**	**9%**	**-**	**7%**	**0%**	**0%**	**-**	**13%**	**4%**	**0%**	**-**	**0%**	**3%**	**13%**	**4%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	5	0	3	2	*10*	0	0	0	0	*0*	1	1	0	0	*2*
7:15 AM	1	0	7	1	*9*	0	0	0	1	*1*	0	1	0	1	*2*
7:30 AM	0	0	2	2	*4*	0	0	0	0	*0*	1	0	0	0	*1*
7:45 AM	1	1	6	3	*11*	0	0	0	0	*0*	1	0	0	0	*1*
8:00 AM	**3**	**2**	**3**	**7**	**15**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**
8:15 AM	**2**	**0**	**6**	**2**	**10**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**
8:30 AM	**1**	**0**	**7**	**3**	**11**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**2**
8:45 AM	**0**	**0**	**3**	**4**	**7**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**
Count Total	13	3	37	24	*77*	0	0	0	1	*1*	6	4	0	1	*11*
Peak Hour	**6**	**2**	**19**	**16**	***43***	**0**	**0**	**0**	**0**	***0***	**3**	**2**	**0**	**0**	**5**

Kyle Campbell
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Count Summaries - Heavy Vehicles

Interval Start	Holmes Ln				Hilda St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	1	0	4	0	0	0	0	0	1	2	0	0	0	2	0	10	0
7:15 AM	0	0	0	1	0	0	0	0	0	0	7	0	0	0	1	0	9	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	4	0
7:45 AM	0	0	0	1	0	1	0	0	0	2	4	0	0	0	3	0	11	34
8:00 AM	**0**	**1**	**0**	**2**	**0**	**2**	**0**	**0**	**0**	**1**	**2**	**0**	**0**	**0**	**6**	**1**	**15**	**39**
8:15 AM	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**2**	**0**	**10**	**40**
8:30 AM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**2**	**5**	**0**	**0**	**0**	**1**	**2**	**11**	**47**
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**3**	**1**	**7**	**43**
Count Total	0	4	0	9	0	3	0	0	0	6	31	0	0	0	20	4	77	
Pk Hr Heavy	**0**	**3**	**0**	**3**	**0**	**2**	**0**	**0**	**0**	**3**	**16**	**0**	**0**	**0**	**12**	**4**	**43**	

Count Summaries - Bikes

Interval Start	Holmes Ln				Hilda St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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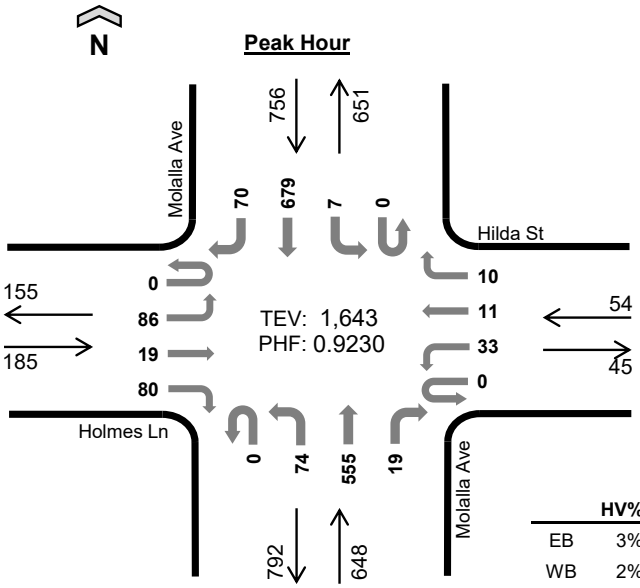
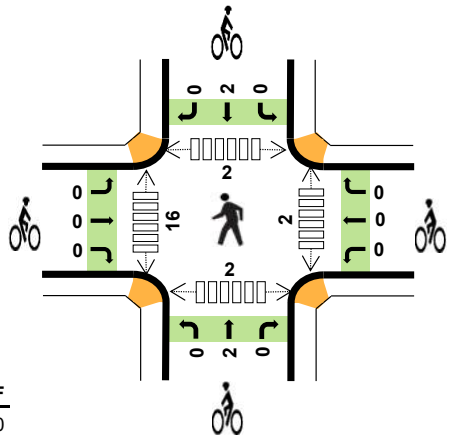
Molalla Ave
Holmes Ln

Date: 9/9/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM





	HV%	PHF
EB	3%	0.70
WB	2%	0.84
NB	2%	0.90
SB	1%	0.94
TOTAL	2%	0.92

Peak Hour Count Summaries

Peak Hour Interval Start		Holmes Ln Eastbound				Hilda St Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		**0**	**29**	**4**	**33**	**0**	**10**	**3**	**3**	**0**	**14**	**142**	**5**	**0**	**3**	**178**	**21**	**445**	**0**
4:15 PM		**0**	**20**	**5**	**18**	**0**	**11**	**2**	**3**	**0**	**24**	**126**	**7**	**0**	**2**	**144**	**9**	**371**	**0**
4:30 PM		**0**	**15**	**7**	**16**	**0**	**4**	**4**	**1**	**0**	**22**	**156**	**3**	**0**	**0**	**182**	**19**	**429**	**0**
4:45 PM		**0**	**22**	**3**	**13**	**0**	**8**	**2**	**3**	**0**	**14**	**131**	**4**	**0**	**2**	**175**	**21**	**398**	**1,643**
Pk Hr	All	**0**	**86**	**19**	**80**	**0**	**33**	**11**	**10**	**0**	**74**	**555**	**19**	**0**	**7**	**679**	**70**	**1,643**	
	HV	**0**	**2**	**0**	**3**	**0**	**1**	**0**	**0**	**0**	**3**	**10**	**0**	**0**	**0**	**8**	**3**	**30**	
	HV%	-	**2%**	**0%**	**4%**	-	**3%**	**0%**	**0%**	-	**4%**	**2%**	**0%**	-	**0%**	**1%**	**4%**	**2%**	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	**0**	**1**	**2**	**7**	***10***	**0**	**0**	**1**	**0**	***1***	**0**	**4**	**0**	**1**	***5***
4:15 PM	**1**	**0**	**2**	**1**	***4***	**0**	**0**	**1**	**1**	***2***	**1**	**2**	**0**	**1**	***4***
4:30 PM	**2**	**0**	**5**	**2**	***9***	**0**	**0**	**0**	**1**	***1***	**0**	**7**	**0**	**0**	***7***
4:45 PM	**2**	**0**	**4**	**1**	***7***	**0**	**0**	**0**	**0**	***0***	**1**	**3**	**2**	**0**	***6***
Peak Hour	**5**	**1**	**13**	**11**	***30***	**0**	**0**	**2**	**2**	***4***	**2**	**16**	**2**	**2**	***22***

Kyle Campbell
(425) 213-7345

Count Summaries - All Vehicles

Interval Start	Holmes Ln				Hilda St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**29**	**4**	**33**	**0**	**10**	**3**	**3**	**0**	**14**	**142**	**5**	**0**	**3**	**178**	**21**	**445**	0
4:15 PM	**0**	**20**	**5**	**18**	**0**	**11**	**2**	**3**	**0**	**24**	**126**	**7**	**0**	**2**	**144**	**9**	**371**	**0**
4:30 PM	**0**	**15**	**7**	**16**	**0**	**4**	**4**	**1**	**0**	**22**	**156**	**3**	**0**	**0**	**182**	**19**	**429**	**0**
4:45 PM	**0**	**22**	**3**	**13**	**0**	**8**	**2**	**3**	**0**	**14**	**131**	**4**	**0**	**2**	**175**	**21**	**398**	**1,643**
5:00 PM	0	17	3	8	0	10	3	4	0	16	145	5	0	0	163	19	393	1,591
5:15 PM	0	19	2	19	0	7	1	4	0	16	139	8	0	2	128	20	365	1,585
5:30 PM	0	13	3	18	0	8	1	0	0	17	132	6	0	2	129	17	346	1,502
5:45 PM	0	13	1	13	0	6	4	2	0	20	128	4	0	1	125	17	334	1,438
Count Total	0	148	28	138	0	64	20	20	0	143	1,099	42	0	12	1,224	143	3,081	
Pk Hr All	**0**	**86**	**19**	**80**	**0**	**33**	**11**	**10**	**0**	**74**	**555**	**19**	**0**	**7**	**679**	**70**	**1,643**	
Pk Hr HV	**0**	**2**	**0**	**3**	**0**	**1**	**0**	**0**	**0**	**3**	**10**	**0**	**0**	**0**	**8**	**3**	**30**	
Pk Hr HV%	**-**	**2%**	**0%**	**4%**	**-**	**3%**	**0%**	**0%**	**-**	**4%**	**2%**	**0%**	**-**	**0%**	**1%**	**4%**	**2%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	**0**	**1**	**2**	**7**	**10**	**0**	**0**	**1**	**0**	**1**	**0**	**4**	**0**	**1**	**5**
4:15 PM	**1**	**0**	**2**	**1**	**4**	**0**	**0**	**1**	**1**	**2**	**1**	**2**	**0**	**1**	**4**
4:30 PM	**2**	**0**	**5**	**2**	**9**	**0**	**0**	**0**	**1**	**1**	**0**	**7**	**0**	**0**	**7**
4:45 PM	**2**	**0**	**4**	**1**	**7**	**0**	**0**	**0**	**0**	**0**	**1**	**3**	**2**	**0**	**6**
5:00 PM	0	0	1	1	*2*	0	0	0	1	*1*	1	0	1	0	*2*
5:15 PM	0	0	0	3	*3*	0	0	0	0	*0*	0	2	0	1	*3*
5:30 PM	0	0	0	0	*0*	0	0	1	1	*2*	3	2	0	0	*5*
5:45 PM	0	0	1	1	*2*	0	0	0	0	*0*	3	1	1	1	*6*
Count Total	5	1	15	16	*37*	0	0	3	4	*7*	9	21	4	4	*38*
Peak Hour	**5**	**1**	**13**	**11**	***30***	**0**	**0**	**2**	**2**	***4***	**2**	**16**	**2**	**2**	**22**

Kyle Campbell
(425) 213-7345

Count Summaries - Heavy Vehicles

Interval Start	Holmes Ln				Hilda St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**5**	**2**	**10**	0
4:15 PM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**4**	**0**
4:30 PM	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**1**	**4**	**0**	**0**	**0**	**1**	**1**	**9**	**0**
4:45 PM	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**1**	**0**	**7**	**30**
5:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2	22
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	3	21
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
5:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2	7
Count Total	0	2	0	3	0	1	0	0	0	3	12	0	0	0	12	4	37	
Pk Hr Heavy	**0**	**2**	**0**	**3**	**0**	**1**	**0**	**0**	**0**	**3**	**10**	**0**	**0**	**0**	**8**	**3**	**30**	

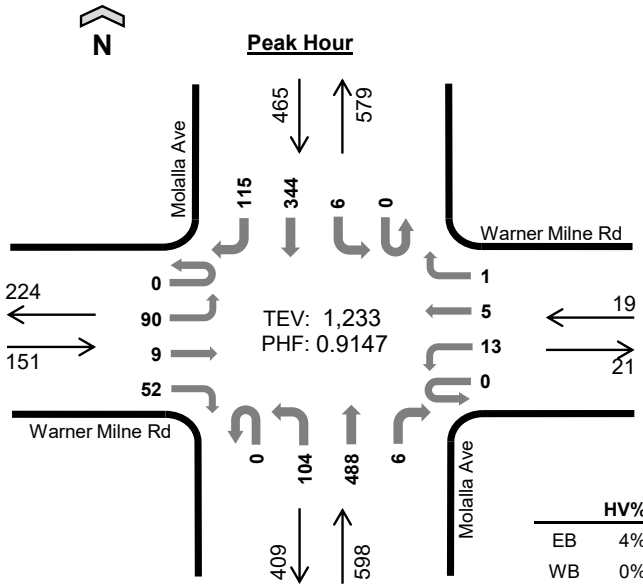
Count Summaries - Bikes

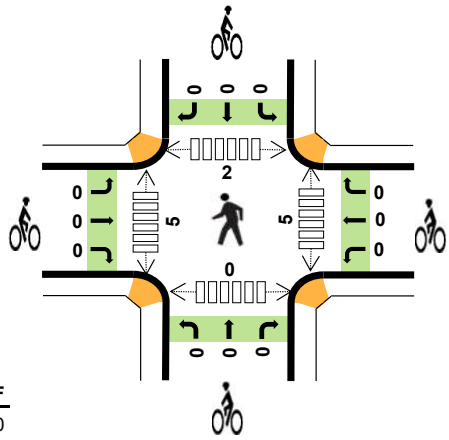
Interval Start	Holmes Ln				Hilda St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**2**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	4
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2	3
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Count Total	0	0	0	0	0	0	0	0	0	0	3	0	0	0	4	0	7	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**2**	**0**	**4**	

Kyle Campbell
(425) 213-7345

Molalla Ave
Warner Milne Rd

Date: 9/9/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 8:00 AM to 9:00 AM





	HV%	PHF
EB	4%	0.80
WB	0%	0.79
NB	5%	0.94
SB	4%	0.87
TOTAL	4%	0.91

Peak Hour Count Summaries

Peak Hour Interval Start		Warner Milne Rd Eastbound				Warner Milne Rd Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
8:00 AM		**0**	**19**	**2**	**16**	**0**	**4**	**0**	**0**	**0**	**21**	**110**	**1**	**0**	**1**	**82**	**28**	**284**	**0**
8:15 AM		**0**	**17**	**3**	**7**	**0**	**2**	**2**	**1**	**0**	**25**	**123**	**2**	**0**	**1**	**72**	**34**	**289**	**0**
8:30 AM		**0**	**25**	**2**	**20**	**0**	**2**	**2**	**0**	**0**	**24**	**134**	**1**	**0**	**3**	**85**	**25**	**323**	**0**
8:45 AM		**0**	**29**	**2**	**9**	**0**	**5**	**1**	**0**	**0**	**34**	**121**	**2**	**0**	**1**	**105**	**28**	**337**	**1,233**
Pk Hr	All	**0**	**90**	**9**	**52**	**0**	**13**	**5**	**1**	**0**	**104**	**488**	**6**	**0**	**6**	**344**	**115**	**1,233**	
	HV	**0**	**2**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**1**	**25**	**1**	**0**	**0**	**17**	**3**	**53**	
	HV%	-	**2%**	**0%**	**8%**	-	**0%**	**0%**	**0%**	-	**1%**	**5%**	**17%**	-	**0%**	**5%**	**3%**	**4%**	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
8:00 AM	**3**	**0**	**7**	**9**	***19***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**0**	***1***
8:15 AM	**2**	**0**	**7**	**2**	***11***	**0**	**0**	**0**	**0**	***0***	**1**	**1**	**0**	**0**	***2***
8:30 AM	**0**	**0**	**6**	**3**	***9***	**0**	**0**	**0**	**0**	***0***	**1**	**2**	**0**	**0**	***3***
8:45 AM	**1**	**0**	**7**	**6**	***14***	**0**	**0**	**0**	**0**	***0***	**3**	**1**	**2**	**0**	***6***
Peak Hour	**6**	**0**	**27**	**20**	***53***	**0**	**0**	**0**	**0**	***0***	**5**	**5**	**2**	**0**	***12***

Kyle Campbell
(425) 213-7345

Count Summaries - All Vehicles

Interval Start	Warner Milne Rd Eastbound				Warner Milne Rd Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	22	2	4	0	1	2	2	0	14	81	1	0	1	32	13	175	0
7:15 AM	0	29	0	15	0	3	0	1	0	15	89	0	0	0	51	19	222	0
7:30 AM	0	14	1	10	0	6	0	0	0	22	113	0	0	0	67	14	247	0
7:45 AM	0	21	2	19	0	5	0	1	0	29	103	1	0	0	75	25	281	925
8:00 AM	**0**	**19**	**2**	**16**	**0**	**4**	**0**	**0**	**0**	**21**	**110**	**1**	**0**	**1**	**82**	**28**	**284**	**1,034**
8:15 AM	**0**	**17**	**3**	**7**	**0**	**2**	**2**	**1**	**0**	**25**	**123**	**2**	**0**	**1**	**72**	**34**	**289**	**1,101**
8:30 AM	**0**	**25**	**2**	**20**	**0**	**2**	**2**	**0**	**0**	**24**	**134**	**1**	**0**	**3**	**85**	**25**	**323**	**1,177**
8:45 AM	**0**	**29**	**2**	**9**	**0**	**5**	**1**	**0**	**0**	**34**	**121**	**2**	**0**	**1**	**105**	**28**	**337**	**1,233**
Count Total	0	176	14	100	0	28	7	5	0	184	874	8	0	7	569	186	2,158	
Pk Hr All	**0**	**90**	**9**	**52**	**0**	**13**	**5**	**1**	**0**	**104**	**488**	**6**	**0**	**6**	**344**	**115**	**1,233**	
Pk Hr HV	**0**	**2**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**1**	**25**	**1**	**0**	**0**	**17**	**3**	**53**	
Pk Hr HV%	**-**	**2%**	**0%**	**8%**	**-**	**0%**	**0%**	**0%**	**-**	**1%**	**5%**	**17%**	**-**	**0%**	**5%**	**3%**	**4%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	0	0	4	6	*10*	1	0	0	0	*1*	2	1	1	1	*5*
7:15 AM	2	0	5	3	*10*	0	0	0	0	*0*	0	2	0	1	*3*
7:30 AM	1	0	5	3	*9*	0	0	0	1	*1*	0	0	0	1	*1*
7:45 AM	1	0	1	3	*5*	0	0	0	0	*0*	0	0	0	0	*0*
8:00 AM	**3**	**0**	**7**	**9**	**19**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**
8:15 AM	**2**	**0**	**7**	**2**	**11**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**2**
8:30 AM	**0**	**0**	**6**	**3**	**9**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**0**	**0**	**3**
8:45 AM	**1**	**0**	**7**	**6**	**14**	**0**	**0**	**0**	**0**	**0**	**3**	**1**	**2**	**0**	**6**
Count Total	10	0	42	35	*87*	1	0	0	1	*2*	7	8	3	3	*21*
Peak Hour	**6**	**0**	**27**	**20**	***53***	**0**	**0**	**0**	**0**	***0***	**5**	**5**	**2**	**0**	**12**

Kyle Campbell
(425) 213-7345

Count Summaries - Heavy Vehicles

Interval Start	Warner Milne Rd				Warner Milne Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	3	1	0	0	6	0	10	0
7:15 AM	0	1	0	1	0	0	0	0	0	0	5	0	0	0	3	0	10	0
7:30 AM	0	0	0	1	0	0	0	0	0	0	5	0	0	0	3	0	9	0
7:45 AM	0	1	0	0	0	0	0	0	0	0	0	1	0	0	3	0	5	34
8:00 AM	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**1**	**6**	**0**	**0**	**0**	**7**	**2**	**19**	**43**
8:15 AM	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**2**	**0**	**11**	**44**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**1**	**0**	**0**	**3**	**0**	**9**	**44**
8:45 AM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**5**	**1**	**14**	**53**
Count Total	0	4	0	6	0	0	0	0	0	1	38	3	0	0	32	3	87	
Pk Hr Heavy	**0**	**2**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**1**	**25**	**1**	**0**	**0**	**17**	**3**	**53**	

Count Summaries - Bikes

Interval Start	Warner Milne Rd				Warner Milne Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	2	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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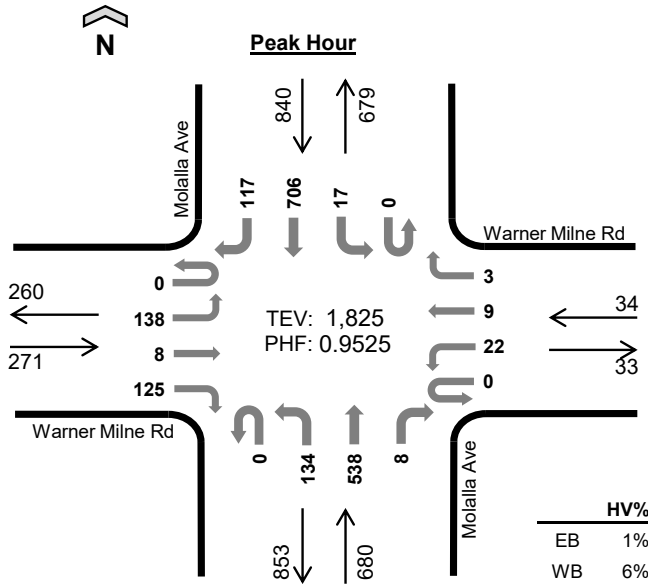
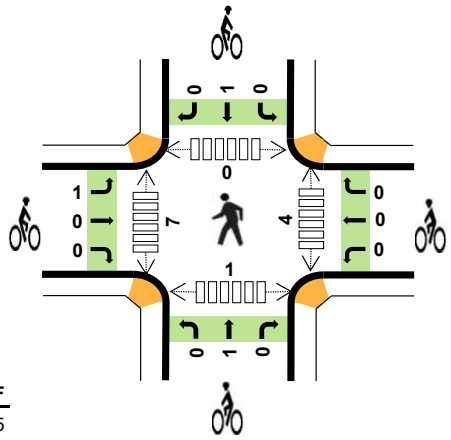
Molalla Ave
Warner Milne Rd

Date: 9/9/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM





	HV%	PHF
EB	1%	0.95
WB	6%	0.85
NB	2%	0.89
SB	2%	0.88
TOTAL	2%	0.95

Peak Hour Count Summaries

Peak Hour Interval Start		Warner Milne Rd Eastbound				Warner Milne Rd Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		**0**	**36**	**1**	**34**	**0**	**9**	**1**	**0**	**0**	**27**	**132**	**0**	**0**	**3**	**203**	**33**	**479**	**0**
4:15 PM		**0**	**38**	**0**	**24**	**0**	**6**	**2**	**2**	**0**	**36**	**118**	**5**	**0**	**3**	**164**	**32**	**430**	**0**
4:30 PM		**0**	**33**	**3**	**32**	**0**	**2**	**4**	**1**	**0**	**41**	**149**	**2**	**0**	**5**	**159**	**32**	**463**	**0**
4:45 PM		**0**	**31**	**4**	**35**	**0**	**5**	**2**	**0**	**0**	**30**	**139**	**1**	**0**	**6**	**180**	**20**	**453**	**1,825**
Pk Hr	All	**0**	**138**	**8**	**125**	**0**	**22**	**9**	**3**	**0**	**134**	**538**	**8**	**0**	**17**	**706**	**117**	**1,825**	
	HV	**0**	**2**	**1**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**12**	**1**	**0**	**0**	**16**	**0**	**35**	
	HV%	**-**	**1%**	**13%**	**1%**	**-**	**9%**	**0%**	**0%**	**-**	**0%**	**2%**	**13%**	**-**	**0%**	**2%**	**0%**	**2%**	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	**1**	**1**	**3**	**8**	***13***	**0**	**0**	**1**	**0**	***1***	**1**	**4**	**0**	**1**	***6***
4:15 PM	**2**	**0**	**3**	**4**	***9***	**0**	**0**	**0**	**1**	***1***	**3**	**3**	**0**	**0**	***6***
4:30 PM	**0**	**0**	**3**	**3**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
4:45 PM	**1**	**1**	**4**	**1**	***7***	**1**	**0**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***
Peak Hour	**4**	**2**	**13**	**16**	***35***	**1**	**0**	**1**	**1**	***3***	**4**	**7**	**0**	**1**	***12***

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Count Summaries - All Vehicles

Interval Start	Warner Milne Rd Eastbound				Warner Milne Rd Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**36**	**1**	**34**	**0**	**9**	**1**	**0**	**0**	**27**	**132**	**0**	**0**	**3**	**203**	**33**	**479**	0
4:15 PM	**0**	**38**	**0**	**24**	**0**	**6**	**2**	**2**	**0**	**36**	**118**	**5**	**0**	**3**	**164**	**32**	**430**	**0**
4:30 PM	**0**	**33**	**3**	**32**	**0**	**2**	**4**	**1**	**0**	**41**	**149**	**2**	**0**	**5**	**159**	**32**	**463**	**0**
4:45 PM	**0**	**31**	**4**	**35**	**0**	**5**	**2**	**0**	**0**	**30**	**139**	**1**	**0**	**6**	**180**	**20**	**453**	**1,825**
5:00 PM	0	36	1	45	0	9	0	1	0	31	116	1	0	4	165	33	442	1,788
5:15 PM	0	32	2	19	0	4	5	2	0	18	128	5	0	1	135	28	379	1,737
5:30 PM	0	33	1	31	0	9	4	2	0	34	110	2	0	1	137	16	380	1,654
5:45 PM	0	31	1	36	0	4	4	2	0	35	119	6	0	5	135	23	401	1,602
Count Total	0	270	13	256	0	48	22	10	0	252	1,011	22	0	28	1,278	217	3,427	
Pk Hr All	**0**	**138**	**8**	**125**	**0**	**22**	**9**	**3**	**0**	**134**	**538**	**8**	**0**	**17**	**706**	**117**	**1,825**	
Pk Hr HV	**0**	**2**	**1**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**12**	**1**	**0**	**0**	**16**	**0**	**35**	
Pk Hr HV%	**-**	**1%**	**13%**	**1%**	**-**	**9%**	**0%**	**0%**	**-**	**0%**	**2%**	**13%**	**-**	**0%**	**2%**	**0%**	**2%**	

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) E	W	N	S	Total
4:00 PM	**1**	**1**	**3**	**8**	**13**	**0**	**0**	**1**	**0**	**1**	**1**	**4**	**0**	**1**	**6**
4:15 PM	**2**	**0**	**3**	**4**	**9**	**0**	**0**	**0**	**1**	**1**	**3**	**3**	**0**	**0**	**6**
4:30 PM	**0**	**0**	**3**	**3**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:45 PM	**1**	**1**	**4**	**1**	**7**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**
5:00 PM	0	0	0	1	*1*	0	0	0	1	*1*	0	1	2	3	*6*
5:15 PM	0	0	0	2	*2*	0	0	0	0	*0*	0	2	0	4	*6*
5:30 PM	0	0	0	0	*0*	0	1	0	0	*1*	1	0	2	1	*4*
5:45 PM	1	0	1	1	*3*	0	0	0	1	*1*	6	1	0	4	*11*
Count Total	5	2	14	20	*41*	1	1	1	3	*6*	11	11	4	13	*39*
Peak Hour	**4**	**2**	**13**	**16**	***35***	**1**	**0**	**1**	**1**	***3***	**4**	**7**	**0**	**1**	**12**

Kyle Campbell
(425) 213-7345

Count Summaries - Heavy Vehicles

Interval Start	Warner Milne Rd				Warner Milne Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**8**	**0**	**13**	0
4:15 PM	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**0**	**4**	**0**	**9**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**3**	**0**	**6**	**0**
4:45 PM	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**1**	**0**	**7**	**35**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	23
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	16
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
5:45 PM	0	0	0	1	0	0	0	0	0	0	1	0	0	0	1	0	3	6
Count Total	0	2	1	2	0	2	0	0	0	0	13	1	0	0	20	0	41	
Pk Hr Heavy	**0**	**2**	**1**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**12**	**1**	**0**	**0**	**16**	**0**	**35**	

Count Summaries - Bikes

Interval Start	Warner Milne Rd				Warner Milne Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:45 PM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**3**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	3
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3
Count Total	0	1	0	0	0	0	0	1	0	0	1	0	0	0	2	1	6	
Pk Hr Bike	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**3**	

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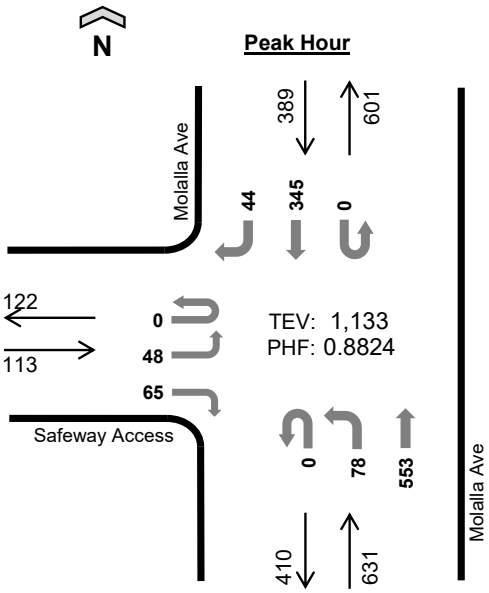
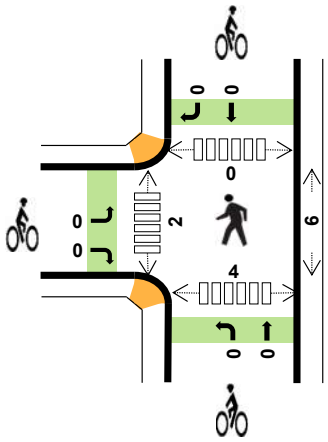
Molalla Ave
Safeway Access

Date: 9/9/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 8:00 AM to 9:00 AM





	HV%	PHF
EB	1%	0.71
WB	--	--
NB	3%	0.91
SB	4%	0.79
TOTAL	4%	0.88

Peak Hour Count Summaries

Peak Hour Interval Start		Safeway Access				n/a				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
8:00 AM		0	11	0	16	0	0	0	0	0	17	126	0	0	0	87	9	266	0
8:15 AM		0	10	0	11	0	0	0	0	0	21	141	0	0	0	66	12	261	0
8:30 AM		0	20	0	20	0	0	0	0	0	15	138	0	0	0	83	9	285	0
8:45 AM		0	7	0	18	0	0	0	0	0	25	148	0	0	0	109	14	321	1,133
Pk Hr	All	0	48	0	65	0	0	0	0	0	78	553	0	0	0	345	44	1,133	
	HV	0	0	0	1	0	0	0	0	0	0	22	0	0	0	16	1	40	
	HV%	-	0%	-	2%	-	-	-	-	-	0%	4%	-	-	-	5%	2%	4%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
8:00 AM	1	0	4	8	*13*	0	0	0	0	*0*	0	0	0	0	*0*
8:15 AM	0	0	6	2	*8*	0	0	0	0	*0*	1	1	0	2	*4*
8:30 AM	0	0	5	2	*7*	0	0	0	0	*0*	3	1	0	2	*6*
8:45 AM	0	0	7	5	*12*	0	0	0	0	*0*	2	0	0	0	*2*
Peak Hour	1	0	22	17	*40*	0	0	0	0	*0*	6	2	0	4	*12*

Kyle Campbell
(425) 213-7345

Count Summaries - All Vehicles

Interval Start	Safeway Access				n/a				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	8	0	6	0	0	0	0	0	8	88	0	0	0	29	5	144	0
7:15 AM	0	1	0	14	0	0	0	0	0	9	107	0	0	0	68	3	202	0
7:30 AM	0	9	0	17	0	0	0	0	0	20	127	0	0	0	79	7	259	0
7:45 AM	0	7	0	17	0	0	0	0	0	12	124	0	0	0	90	9	259	864
8:00 AM	**0**	**11**	**0**	**16**	**0**	**0**	**0**	**0**	**0**	**17**	**126**	**0**	**0**	**0**	**87**	**9**	**266**	**986**
8:15 AM	**0**	**10**	**0**	**11**	**0**	**0**	**0**	**0**	**0**	**21**	**141**	**0**	**0**	**0**	**66**	**12**	**261**	**1,045**
8:30 AM	**0**	**20**	**0**	**20**	**0**	**0**	**0**	**0**	**0**	**15**	**138**	**0**	**0**	**0**	**83**	**9**	**285**	**1,071**
8:45 AM	**0**	**7**	**0**	**18**	**0**	**0**	**0**	**0**	**0**	**25**	**148**	**0**	**0**	**0**	**109**	**14**	**321**	**1,133**
Count Total	0	73	0	119	0	0	0	0	0	127	999	0	0	0	611	68	1,997	
Pk Hr All	**0**	**48**	**0**	**65**	**0**	**0**	**0**	**0**	**0**	**78**	**553**	**0**	**0**	**0**	**345**	**44**	**1,133**	
Pk Hr HV	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**22**	**0**	**0**	**0**	**16**	**1**	**40**	
Pk Hr HV%	**-**	**0%**	**-**	**2%**	**-**	**-**	**-**	**-**	**-**	**0%**	**4%**	**-**	**-**	**-**	**5%**	**2%**	**4%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	0	0	4	6	*10*	0	0	0	0	*0*	1	0	2	0	*3*
7:15 AM	1	0	8	2	*11*	0	0	0	0	*0*	0	0	2	2	*4*
7:30 AM	1	0	6	4	*11*	0	0	0	0	*0*	0	0	2	0	*2*
7:45 AM	1	0	2	2	*5*	0	0	0	1	*1*	0	0	0	0	*0*
8:00 AM	**1**	**0**	**4**	**8**	**13**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	**0**	**0**	**6**	**2**	**8**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**2**	**4**
8:30 AM	**0**	**0**	**5**	**2**	**7**	**0**	**0**	**0**	**0**	**0**	**3**	**1**	**0**	**2**	**6**
8:45 AM	**0**	**0**	**7**	**5**	**12**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**2**
Count Total	4	0	42	31	*77*	0	0	0	1	*1*	7	2	6	6	*21*
Peak Hour	**1**	**0**	**22**	**17**	***40***	**0**	**0**	**0**	**0**	***0***	**6**	**2**	**0**	**4**	**12**

Kyle Campbell
(425) 213-7345

Count Summaries - Heavy Vehicles

Interval Start	Safeway Access				n/a				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	6	0	10	0
7:15 AM	0	0	0	1	0	0	0	0	0	0	8	0	0	0	2	0	11	0
7:30 AM	0	0	0	1	0	0	0	0	0	0	6	0	0	0	3	1	11	0
7:45 AM	0	0	0	1	0	0	0	0	0	1	1	0	0	0	2	0	5	37
8:00 AM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**7**	**1**	**13**	**40**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**2**	**0**	**8**	**37**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**2**	**0**	**7**	**33**
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**5**	**0**	**12**	**40**
Count Total	0	0	0	4	0	0	0	0	0	1	41	0	0	0	29	2	77	
Pk Hr Heavy	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**22**	**0**	**0**	**0**	**16**	**1**	**40**	

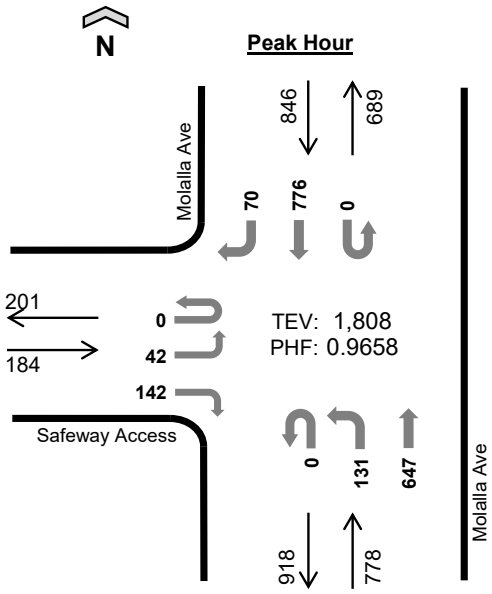
Count Summaries - Bikes

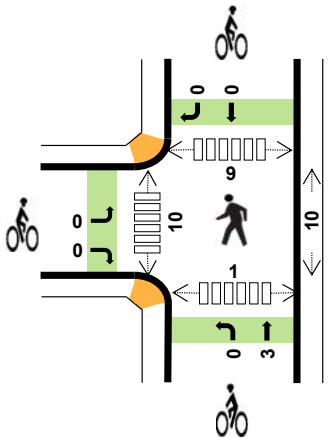
Interval Start	Safeway Access				n/a				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

Kyle Campbell
(425) 213-7345

Molalla Ave
Safeway Access

Date: 9/9/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM





	HV%	PHF
EB	0%	0.79
WB	--	--
NB	1%	0.89
SB	2%	0.90
TOTAL	1%	0.97

Peak Hour Count Summaries

Peak Hour Interval Start		Safeway Access Eastbound				n/a Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	11	0	27	0	0	0	0	0	28	148	0	0	0	213	21	448	0
4:15 PM		0	13	0	42	0	0	0	0	0	37	155	0	0	0	187	12	446	0
4:30 PM		0	3	0	30	0	0	0	0	0	29	189	0	0	0	177	18	446	0
4:45 PM		0	15	0	43	0	0	0	0	0	37	155	0	0	0	199	19	468	1,808
Pk Hr	All	0	42	0	142	0	0	0	0	0	131	647	0	0	0	776	70	1,808	
	HV	0	0	0	0	0	0	0	0	0	0	11	0	0	0	15	0	26	
	HV%	-	0%	-	0%	-	-	-	-	-	0%	2%	-	-	-	2%	0%	1%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) E	W	N	S	Total
4:00 PM	0	0	2	8	*10*	0	0	3	0	*3*	2	1	0	0	*3*
4:15 PM	0	0	1	3	*4*	0	0	0	0	*0*	4	1	2	0	*7*
4:30 PM	0	0	4	3	*7*	0	0	0	0	*0*	1	5	2	1	*9*
4:45 PM	0	0	4	1	*5*	0	0	0	0	*0*	3	3	5	0	*11*
Peak Hour	0	0	11	15	*26*	0	0	3	0	*3*	10	10	9	1	*30*

Kyle Campbell
(425) 213-7345

Count Summaries - All Vehicles

Interval Start	Safeway Access				n/a				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**11**	**0**	**27**	**0**	**0**	**0**	**0**	**0**	**28**	**148**	**0**	**0**	**0**	**213**	**21**	**448**	0
4:15 PM	**0**	**13**	**0**	**42**	**0**	**0**	**0**	**0**	**0**	**37**	**155**	**0**	**0**	**0**	**187**	**12**	**446**	**0**
4:30 PM	**0**	**3**	**0**	**30**	**0**	**0**	**0**	**0**	**0**	**29**	**189**	**0**	**0**	**0**	**177**	**18**	**446**	**0**
4:45 PM	**0**	**15**	**0**	**43**	**0**	**0**	**0**	**0**	**0**	**37**	**155**	**0**	**0**	**0**	**199**	**19**	**468**	**1,808**
5:00 PM	0	13	0	23	0	0	0	0	0	35	141	0	0	0	211	18	441	1,801
5:15 PM	0	21	0	32	0	0	0	0	0	34	145	0	0	0	150	14	396	1,751
5:30 PM	0	7	0	34	0	0	0	0	0	29	148	0	0	0	169	16	403	1,708
5:45 PM	0	15	0	28	0	0	0	0	0	29	155	0	0	0	153	18	398	1,638
Count Total	0	98	0	259	0	0	0	0	0	258	1,236	0	0	0	1,459	136	3,446	
Pk Hr All	**0**	**42**	**0**	**142**	**0**	**0**	**0**	**0**	**0**	**131**	**647**	**0**	**0**	**0**	**776**	**70**	**1,808**	
Pk Hr HV	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**11**	**0**	**0**	**0**	**15**	**0**	**26**	
Pk Hr HV%	**-**	**0%**	**-**	**0%**	**-**	**-**	**-**	**-**	**-**	**0%**	**2%**	**-**	**-**	**-**	**2%**	**0%**	**1%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	**0**	**0**	**2**	**8**	**10**	**0**	**0**	**3**	**0**	**3**	**2**	**1**	**0**	**0**	**3**
4:15 PM	**0**	**0**	**1**	**3**	**4**	**0**	**0**	**0**	**0**	**0**	**4**	**1**	**2**	**0**	**7**
4:30 PM	**0**	**0**	**4**	**3**	**7**	**0**	**0**	**0**	**0**	**0**	**1**	**5**	**2**	**1**	**9**
4:45 PM	**0**	**0**	**4**	**1**	**5**	**0**	**0**	**0**	**0**	**0**	**3**	**3**	**5**	**0**	**11**
5:00 PM	0	0	0	3	*3*	0	0	0	0	*0*	0	7	0	0	*7*
5:15 PM	1	0	0	2	*3*	0	0	1	0	*1*	1	0	0	0	*1*
5:30 PM	0	0	0	0	*0*	0	0	0	0	*0*	3	0	3	1	*7*
5:45 PM	0	0	1	2	*3*	0	0	0	0	*0*	5	1	3	1	*10*
Count Total	1	0	12	22	*35*	0	0	4	0	*4*	19	18	15	3	*55*
Peak Hour	**0**	**0**	**11**	**15**	***26***	**0**	**0**	**3**	**0**	***3***	**10**	**10**	**9**	**1**	**30**

Kyle Campbell
(425) 213-7345

Count Summaries - Heavy Vehicles

Interval Start	Safeway Access				n/a				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**8**	**0**	**10**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**3**	**0**	**4**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**3**	**0**	**7**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**1**	**0**	**5**	**26**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	19
5:15 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	3	18
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
5:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	3	9
Count Total	0	0	0	1	0	0	0	0	0	0	12	0	0	0	22	0	35	
Pk Hr Heavy	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**11**	**0**	**0**	**0**	**15**	**0**	**26**	

Count Summaries - Bikes

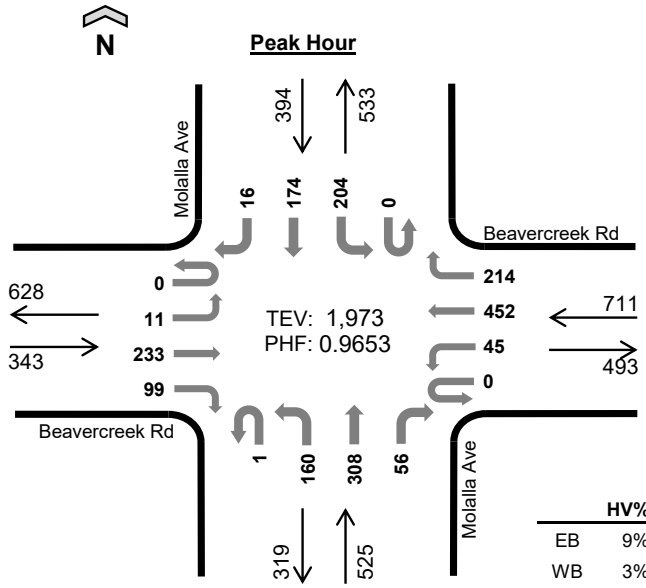
Interval Start	Safeway Access				n/a				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**3**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	4	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**3**	

Kyle Campbell
(425) 213-7345

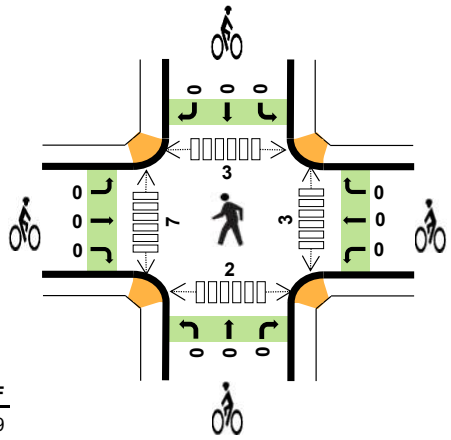
project.manager.wa@idaxdata.com

Molalla Ave
Beavercreek Rd

Date: 9/9/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM



	HV%	PHF
EB	9%	0.89
WB	3%	0.94
NB	3%	0.97
SB	4%	0.90
TOTAL	4%	0.97



Peak Hour Count Summaries

Peak Hour Interval Start		Beavercreek Rd Eastbound				Beavercreek Rd Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:45 AM		0	2	60	21	0	10	123	57	0	36	69	22	0	56	48	5	509	0
8:00 AM		0	2	63	31	0	19	122	42	0	40	79	16	0	57	37	3	511	0
8:15 AM		0	4	56	21	0	9	105	56	1	40	83	8	0	38	40	5	466	0
8:30 AM		0	3	54	26	0	7	102	59	0	44	77	10	0	53	49	3	487	1,973
Pk Hr	All	0	11	233	99	0	45	452	214	1	160	308	56	0	204	174	16	1,973	
	HV	0	0	25	6	0	5	13	6	0	6	5	4	0	11	4	0	85	
	HV%	-	0%	11%	6%	-	11%	3%	3%	0%	4%	2%	7%	-	5%	2%	0%	4%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:45 AM	8	6	2	4	*20*	0	0	0	0	*0*	0	2	0	0	*2*
8:00 AM	14	3	6	6	*29*	0	0	0	0	*0*	0	2	0	1	*3*
8:15 AM	5	6	4	2	*17*	0	0	0	0	*0*	3	3	1	1	*8*
8:30 AM	4	9	3	3	*19*	0	0	0	0	*0*	0	0	2	0	*2*
Peak Hour	31	24	15	15	*85*	0	0	0	0	*0*	3	7	3	2	*15*

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Count Summaries - All Vehicles

Interval Start	Beavercreek Rd Eastbound				Beavercreek Rd Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	10	48	25	0	9	100	28	0	20	54	14	0	21	21	2	352	0
7:15 AM	0	5	49	22	0	9	109	47	0	26	61	12	0	37	41	1	419	0
7:30 AM	0	7	64	20	0	6	93	72	0	42	57	15	0	41	48	5	470	0
7:45 AM	**0**	**2**	**60**	**21**	**0**	**10**	**123**	**57**	**0**	**36**	**69**	**22**	**0**	**56**	**48**	**5**	**509**	**1,750**
8:00 AM	**0**	**2**	**63**	**31**	**0**	**19**	**122**	**42**	**0**	**40**	**79**	**16**	**0**	**57**	**37**	**3**	**511**	**1,909**
8:15 AM	**0**	**4**	**56**	**21**	**0**	**9**	**105**	**56**	**1**	**40**	**83**	**8**	**0**	**38**	**40**	**5**	**466**	**1,956**
8:30 AM	**0**	**3**	**54**	**26**	**0**	**7**	**102**	**59**	**0**	**44**	**77**	**10**	**0**	**53**	**49**	**3**	**487**	**1,973**
8:45 AM	0	2	41	25	0	12	106	75	0	44	49	15	0	60	66	5	500	1,964
Count Total	0	35	435	191	0	81	860	436	1	292	529	112	0	363	350	29	3,714	
Pk Hr All	**0**	**11**	**233**	**99**	**0**	**45**	**452**	**214**	**1**	**160**	**308**	**56**	**0**	**204**	**174**	**16**	**1,973**	
Pk Hr HV	**0**	**0**	**25**	**6**	**0**	**5**	**13**	**6**	**0**	**6**	**5**	**4**	**0**	**11**	**4**	**0**	**85**	
Pk Hr HV%	**-**	**0%**	**11%**	**6%**	**-**	**11%**	**3%**	**3%**	**0%**	**4%**	**2%**	**7%**	**-**	**5%**	**2%**	**0%**	**4%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	4	4	7	6	*21*	0	0	0	0	*0*	1	4	1	2	*8*
7:15 AM	3	7	3	3	*16*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	12	3	4	3	*22*	0	0	0	0	*0*	0	1	0	0	*1*
7:45 AM	**8**	**6**	**2**	**4**	**20**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**2**
8:00 AM	**14**	**3**	**6**	**6**	**29**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**3**
8:15 AM	**5**	**6**	**4**	**2**	**17**	**0**	**0**	**0**	**0**	**0**	**3**	**3**	**1**	**1**	**8**
8:30 AM	**4**	**9**	**3**	**3**	**19**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**
8:45 AM	1	4	5	5	*15*	0	0	0	0	*0*	0	5	1	0	*6*
Count Total	51	42	34	32	*159*	0	0	0	0	*0*	4	17	5	4	*30*
Peak Hour	**31**	**24**	**15**	**15**	***85***	**0**	**0**	**0**	**0**	***0***	**3**	**7**	**3**	**2**	**15**

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Count Summaries - Heavy Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	3	1	0	3	1	0	0	3	3	1	0	3	1	2	21	0
7:15 AM	0	1	2	0	0	2	3	2	0	1	0	2	0	1	2	0	16	0
7:30 AM	0	1	9	2	0	0	2	1	0	3	1	0	0	1	2	0	22	0
7:45 AM	**0**	**0**	**8**	**0**	**0**	**3**	**2**	**1**	**0**	**0**	**0**	**2**	**0**	**4**	**0**	**0**	**20**	**79**
8:00 AM	**0**	**0**	**11**	**3**	**0**	**0**	**2**	**1**	**0**	**2**	**2**	**2**	**0**	**5**	**1**	**0**	**29**	**87**
8:15 AM	**0**	**0**	**3**	**2**	**0**	**1**	**4**	**1**	**0**	**3**	**1**	**0**	**0**	**2**	**0**	**0**	**17**	**88**
8:30 AM	**0**	**0**	**3**	**1**	**0**	**1**	**5**	**3**	**0**	**1**	**2**	**0**	**0**	**0**	**3**	**0**	**19**	**85**
8:45 AM	0	0	1	0	0	1	0	3	0	3	2	0	0	2	3	0	15	80
Count Total	0	2	40	9	0	11	19	12	0	16	11	7	0	18	12	2	159	
Pk Hr Heavy	**0**	**0**	**25**	**6**	**0**	**5**	**13**	**6**	**0**	**6**	**5**	**4**	**0**	**11**	**4**	**0**	**85**	

Count Summaries - Bikes

Interval Start	Beavercreek Rd				Beavercreek Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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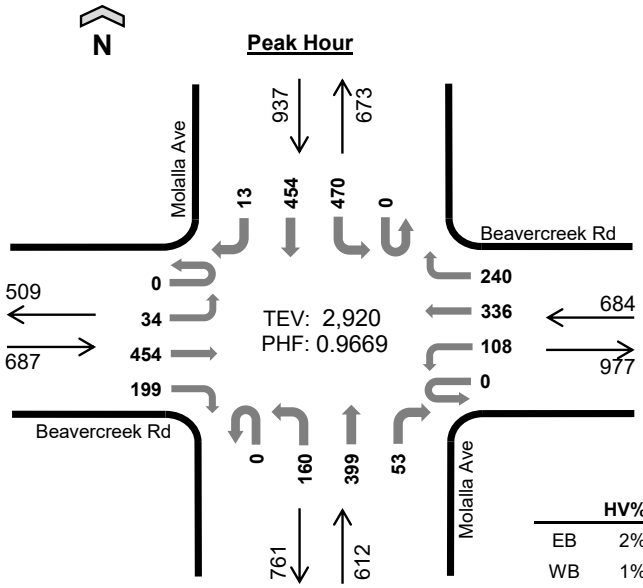
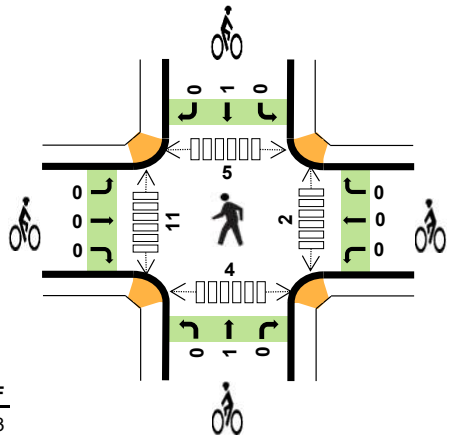
Molalla Ave
Beavercreek Rd

Date: 9/9/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:15 PM to 5:15 PM





	HV%	PHF
EB	2%	0.73
WB	1%	0.98
NB	2%	0.86
SB	1%	0.90
TOTAL	2%	0.97

Peak Hour Count Summaries

Peak Hour Interval Start		Beavercreek Rd Eastbound				Beavercreek Rd Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:15 PM		0	7	87	44	0	26	79	62	0	38	97	13	0	110	128	7	698	0
4:30 PM		0	10	113	46	0	22	97	55	0	42	123	13	0	102	108	2	733	0
4:45 PM		0	9	96	41	0	30	72	68	0	45	100	13	0	138	121	1	734	0
5:00 PM		0	8	158	68	0	30	88	55	0	35	79	14	0	120	97	3	755	2,920
Pk Hr	All	0	34	454	199	0	108	336	240	0	160	399	53	0	470	454	13	2,920	
	HV	0	1	7	7	0	1	5	4	0	8	2	0	0	5	8	0	48	
	HV%	-	3%	2%	4%	-	1%	1%	2%	-	5%	1%	0%	-	1%	2%	0%	2%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:15 PM	5	3	2	5	*15*	0	0	1	1	*2*	1	1	1	0	*3*
4:30 PM	2	5	3	4	*14*	0	0	0	0	*0*	0	2	1	0	*3*
4:45 PM	7	0	4	2	*13*	0	0	0	0	*0*	1	2	1	0	*4*
5:00 PM	1	2	1	2	*6*	0	0	0	0	*0*	0	6	2	4	*12*
Peak Hour	15	10	10	13	*48*	0	0	1	1	2	2	11	5	4	*22*

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Count Summaries - All Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	13	114	52	0	24	73	60	0	43	85	21	0	122	113	1	721	0
4:15 PM	**0**	**7**	**87**	**44**	**0**	**26**	**79**	**62**	**0**	**38**	**97**	**13**	**0**	**110**	**128**	**7**	**698**	**0**
4:30 PM	**0**	**10**	**113**	**46**	**0**	**22**	**97**	**55**	**0**	**42**	**123**	**13**	**0**	**102**	**108**	**2**	**733**	**0**
4:45 PM	**0**	**9**	**96**	**41**	**0**	**30**	**72**	**68**	**0**	**45**	**100**	**13**	**0**	**138**	**121**	**1**	**734**	**2,886**
5:00 PM	**0**	**8**	**158**	**68**	**0**	**30**	**88**	**55**	**0**	**35**	**79**	**14**	**0**	**120**	**97**	**3**	**755**	**2,920**
5:15 PM	0	5	104	33	0	30	60	69	0	37	86	25	0	100	104	3	656	2,878
5:30 PM	0	5	139	56	0	20	85	67	0	36	85	18	0	99	96	1	707	2,852
5:45 PM	0	5	72	28	0	26	72	68	0	37	90	15	0	100	100	3	616	2,734
Count Total	0	62	883	368	0	208	626	504	0	313	745	132	0	891	867	21	5,620	
Pk Hr All	**0**	**34**	**454**	**199**	**0**	**108**	**336**	**240**	**0**	**160**	**399**	**53**	**0**	**470**	**454**	**13**	**2,920**	
Pk Hr HV	**0**	**1**	**7**	**7**	**0**	**1**	**5**	**4**	**0**	**8**	**2**	**0**	**0**	**5**	**8**	**0**	**48**	
Pk Hr HV%	**-**	**3%**	**2%**	**4%**	**-**	**1%**	**1%**	**2%**	**-**	**5%**	**1%**	**0%**	**-**	**1%**	**2%**	**0%**	**2%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	6	7	3	9	*25*	0	0	0	0	*0*	2	4	2	2	*10*
4:15 PM	**5**	**3**	**2**	**5**	**15**	**0**	**0**	**1**	**1**	**2**	**1**	**1**	**1**	**0**	**3**
4:30 PM	**2**	**5**	**3**	**4**	**14**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**3**
4:45 PM	**7**	**0**	**4**	**2**	**13**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**1**	**0**	**4**
5:00 PM	**1**	**2**	**1**	**2**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**2**	**4**	**12**
5:15 PM	1	2	2	2	*7*	0	0	1	0	*1*	1	5	0	1	*7*
5:30 PM	2	2	1	1	*6*	0	0	0	0	*0*	1	4	0	1	*6*
5:45 PM	1	2	1	1	*5*	0	0	0	0	*0*	5	4	1	3	*13*
Count Total	25	23	17	26	*91*	0	0	2	1	*3*	11	28	8	11	*58*
Peak Hour	**15**	**10**	**10**	**13**	***48***	**0**	**0**	**1**	**1**	**2**	**2**	**11**	**5**	**4**	**22**

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Count Summaries - Heavy Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	2	4	0	1	6	0	0	3	0	0	0	4	5	0	25	0
4:15 PM	**0**	**0**	**5**	**0**	**0**	**1**	**1**	**1**	**0**	**2**	**0**	**0**	**0**	**3**	**2**	**0**	**15**	**0**
4:30 PM	**0**	**0**	**0**	**2**	**0**	**0**	**2**	**3**	**0**	**3**	**0**	**0**	**0**	**1**	**3**	**0**	**14**	**0**
4:45 PM	**0**	**1**	**2**	**4**	**0**	**0**	**0**	**0**	**0**	**2**	**2**	**0**	**0**	**1**	**1**	**0**	**13**	**67**
5:00 PM	**0**	**0**	**0**	**1**	**0**	**0**	**2**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**2**	**0**	**6**	**48**
5:15 PM	0	0	0	1	0	0	2	0	0	1	0	1	0	1	1	0	7	40
5:30 PM	0	0	1	1	0	1	1	0	0	1	0	0	0	1	0	0	6	32
5:45 PM	0	0	0	1	0	1	1	0	0	1	0	0	0	1	0	0	5	24
Count Total	0	1	10	14	0	4	15	4	0	14	2	1	0	12	14	0	91	
Pk Hr Heavy	**0**	**1**	**7**	**7**	**0**	**1**	**5**	**4**	**0**	**8**	**2**	**0**	**0**	**5**	**8**	**0**	**48**	

Count Summaries - Bikes

Interval Start	Beavercreek Rd				Beavercreek Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**2**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	3	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**2**	

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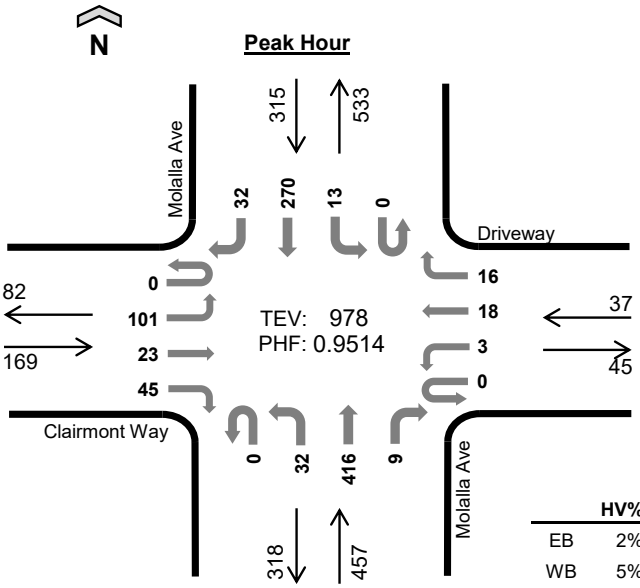
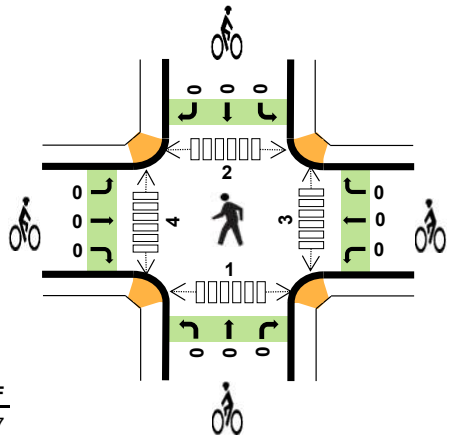
Molalla Ave
Clairmont Way

Date: 9/9/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 8:00 AM to 9:00 AM





	HV%	PHF
EB	2%	0.77
WB	5%	0.58
NB	4%	0.94
SB	5%	0.87
TOTAL	4%	0.95

Peak Hour Count Summaries

Peak Hour Interval Start		Clairmont Way Eastbound				Driveway Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
8:00 AM		0	29	9	17	0	1	3	1	0	5	93	2	0	2	70	12	244	0
8:15 AM		0	21	7	12	0	1	8	7	0	9	105	4	0	3	58	8	243	0
8:30 AM		0	26	4	7	0	1	3	4	0	9	108	1	0	4	63	4	234	0
8:45 AM		0	25	3	9	0	0	4	4	0	9	110	2	0	4	79	8	257	978
Pk Hr	All	0	101	23	45	0	3	18	16	0	32	416	9	0	13	270	32	978	
	HV	0	2	0	1	0	0	0	2	0	3	16	0	0	1	13	1	39	
	HV%	-	2%	0%	2%	-	0%	0%	13%	-	9%	4%	0%	-	8%	5%	3%	4%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
8:00 AM	2	0	6	4	*12*	0	0	0	0	*0*	0	1	0	0	*1*
8:15 AM	0	1	4	2	*7*	0	0	0	0	*0*	2	0	1	0	*3*
8:30 AM	0	1	3	6	*10*	0	0	0	0	*0*	0	0	1	0	*1*
8:45 AM	1	0	6	3	*10*	0	0	0	0	*0*	1	3	0	1	*5*
Peak Hour	3	2	19	15	*39*	0	0	0	0	*0*	3	4	2	1	*10*

Kyle Campbell
(425) 213-7345

Count Summaries - All Vehicles

Interval Start	Clairmont Way				Driveway				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	30	2	6	0	0	1	2	0	4	58	0	0	0	48	1	152	0
7:15 AM	0	34	7	5	0	1	0	1	0	2	58	1	0	0	47	11	167	0
7:30 AM	0	31	11	11	0	1	4	3	0	4	77	1	0	1	61	12	217	0
7:45 AM	0	44	11	16	0	0	2	0	0	2	95	1	0	1	58	12	242	778
8:00 AM	**0**	**29**	**9**	**17**	**0**	**1**	**3**	**1**	**0**	**5**	**93**	**2**	**0**	**2**	**70**	**12**	**244**	**870**
8:15 AM	**0**	**21**	**7**	**12**	**0**	**1**	**8**	**7**	**0**	**9**	**105**	**4**	**0**	**3**	**58**	**8**	**243**	**946**
8:30 AM	**0**	**26**	**4**	**7**	**0**	**1**	**3**	**4**	**0**	**9**	**108**	**1**	**0**	**4**	**63**	**4**	**234**	**963**
8:45 AM	**0**	**25**	**3**	**9**	**0**	**0**	**4**	**4**	**0**	**9**	**110**	**2**	**0**	**4**	**79**	**8**	**257**	**978**
Count Total	0	240	54	83	0	5	25	22	0	44	704	12	0	15	484	68	1,756	
Pk Hr All	**0**	**101**	**23**	**45**	**0**	**3**	**18**	**16**	**0**	**32**	**416**	**9**	**0**	**13**	**270**	**32**	**978**	
Pk Hr HV	**0**	**2**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**3**	**16**	**0**	**0**	**1**	**13**	**1**	**39**	
Pk Hr HV%	**-**	**2%**	**0%**	**2%**	**-**	**0%**	**0%**	**13%**	**-**	**9%**	**4%**	**0%**	**-**	**8%**	**5%**	**3%**	**4%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	3	0	9	2	*14*	0	0	0	0	*0*	1	1	2	0	*4*
7:15 AM	2	0	2	0	*4*	0	0	0	0	*0*	2	1	2	0	*5*
7:30 AM	1	0	5	5	*11*	0	0	0	0	*0*	1	1	4	1	*7*
7:45 AM	1	0	0	4	*5*	0	0	0	0	*0*	0	2	0	1	*3*
8:00 AM	**2**	**0**	**6**	**4**	**12**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**
8:15 AM	**0**	**1**	**4**	**2**	**7**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**0**	**3**
8:30 AM	**0**	**1**	**3**	**6**	**10**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**
8:45 AM	**1**	**0**	**6**	**3**	**10**	**0**	**0**	**0**	**0**	**0**	**1**	**3**	**0**	**1**	**5**
Count Total	10	2	35	26	*73*	0	0	0	0	*0*	7	9	10	3	*29*
Peak Hour	**3**	**2**	**19**	**15**	***39***	**0**	**0**	**0**	**0**	***0***	**3**	**4**	**2**	**1**	**10**

Kyle Campbell
(425) 213-7345

project.manager.wa@idaxdata.com

Count Summaries - Heavy Vehicles

Interval Start	Clairmont Way				Driveway				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	2	0	1	0	0	0	0	0	3	6	0	0	0	2	0	14	0
7:15 AM	0	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	4	0
7:30 AM	0	0	0	1	0	0	0	0	0	0	5	0	0	1	3	1	11	0
7:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	3	1	5	34
8:00 AM	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**4**	**0**	**12**	**32**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**3**	**0**	**0**	**0**	**2**	**0**	**7**	**35**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**3**	**0**	**0**	**0**	**5**	**1**	**10**	**34**
8:45 AM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**4**	**0**	**0**	**1**	**2**	**0**	**10**	**39**
Count Total	0	7	0	3	0	0	0	2	0	6	29	0	0	2	21	3	73	
Pk Hr Heavy	**0**	**2**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**3**	**16**	**0**	**0**	**1**	**13**	**1**	**39**	

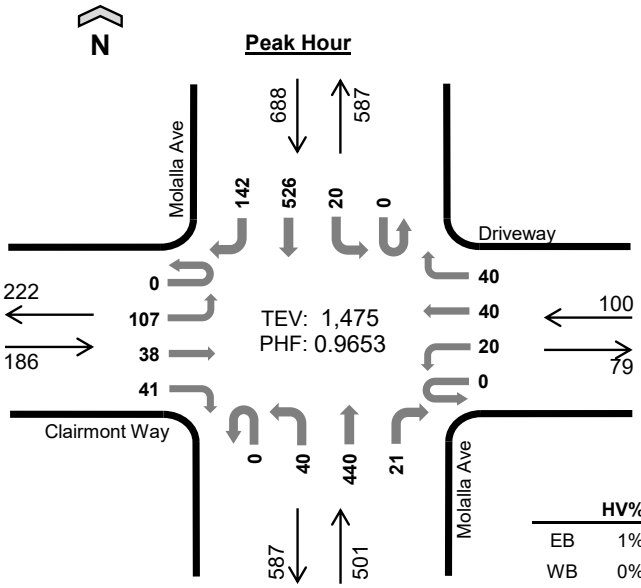
Count Summaries - Bikes

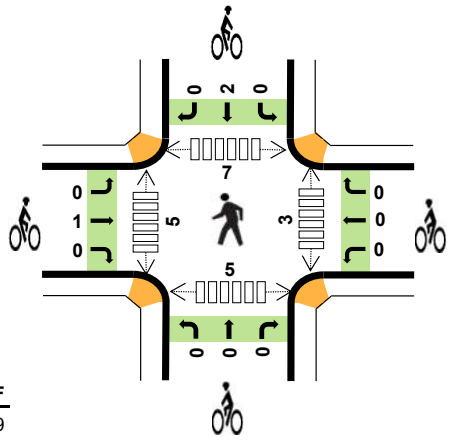
Interval Start	Clairmont Way				Driveway				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

Kyle Campbell
(425) 213-7345

Molalla Ave
Clairmont Way

Date: 9/9/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM





	HV%	PHF
EB	1%	0.79
WB	0%	0.89
NB	3%	0.86
SB	3%	0.93
TOTAL	3%	0.97

Peak Hour Count Summaries

Peak Hour Interval Start		Clairmont Way Eastbound				Driveway Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		**0**	**29**	**4**	**4**	**0**	**6**	**10**	**12**	**0**	**9**	**120**	**8**	**0**	**8**	**131**	**41**	**382**	**0**
4:15 PM		**0**	**19**	**5**	**15**	**0**	**4**	**11**	**9**	**0**	**11**	**88**	**2**	**0**	**3**	**140**	**41**	**348**	**0**
4:30 PM		**0**	**29**	**13**	**9**	**0**	**3**	**8**	**11**	**0**	**13**	**126**	**6**	**0**	**6**	**117**	**30**	**371**	**0**
4:45 PM		**0**	**30**	**16**	**13**	**0**	**7**	**11**	**8**	**0**	**7**	**106**	**5**	**0**	**3**	**138**	**30**	**374**	**1,475**
Pk Hr	All	**0**	**107**	**38**	**41**	**0**	**20**	**40**	**40**	**0**	**40**	**440**	**21**	**0**	**20**	**526**	**142**	**1,475**	
	HV	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**12**	**0**	**0**	**1**	**18**	**5**	**38**	
	HV%	**-**	**0%**	**0%**	**2%**	**-**	**0%**	**0%**	**0%**	**-**	**3%**	**3%**	**0%**	**-**	**5%**	**3%**	**4%**	**3%**	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	**0**	**0**	**3**	**8**	***11***	**0**	**0**	**0**	**0**	***0***	**1**	**2**	**5**	**0**	***8***
4:15 PM	**1**	**0**	**3**	**4**	***8***	**0**	**0**	**0**	**1**	***1***	**0**	**0**	**1**	**3**	***4***
4:30 PM	**0**	**0**	**4**	**6**	***10***	**0**	**0**	**0**	**1**	***1***	**1**	**2**	**0**	**1**	***4***
4:45 PM	**0**	**0**	**3**	**6**	***9***	**1**	**0**	**0**	**0**	***1***	**1**	**1**	**1**	**1**	***4***
Peak Hour	**1**	**0**	**13**	**24**	***38***	**1**	**0**	**0**	**2**	***3***	**3**	**5**	**7**	**5**	***20***

Kyle Campbell
(425) 213-7345

Count Summaries - All Vehicles

Interval Start	Clairmont Way				Driveway				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**29**	**4**	**4**	**0**	**6**	**10**	**12**	**0**	**9**	**120**	**8**	**0**	**8**	**131**	**41**	**382**	0
4:15 PM	**0**	**19**	**5**	**15**	**0**	**4**	**11**	**9**	**0**	**11**	**88**	**2**	**0**	**3**	**140**	**41**	**348**	**0**
4:30 PM	**0**	**29**	**13**	**9**	**0**	**3**	**8**	**11**	**0**	**13**	**126**	**6**	**0**	**6**	**117**	**30**	**371**	**0**
4:45 PM	**0**	**30**	**16**	**13**	**0**	**7**	**11**	**8**	**0**	**7**	**106**	**5**	**0**	**3**	**138**	**30**	**374**	**1,475**
5:00 PM	0	22	9	11	0	3	17	7	0	15	105	4	0	2	140	38	373	1,466
5:15 PM	0	23	9	11	0	6	6	10	0	7	83	2	0	5	120	43	325	1,443
5:30 PM	0	26	7	14	0	2	10	8	0	14	97	4	0	2	108	32	324	1,396
5:45 PM	0	23	7	13	0	5	16	9	0	14	94	3	0	3	106	44	337	1,359
Count Total	0	201	70	90	0	36	89	74	0	90	819	34	0	32	1,000	299	2,834	
Pk Hr All	**0**	**107**	**38**	**41**	**0**	**20**	**40**	**40**	**0**	**40**	**440**	**21**	**0**	**20**	**526**	**142**	**1,475**	
Pk Hr HV	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**12**	**0**	**0**	**1**	**18**	**5**	**38**	
Pk Hr HV%	**-**	**0%**	**0%**	**2%**	**-**	**0%**	**0%**	**0%**	**-**	**3%**	**3%**	**0%**	**-**	**5%**	**3%**	**4%**	**3%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	**0**	**0**	**3**	**8**	**11**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**5**	**0**	**8**
4:15 PM	**1**	**0**	**3**	**4**	**8**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**1**	**3**	**4**
4:30 PM	**0**	**0**	**4**	**6**	**10**	**0**	**0**	**0**	**1**	**1**	**1**	**2**	**0**	**1**	**4**
4:45 PM	**0**	**0**	**3**	**6**	**9**	**1**	**0**	**0**	**0**	**1**	**1**	**1**	**1**	**1**	**4**
5:00 PM	0	0	1	3	*4*	0	0	0	0	*0*	5	1	5	1	*12*
5:15 PM	0	0	1	2	*3*	0	0	0	0	*0*	1	1	0	0	*2*
5:30 PM	1	0	1	2	*4*	0	0	0	0	*0*	2	1	5	1	*9*
5:45 PM	1	0	1	1	*3*	0	0	0	0	*0*	4	1	0	1	*6*
Count Total	3	0	17	32	*52*	1	0	0	2	*3*	15	9	17	8	*49*
Peak Hour	**1**	**0**	**13**	**24**	***38***	**1**	**0**	**0**	**2**	***3***	**3**	**5**	**7**	**5**	**20**

Kyle Campbell
(425) 213-7345

Count Summaries - Heavy Vehicles

Interval Start	Clairmont Way				Driveway				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**1**	**6**	**1**	**11**	0
4:15 PM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**0**	**0**	**0**	**2**	**2**	**8**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**5**	**1**	**10**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**5**	**1**	**9**	**38**
5:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0	4	31
5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	3	26
5:30 PM	0	0	0	1	0	0	0	0	0	0	1	0	0	0	2	0	4	20
5:45 PM	0	0	0	1	0	0	0	0	0	0	1	0	0	0	1	0	3	14
Count Total	0	0	0	3	0	0	0	0	0	1	16	0	0	1	26	5	52	
Pk Hr Heavy	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**12**	**0**	**0**	**1**	**18**	**5**	**38**	

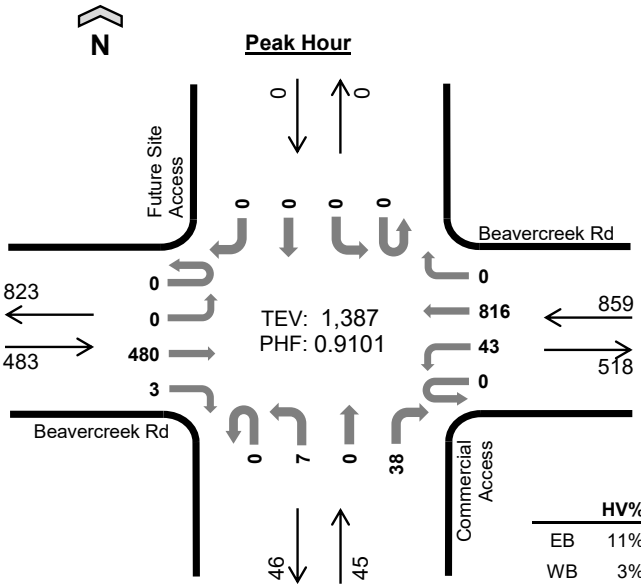
Count Summaries - Bikes

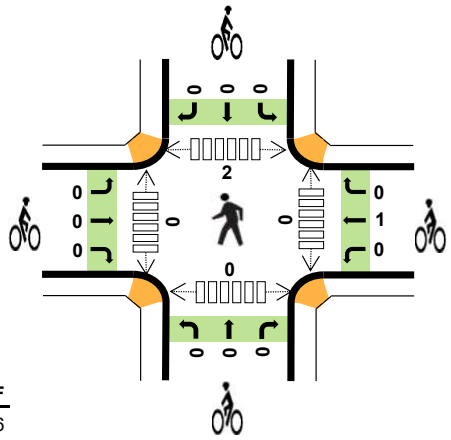
Interval Start	Clairmont Way				Driveway				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**
4:45 PM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**3**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	3	
Pk Hr Bike	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**3**	

Kyle Campbell
(425) 213-7345

Commercial Access
Beavercreek Rd

Date: 9/9/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM





	HV%	PHF
EB	11%	0.86
WB	3%	0.94
NB	0%	0.70
SB	--	--
TOTAL	6%	0.91

Peak Hour Count Summaries

Peak Hour Interval Start		Beavercreek Rd Eastbound				Beavercreek Rd Westbound				Commercial Access Northbound				Future Site Access Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:30 AM		0	0	111	1	0	12	203	0	0	3	0	8	0	0	0	0	338	0
7:45 AM		0	0	130	1	0	12	197	0	0	1	0	15	0	0	0	0	356	0
8:00 AM		0	0	140	0	0	12	217	0	0	2	0	10	0	0	0	0	381	0
8:15 AM		0	0	99	1	0	7	199	0	0	1	0	5	0	0	0	0	312	1,387
Pk Hr	All	0	0	480	3	0	43	816	0	0	7	0	38	0	0	0	0	1,387	
	HV	0	0	52	0	0	0	27	0	0	0	0	0	0	0	0	0	79	
	HV%	-	-	11%	0%	-	0%	3%	-	-	0%	-	0%	-	-	-	-	6%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:30 AM	9	8	0	0	*17*	0	1	0	0	*1*	0	0	0	0	*0*
7:45 AM	15	5	0	0	*20*	0	0	0	0	*0*	0	0	0	0	*0*
8:00 AM	22	5	0	0	*27*	0	0	0	0	*0*	0	0	0	0	*0*
8:15 AM	6	9	0	0	*15*	0	0	0	0	*0*	0	0	2	0	*2*
Peak Hour	52	27	0	0	*79*	0	1	0	0	*1*	0	0	2	0	*2*

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Count Summaries - All Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				Commercial Access				Future Site Access				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	86	0	0	8	148	0	0	2	0	5	0	0	0	0	249	0
7:15 AM	0	0	101	0	0	7	179	0	0	0	0	3	0	0	0	0	290	0
7:30 AM	**0**	**0**	**111**	**1**	**0**	**12**	**203**	**0**	**0**	**3**	**0**	**8**	**0**	**0**	**0**	**0**	**338**	**0**
7:45 AM	**0**	**0**	**130**	**1**	**0**	**12**	**197**	**0**	**0**	**1**	**0**	**15**	**0**	**0**	**0**	**0**	**356**	**1,233**
8:00 AM	**0**	**0**	**140**	**0**	**0**	**12**	**217**	**0**	**0**	**2**	**0**	**10**	**0**	**0**	**0**	**0**	**381**	**1,365**
8:15 AM	**0**	**0**	**99**	**1**	**0**	**7**	**199**	**0**	**0**	**1**	**0**	**5**	**0**	**0**	**0**	**0**	**312**	**1,387**
8:30 AM	0	0	115	2	0	8	187	0	0	1	0	3	0	0	0	0	316	1,365
8:45 AM	0	0	107	4	0	16	210	0	0	2	0	7	0	0	0	0	346	1,355
Count Total	0	0	889	9	0	82	1,540	0	0	12	0	56	0	0	0	0	2,588	
Pk Hr All	**0**	**0**	**480**	**3**	**0**	**43**	**816**	**0**	**0**	**7**	**0**	**38**	**0**	**0**	**0**	**0**	**1,387**	
Pk Hr HV	**0**	**0**	**52**	**0**	**0**	**0**	**27**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**79**	
Pk Hr HV%	**-**	**-**	**11%**	**0%**	**-**	**0%**	**3%**	**-**	**-**	**0%**	**-**	**0%**	**-**	**-**	**-**	**-**	**6%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	7	6	0	0	*13*	0	0	0	0	*0*	0	0	2	1	*3*
7:15 AM	5	7	0	0	*12*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	**9**	**8**	**0**	**0**	**17**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**
7:45 AM	**15**	**5**	**0**	**0**	**20**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:00 AM	**22**	**5**	**0**	**0**	**27**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	**6**	**9**	**0**	**0**	**15**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**
8:30 AM	3	9	0	0	*12*	0	2	0	0	*2*	0	0	1	0	*1*
8:45 AM	3	7	0	0	*10*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	70	56	0	0	*126*	0	3	0	0	*3*	0	0	5	1	*6*
Peak Hour	**52**	**27**	**0**	**0**	***79***	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**2**	**0**	**2**

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Count Summaries - Heavy Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				Commercial Access				Future Site Access				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	7	0	0	0	6	0	0	0	0	0	0	0	0	0	13	0
7:15 AM	0	0	5	0	0	0	7	0	0	0	0	0	0	0	0	0	12	0
7:30 AM	**0**	**0**	**9**	**0**	**0**	**0**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**17**	**0**
7:45 AM	**0**	**0**	**15**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**20**	**62**
8:00 AM	**0**	**0**	**22**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**27**	**76**
8:15 AM	**0**	**0**	**6**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**15**	**79**
8:30 AM	0	0	3	0	0	0	9	0	0	0	0	0	0	0	0	0	12	74
8:45 AM	0	0	3	0	0	0	7	0	0	0	0	0	0	0	0	0	10	64
Count Total	0	0	70	0	0	0	56	0	0	0	0	0	0	0	0	0	126	
Pk Hr Heavy	**0**	**0**	**52**	**0**	**0**	**0**	**27**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**79**	

Count Summaries - Bikes

Interval Start	Beavercreek Rd				Beavercreek Rd				Commercial Access				Future Site Access				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:30 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	2
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Count Total	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	

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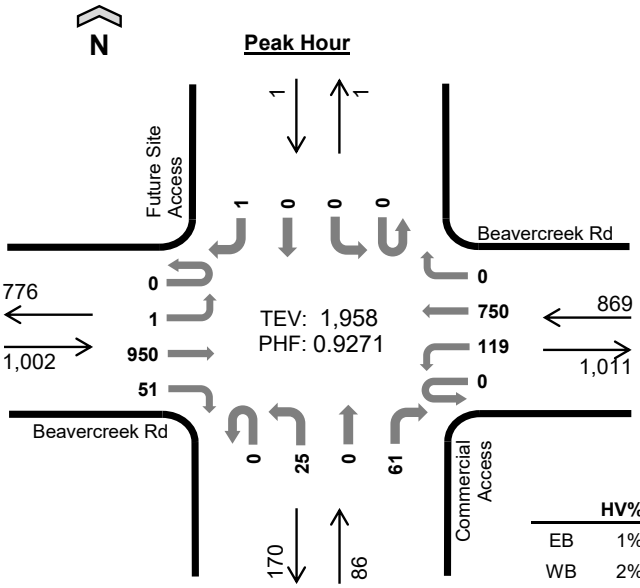
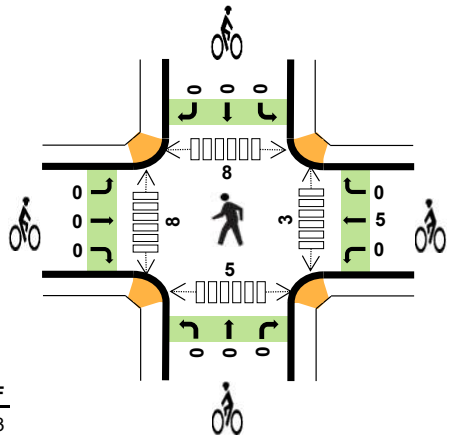
Commercial Access
Beavercreek Rd

Date: 9/9/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:15 PM to 5:15 PM





	HV%	PHF
EB	1%	0.83
WB	2%	0.97
NB	0%	0.65
SB	0%	0.25
TOTAL	1%	0.93

Peak Hour Count Summaries

Peak Hour Interval Start		Beavercreek Rd Eastbound				Beavercreek Rd Westbound				Commercial Access Northbound				Future Site Access Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:15 PM		0	0	202	13	0	27	196	0	0	7	0	26	0	0	0	0	471	0
4:30 PM		0	1	220	12	0	40	182	0	0	6	0	1	0	0	0	0	462	0
4:45 PM		0	0	238	14	0	26	191	0	0	8	0	19	0	0	0	1	497	0
5:00 PM		0	0	290	12	0	26	181	0	0	4	0	15	0	0	0	0	528	1,958
Pk Hr	All	0	1	950	51	0	119	750	0	0	25	0	61	0	0	0	1	1,958	
	HV	0	0	12	0	0	2	13	0	0	0	0	0	0	0	0	0	27	
	HV%	-	0%	1%	0%	-	2%	2%	-	-	0%	-	0%	-	-	-	0%	1%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:15 PM	9	4	0	0	*13*	0	1	0	0	*1*	2	4	3	0	*9*
4:30 PM	1	4	0	0	*5*	0	0	0	0	*0*	0	2	3	0	*5*
4:45 PM	2	3	0	0	*5*	0	2	0	0	*2*	1	2	1	0	*4*
5:00 PM	0	4	0	0	*4*	0	2	0	0	*2*	0	0	1	5	*6*
Peak Hour	12	15	0	0	*27*	0	5	0	0	*5*	3	8	8	5	*24*

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Count Summaries - All Vehicles

Interval Start	Beavercreek Rd Eastbound				Beavercreek Rd Westbound				Commercial Access Northbound				Future Site Access Southbound				15-min Total	Rolling Hour Total
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	1	230	10	0	32	170	0	0	7	0	23	0	0	0	1	474	0
4:15 PM	**0**	**0**	**202**	**13**	**0**	**27**	**196**	**0**	**0**	**7**	**0**	**26**	**0**	**0**	**0**	**0**	**471**	**0**
4:30 PM	**0**	**1**	**220**	**12**	**0**	**40**	**182**	**0**	**0**	**6**	**0**	**1**	**0**	**0**	**0**	**0**	**462**	**0**
4:45 PM	**0**	**0**	**238**	**14**	**0**	**26**	**191**	**0**	**0**	**8**	**0**	**19**	**0**	**0**	**0**	**1**	**497**	**1,904**
5:00 PM	**0**	**0**	**290**	**12**	**0**	**26**	**181**	**0**	**0**	**4**	**0**	**15**	**0**	**0**	**0**	**0**	**528**	**1,958**
5:15 PM	0	0	228	10	0	26	167	0	0	9	0	11	0	0	0	0	451	1,938
5:30 PM	0	0	240	13	0	16	184	0	0	7	0	14	0	0	0	0	474	1,950
5:45 PM	0	0	190	12	0	27	185	0	0	5	0	9	0	0	0	0	428	1,881
Count Total	0	2	1,838	96	0	220	1,456	0	0	53	0	118	0	0	0	2	3,785	
Pk Hr All	**0**	**1**	**950**	**51**	**0**	**119**	**750**	**0**	**0**	**25**	**0**	**61**	**0**	**0**	**0**	**1**	**1,958**	
Pk Hr HV	**0**	**0**	**12**	**0**	**0**	**2**	**13**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**27**	
Pk Hr HV%	**-**	**0%**	**1%**	**0%**	**-**	**2%**	**2%**	**-**	**-**	**0%**	**-**	**0%**	**-**	**-**	**-**	**0%**	**1%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	4	7	1	0	*12*	0	3	0	0	*3*	0	0	2	0	*2*
4:15 PM	**9**	**4**	**0**	**0**	**13**	**0**	**1**	**0**	**0**	**1**	**2**	**4**	**3**	**0**	**9**
4:30 PM	**1**	**4**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**3**	**0**	**5**
4:45 PM	**2**	**3**	**0**	**0**	**5**	**0**	**2**	**0**	**0**	**2**	**1**	**2**	**1**	**0**	**4**
5:00 PM	**0**	**4**	**0**	**0**	**4**	**0**	**2**	**0**	**0**	**2**	**0**	**0**	**1**	**5**	**6**
5:15 PM	2	3	0	0	*5*	0	0	0	0	*0*	1	0	1	0	*2*
5:30 PM	2	2	0	0	*4*	0	1	0	0	*1*	0	0	0	0	*0*
5:45 PM	2	2	0	0	*4*	0	0	0	0	*0*	0	1	2	0	*3*
Count Total	22	29	1	0	*52*	0	9	0	0	*9*	4	9	13	5	*31*
Peak Hour	**12**	**15**	**0**	**0**	***27***	**0**	**5**	**0**	**0**	***5***	**3**	**8**	**8**	**5**	**24**

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Count Summaries - Heavy Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				Commercial Access				Future Site Access				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	4	0	0	0	7	0	0	0	0	1	0	0	0	0	12	0
4:15 PM	**0**	**0**	**9**	**0**	**0**	**1**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**13**	**0**
4:30 PM	**0**	**0**	**1**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**
4:45 PM	**0**	**0**	**2**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**35**
5:00 PM	**0**	**0**	**0**	**0**	**0**	**1**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**27**
5:15 PM	0	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	5	19
5:30 PM	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	4	18
5:45 PM	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	4	17
Count Total	0	0	22	0	0	2	27	0	0	0	0	1	0	0	0	0	52	
Pk Hr Heavy	**0**	**0**	**12**	**0**	**0**	**2**	**13**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**27**	

Count Summaries - Bikes

Interval Start	Beavercreek Rd				Beavercreek Rd				Commercial Access				Future Site Access				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**6**
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**5**
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
5:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	5
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Count Total	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	9	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	

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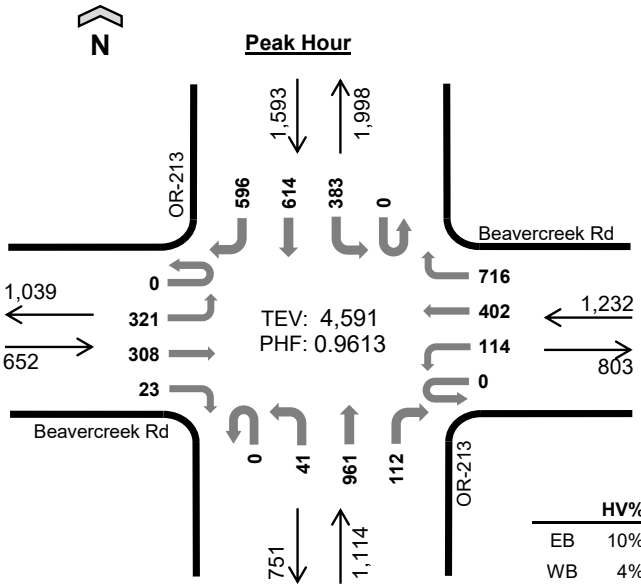
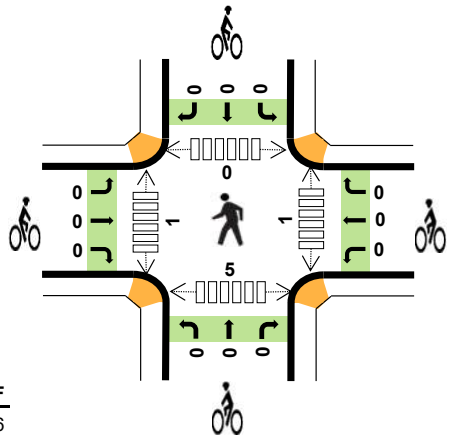
OR-213
Beavercreek Rd

Date: 9/9/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM



	HV%	PHF
EB	10%	0.76
WB	4%	0.88
NB	6%	0.90
SB	5%	0.88
TOTAL	6%	0.96



Peak Hour Count Summaries

Peak Hour Interval Start		Beavercreek Rd Eastbound				Beavercreek Rd Westbound				OR-213 Northbound				OR-213 Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:30 AM		0	88	54	3	0	22	116	180	0	8	282	20	0	80	122	126	1,101	0
7:45 AM		0	87	81	8	0	39	108	203	0	7	224	14	0	86	164	160	1,181	0
8:00 AM		0	86	125	3	0	30	82	164	0	10	199	42	0	122	170	161	1,194	0
8:15 AM		0	60	48	9	0	23	96	169	0	16	256	36	0	95	158	149	1,115	4,591
Pk Hr	All	0	321	308	23	0	114	402	716	0	41	961	112	0	383	614	596	4,591	
	HV	0	39	26	1	0	4	11	34	0	1	58	11	0	14	48	21	268	
	HV%	-	12%	8%	4%	-	4%	3%	5%	-	2%	6%	10%	-	4%	8%	4%	6%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:30 AM	18	14	18	16	*66*	0	0	0	0	*0*	0	1	0	0	*1*
7:45 AM	14	10	18	15	*57*	0	0	0	0	*0*	1	0	0	1	*2*
8:00 AM	26	9	18	28	*81*	0	0	0	0	*0*	0	0	0	2	*2*
8:15 AM	8	16	16	24	*64*	0	0	0	0	*0*	0	0	0	2	*2*
Peak Hour	66	49	70	83	*268*	0	0	0	0	*0*	1	1	0	5	*7*

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Count Summaries - All Vehicles

Interval Start	Beavercreek Rd Eastbound				Beavercreek Rd Westbound				OR-213 Northbound				OR-213 Southbound				15-min Total	Rolling Hour Total
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	65	36	1	0	17	72	192	0	11	284	24	0	72	112	105	991	0
7:15 AM	0	81	51	3	0	22	93	207	0	3	249	16	0	93	115	132	1,065	0
7:30 AM	**0**	**88**	**54**	**3**	**0**	**22**	**116**	**180**	**0**	**8**	**282**	**20**	**0**	**80**	**122**	**126**	**1,101**	**0**
7:45 AM	**0**	**87**	**81**	**8**	**0**	**39**	**108**	**203**	**0**	**7**	**224**	**14**	**0**	**86**	**164**	**160**	**1,181**	**4,338**
8:00 AM	**0**	**86**	**125**	**3**	**0**	**30**	**82**	**164**	**0**	**10**	**199**	**42**	**0**	**122**	**170**	**161**	**1,194**	**4,541**
8:15 AM	**0**	**60**	**48**	**9**	**0**	**23**	**96**	**169**	**0**	**16**	**256**	**36**	**0**	**95**	**158**	**149**	**1,115**	**4,591**
8:30 AM	0	83	68	11	0	29	109	168	0	8	221	29	0	82	124	146	1,078	4,568
8:45 AM	0	80	78	15	0	24	118	148	1	15	176	31	0	92	135	142	1,055	4,442
Count Total	0	630	541	53	0	206	794	1,431	1	78	1,891	212	0	722	1,100	1,121	8,780	
Pk Hr All	**0**	**321**	**308**	**23**	**0**	**114**	**402**	**716**	**0**	**41**	**961**	**112**	**0**	**383**	**614**	**596**	**4,591**	
Pk Hr HV	**0**	**39**	**26**	**1**	**0**	**4**	**11**	**34**	**0**	**1**	**58**	**11**	**0**	**14**	**48**	**21**	**268**	
Pk Hr HV%	**-**	**12%**	**8%**	**4%**	**-**	**4%**	**3%**	**5%**	**-**	**2%**	**6%**	**10%**	**-**	**4%**	**8%**	**4%**	**6%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	6	13	18	14	*51*	0	1	0	0	*1*	0	0	0	1	*1*
7:15 AM	9	11	15	18	*53*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	**18**	**14**	**18**	**16**	**66**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**
7:45 AM	**14**	**10**	**18**	**15**	**57**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**2**
8:00 AM	**26**	**9**	**18**	**28**	**81**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**2**
8:15 AM	**8**	**16**	**16**	**24**	**64**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**2**
8:30 AM	12	14	29	23	*78*	0	0	0	0	*0*	0	0	0	0	*0*
8:45 AM	10	8	14	29	*61*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	103	95	146	167	*511*	0	1	0	0	*1*	1	1	0	6	*8*
Peak Hour	**66**	**49**	**70**	**83**	***268***	**0**	**0**	**0**	**0**	***0***	**1**	**1**	**0**	**5**	**7**

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Count Summaries - Heavy Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	3	3	0	0	1	4	8	0	0	16	2	0	0	12	2	51	0
7:15 AM	0	7	1	1	0	0	5	6	0	0	14	1	0	3	11	4	53	0
7:30 AM	**0**	**15**	**3**	**0**	**0**	**0**	**4**	**10**	**0**	**0**	**17**	**1**	**0**	**1**	**9**	**6**	**66**	**0**
7:45 AM	**0**	**10**	**4**	**0**	**0**	**2**	**1**	**7**	**0**	**0**	**16**	**2**	**0**	**2**	**11**	**2**	**57**	**227**
8:00 AM	**0**	**8**	**18**	**0**	**0**	**2**	**1**	**6**	**0**	**1**	**12**	**5**	**0**	**10**	**12**	**6**	**81**	**257**
8:15 AM	**0**	**6**	**1**	**1**	**0**	**0**	**5**	**11**	**0**	**0**	**13**	**3**	**0**	**1**	**16**	**7**	**64**	**268**
8:30 AM	0	11	1	0	0	2	6	6	0	0	26	3	0	8	12	3	78	280
8:45 AM	0	8	2	0	0	1	3	4	0	2	10	2	0	8	17	4	61	284
Count Total	0	68	33	2	0	8	29	58	0	3	124	19	0	33	100	34	511	
Pk Hr Heavy	**0**	**39**	**26**	**1**	**0**	**4**	**11**	**34**	**0**	**1**	**58**	**11**	**0**	**14**	**48**	**21**	**268**	

Count Summaries - Bikes

Interval Start	Beavercreek Rd				Beavercreek Rd				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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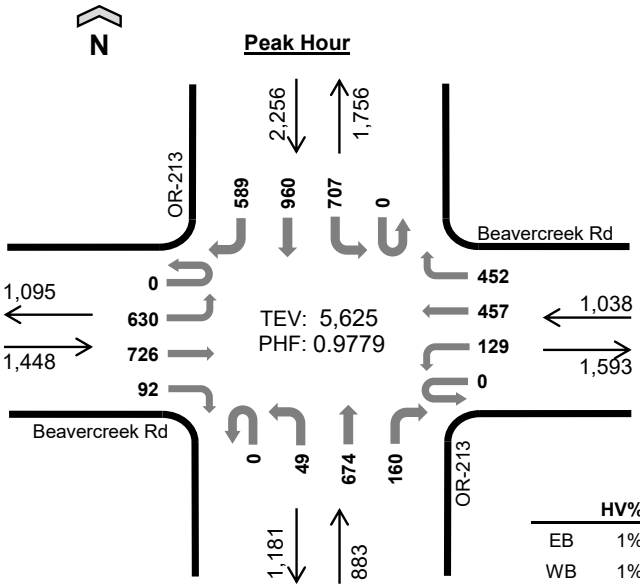
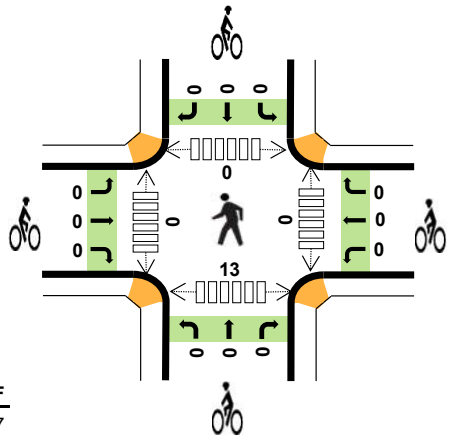
OR-213
Beavercreek Rd

Date: 9/9/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM





	HV%	PHF
EB	1%	0.87
WB	1%	0.83
NB	3%	0.93
SB	2%	0.97
TOTAL	2%	0.98

Peak Hour Count Summaries

Peak Hour Interval Start		Beavercreek Rd Eastbound				Beavercreek Rd Westbound				OR-213 Northbound				OR-213 Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:30 PM		0	156	174	27	0	48	148	115	0	10	151	34	0	173	242	148	1,426	0
4:45 PM		0	139	168	22	0	28	100	125	0	17	146	49	0	195	233	152	1,374	0
5:00 PM		0	142	182	20	0	22	118	118	0	14	181	43	0	162	241	144	1,387	0
5:15 PM		0	193	202	23	0	31	91	94	0	8	196	34	0	177	244	145	1,438	5,625
Pk Hr	All	0	630	726	92	0	129	457	452	0	49	674	160	0	707	960	589	5,625	
	HV	0	6	8	0	0	0	4	5	0	1	26	2	0	25	24	7	108	
	HV%	-	1%	1%	0%	-	0%	1%	1%	-	2%	4%	1%	-	4%	3%	1%	2%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:30 PM	8	2	7	19	*36*	0	0	0	0	*0*	0	0	0	3	*3*
4:45 PM	2	2	13	10	*27*	0	0	0	0	*0*	0	0	0	4	*4*
5:00 PM	0	1	5	17	*23*	0	0	0	0	*0*	0	0	0	5	*5*
5:15 PM	4	4	4	10	*22*	0	0	0	0	*0*	0	0	0	1	*1*
Peak Hour	14	9	29	56	*108*	0	0	0	0	*0*	0	0	0	13	*13*

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Count Summaries - All Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	189	134	14	0	31	107	110	0	14	182	35	0	162	231	159	1,368	0
4:15 PM	0	131	136	15	0	22	103	146	0	13	170	36	0	182	263	162	1,379	0
4:30 PM	**0**	**156**	**174**	**27**	**0**	**48**	**148**	**115**	**0**	**10**	**151**	**34**	**0**	**173**	**242**	**148**	**1,426**	**0**
4:45 PM	**0**	**139**	**168**	**22**	**0**	**28**	**100**	**125**	**0**	**17**	**146**	**49**	**0**	**195**	**233**	**152**	**1,374**	**5,547**
5:00 PM	**0**	**142**	**182**	**20**	**0**	**22**	**118**	**118**	**0**	**14**	**181**	**43**	**0**	**162**	**241**	**144**	**1,387**	**5,566**
5:15 PM	**0**	**193**	**202**	**23**	**0**	**31**	**91**	**94**	**0**	**8**	**196**	**34**	**0**	**177**	**244**	**145**	**1,438**	**5,625**
5:30 PM	0	143	141	21	0	30	109	142	0	12	149	47	0	197	259	136	1,386	5,585
5:45 PM	0	138	154	14	0	28	116	113	0	12	176	30	0	148	199	123	1,251	5,462
Count Total	0	1,231	1,291	156	0	240	892	963	0	100	1,351	308	0	1,396	1,912	1,169	11,009	
Pk Hr All	**0**	**630**	**726**	**92**	**0**	**129**	**457**	**452**	**0**	**49**	**674**	**160**	**0**	**707**	**960**	**589**	**5,625**	
Pk Hr HV	**0**	**6**	**8**	**0**	**0**	**0**	**4**	**5**	**0**	**1**	**26**	**2**	**0**	**25**	**24**	**7**	**108**	
Pk Hr HV%	**-**	**1%**	**1%**	**0%**	**-**	**0%**	**1%**	**1%**	**-**	**2%**	**4%**	**1%**	**-**	**4%**	**3%**	**1%**	**2%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	7	5	6	25	*43*	0	0	0	0	*0*	1	0	0	1	*2*
4:15 PM	8	5	8	23	*44*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	**8**	**2**	**7**	**19**	**36**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**3**
4:45 PM	**2**	**2**	**13**	**10**	**27**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**4**
5:00 PM	**0**	**1**	**5**	**17**	**23**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**5**
5:15 PM	**4**	**4**	**4**	**10**	**22**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**
5:30 PM	4	3	3	16	*26*	0	0	0	0	*0*	0	0	0	3	*3*
5:45 PM	5	1	6	12	*24*	0	0	0	0	*0*	0	0	0	6	*6*
Count Total	38	23	52	132	*245*	0	0	0	0	*0*	1	0	0	23	*24*
Peak Hour	**14**	**9**	**29**	**56**	***108***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**13**	**13**

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Count Summaries - Heavy Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	3	4	0	0	0	2	3	0	0	6	0	0	5	12	8	43	0
4:15 PM	0	4	3	1	0	1	2	2	0	0	8	0	0	11	10	2	44	0
4:30 PM	**0**	**2**	**6**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**7**	**0**	**0**	**10**	**7**	**2**	**36**	**0**
4:45 PM	**0**	**2**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**11**	**2**	**0**	**3**	**6**	**1**	**27**	**150**
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**4**	**0**	**0**	**9**	**5**	**3**	**23**	**130**
5:15 PM	**0**	**2**	**2**	**0**	**0**	**0**	**2**	**2**	**0**	**0**	**4**	**0**	**0**	**3**	**6**	**1**	**22**	**108**
5:30 PM	0	4	0	0	0	0	1	2	0	0	3	0	0	6	4	6	26	98
5:45 PM	0	3	2	0	0	0	1	0	0	0	6	0	0	8	2	2	24	95
Count Total	0	20	17	1	0	1	10	12	0	1	49	2	0	55	52	25	245	
Pk Hr Heavy	**0**	**6**	**8**	**0**	**0**	**0**	**4**	**5**	**0**	**1**	**26**	**2**	**0**	**25**	**24**	**7**	**108**	

Count Summaries - Bikes

Interval Start	Beavercreek Rd				Beavercreek Rd				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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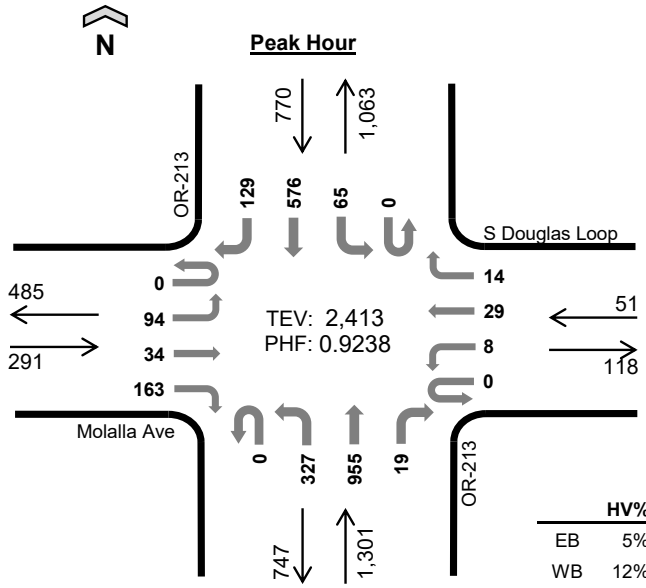
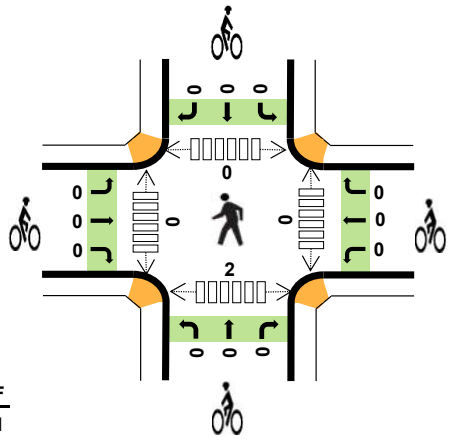
OR-213
Molalla Ave

Date: 9/9/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM



	HV%	PHF
EB	5%	0.71
WB	12%	0.64
NB	6%	0.91
SB	8%	0.86
TOTAL	6%	0.92



Peak Hour Count Summaries

Peak Hour Interval Start		Molalla Ave				S Douglas Loop				OR-213				OR-213				15-min Total	Rolling Hour Total
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:30 AM		0	21	6	31	0	0	6	2	0	64	250	4	0	17	121	24	546	0
7:45 AM		0	18	7	39	0	1	4	0	0	82	233	7	0	18	138	39	586	0
8:00 AM		0	36	12	55	0	4	11	5	0	82	220	3	0	15	173	37	653	0
8:15 AM		0	19	9	38	0	3	8	7	0	99	252	5	0	15	144	29	628	2,413
Pk Hr	All	0	94	34	163	0	8	29	14	0	327	955	19	0	65	576	129	2,413	
	HV	0	4	4	7	0	2	4	0	0	8	65	3	0	1	54	3	155	
	HV%	-	4%	12%	4%	-	25%	14%	0%	-	2%	7%	16%	-	2%	9%	2%	6%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:30 AM	3	1	16	11	*31*	0	0	0	0	*0*	0	0	0	1	*1*
7:45 AM	4	1	22	8	*35*	0	0	0	0	*0*	0	0	0	1	*1*
8:00 AM	6	1	16	20	*43*	0	0	0	0	*0*	0	0	0	0	*0*
8:15 AM	2	3	22	19	*46*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	15	6	76	58	*155*	0	0	0	0	*0*	0	0	0	2	*2*

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Count Summaries - All Vehicles

Interval Start	Molalla Ave				S Douglas Loop				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	25	5	22	0	1	5	3	0	60	275	1	0	6	121	23	547	0
7:15 AM	0	17	0	33	0	3	5	3	0	59	271	1	0	14	110	31	547	0
7:30 AM	**0**	**21**	**6**	**31**	**0**	**0**	**6**	**2**	**0**	**64**	**250**	**4**	**0**	**17**	**121**	**24**	**546**	**0**
7:45 AM	**0**	**18**	**7**	**39**	**0**	**1**	**4**	**0**	**0**	**82**	**233**	**7**	**0**	**18**	**138**	**39**	**586**	**2,226**
8:00 AM	**0**	**36**	**12**	**55**	**0**	**4**	**11**	**5**	**0**	**82**	**220**	**3**	**0**	**15**	**173**	**37**	**653**	**2,332**
8:15 AM	**0**	**19**	**9**	**38**	**0**	**3**	**8**	**7**	**0**	**99**	**252**	**5**	**0**	**15**	**144**	**29**	**628**	**2,413**
8:30 AM	0	20	8	45	0	3	14	3	0	73	218	2	0	10	115	33	544	2,411
8:45 AM	0	22	2	47	0	1	9	4	0	82	210	3	0	13	151	30	574	2,399
Count Total	0	178	49	310	0	16	62	27	0	601	1,929	26	0	108	1,073	246	4,625	
Pk Hr All	**0**	**94**	**34**	**163**	**0**	**8**	**29**	**14**	**0**	**327**	**955**	**19**	**0**	**65**	**576**	**129**	**2,413**	
Pk Hr HV	**0**	**4**	**4**	**7**	**0**	**2**	**4**	**0**	**0**	**8**	**65**	**3**	**0**	**1**	**54**	**3**	**155**	
Pk Hr HV%	**-**	**4%**	**12%**	**4%**	**-**	**25%**	**14%**	**0%**	**-**	**2%**	**7%**	**16%**	**-**	**2%**	**9%**	**2%**	**6%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	3	2	25	13	*43*	0	0	0	0	*0*	0	0	0	1	*1*
7:15 AM	0	1	17	10	*28*	0	0	0	0	*0*	12	0	0	1	*13*
7:30 AM	**3**	**1**	**16**	**11**	**31**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**
7:45 AM	**4**	**1**	**22**	**8**	**35**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**
8:00 AM	**6**	**1**	**16**	**20**	**43**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	**2**	**3**	**22**	**19**	**46**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	4	1	25	15	*45*	0	0	0	0	*0*	0	0	1	0	*1*
8:45 AM	4	1	21	17	*43*	0	0	0	0	*0*	0	0	3	0	*3*
Count Total	26	11	164	113	*314*	0	0	0	0	*0*	12	0	4	4	*20*
Peak Hour	**15**	**6**	**76**	**58**	***155***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**2**	**2**

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Count Summaries - Heavy Vehicles

Interval Start	Molalla Ave				S Douglas Loop				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	1	1	1	0	0	2	0	0	6	18	1	0	1	12	0	43	0
7:15 AM	0	0	0	0	0	1	0	0	0	0	17	0	0	0	9	1	28	0
7:30 AM	**0**	**1**	**1**	**1**	**0**	**0**	**1**	**0**	**0**	**1**	**14**	**1**	**0**	**0**	**11**	**0**	**31**	**0**
7:45 AM	**0**	**0**	**1**	**3**	**0**	**1**	**0**	**0**	**0**	**2**	**20**	**0**	**0**	**0**	**7**	**1**	**35**	**137**
8:00 AM	**0**	**2**	**1**	**3**	**0**	**0**	**1**	**0**	**0**	**1**	**15**	**0**	**0**	**0**	**19**	**1**	**43**	**137**
8:15 AM	**0**	**1**	**1**	**0**	**0**	**1**	**2**	**0**	**0**	**4**	**16**	**2**	**0**	**1**	**17**	**1**	**46**	**155**
8:30 AM	0	1	0	3	0	0	1	0	0	0	25	0	0	0	15	0	45	169
8:45 AM	0	1	0	3	0	0	1	0	0	4	16	1	0	1	14	2	43	177
Count Total	0	7	5	14	0	3	8	0	0	18	141	5	0	3	104	6	314	
Pk Hr Heavy	**0**	**4**	**4**	**7**	**0**	**2**	**4**	**0**	**0**	**8**	**65**	**3**	**0**	**1**	**54**	**3**	**155**	

Count Summaries - Bikes

Interval Start	Molalla Ave				S Douglas Loop				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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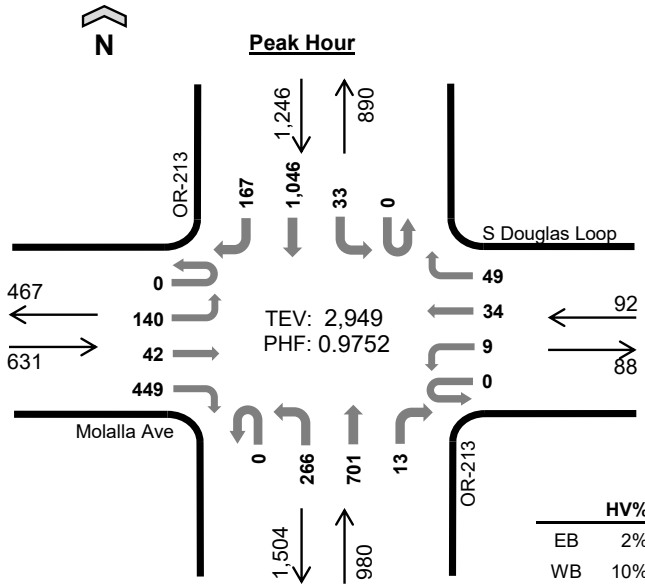
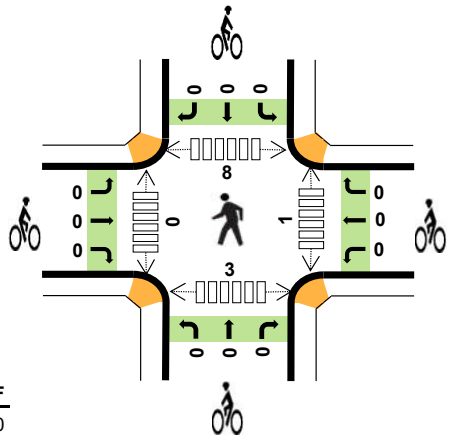
OR-213
Molalla Ave

Date: 9/9/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM



	HV%	PHF
EB	2%	0.90
WB	10%	0.70
NB	3%	0.92
SB	2%	0.96
TOTAL	3%	0.98



Peak Hour Count Summaries

Peak Hour Interval Start		Molalla Ave				S Douglas Loop				OR-213				OR-213				15-min Total	Rolling Hour Total
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:45 PM		0	31	14	104	0	3	11	9	0	65	167	1	0	8	265	51	729	0
5:00 PM		0	41	8	126	0	2	10	21	0	56	167	3	0	10	227	44	715	0
5:15 PM		0	28	10	118	0	4	10	15	0	65	189	2	0	8	280	27	756	0
5:30 PM		0	40	10	101	0	0	3	4	0	80	178	7	0	7	274	45	749	2,949
Pk Hr	All	0	140	42	449	0	9	34	49	0	266	701	13	0	33	1,046	167	2,949	
	HV	0	2	5	4	0	2	5	2	0	4	23	2	0	1	20	4	74	
	HV%	-	1%	12%	1%	-	22%	15%	4%	-	2%	3%	15%	-	3%	2%	2%	3%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:45 PM	6	4	9	6	*25*	0	0	0	0	*0*	0	0	6	0	*6*
5:00 PM	3	1	7	7	*18*	0	0	0	0	*0*	1	0	1	1	*3*
5:15 PM	1	3	6	8	*18*	0	0	0	0	*0*	0	0	1	1	*2*
5:30 PM	1	1	7	4	*13*	0	0	0	0	*0*	0	0	0	1	*1*
Peak Hour	11	9	29	25	*74*	0	0	0	0	*0*	1	0	8	3	*12*

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Count Summaries - All Vehicles

Interval Start	Molalla Ave				S Douglas Loop				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	23	5	108	0	3	10	18	0	82	152	1	0	7	273	51	733	0
4:15 PM	0	26	9	108	0	4	8	12	0	63	162	0	0	1	277	41	711	0
4:30 PM	0	24	7	107	0	1	7	15	0	79	174	2	0	5	263	42	726	0
4:45 PM	**0**	**31**	**14**	**104**	**0**	**3**	**11**	**9**	**0**	**65**	**167**	**1**	**0**	**8**	**265**	**51**	**729**	**2,899**
5:00 PM	**0**	**41**	**8**	**126**	**0**	**2**	**10**	**21**	**0**	**56**	**167**	**3**	**0**	**10**	**227**	**44**	**715**	**2,881**
5:15 PM	**0**	**28**	**10**	**118**	**0**	**4**	**10**	**15**	**0**	**65**	**189**	**2**	**0**	**8**	**280**	**27**	**756**	**2,926**
5:30 PM	**0**	**40**	**10**	**101**	**0**	**0**	**3**	**4**	**0**	**80**	**178**	**7**	**0**	**7**	**274**	**45**	**749**	**2,949**
5:45 PM	0	28	11	106	0	4	11	5	0	63	152	3	0	15	234	31	663	2,883
Count Total	0	241	74	878	0	21	70	99	0	553	1,341	19	0	61	2,093	332	5,782	
Pk Hr All	**0**	**140**	**42**	**449**	**0**	**9**	**34**	**49**	**0**	**266**	**701**	**13**	**0**	**33**	**1,046**	**167**	**2,949**	
Pk Hr HV	**0**	**2**	**5**	**4**	**0**	**2**	**5**	**2**	**0**	**4**	**23**	**2**	**0**	**1**	**20**	**4**	**74**	
Pk Hr HV%	**-**	**1%**	**12%**	**1%**	**-**	**22%**	**15%**	**4%**	**-**	**2%**	**3%**	**15%**	**-**	**3%**	**2%**	**2%**	**3%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	2	2	6	10	*20*	0	0	0	0	*0*	0	0	1	1	*2*
4:15 PM	3	1	10	13	*27*	0	0	0	0	*0*	0	0	2	0	*2*
4:30 PM	2	1	10	12	*25*	1	0	0	0	*1*	0	0	2	0	*2*
4:45 PM	**6**	**4**	**9**	**6**	**25**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**6**
5:00 PM	**3**	**1**	**7**	**7**	**18**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**1**	**3**
5:15 PM	**1**	**3**	**6**	**8**	**18**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**2**
5:30 PM	**1**	**1**	**7**	**4**	**13**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**
5:45 PM	3	2	6	3	*14*	0	0	0	0	*0*	0	0	0	1	*1*
Count Total	21	15	61	63	*160*	1	0	0	0	*1*	1	0	13	5	*19*
Peak Hour	**11**	**9**	**29**	**25**	***74***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**8**	**3**	**12**

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Count Summaries - Heavy Vehicles

Interval Start	Molalla Ave				S Douglas Loop				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	1	0	1	0	0	2	0	0	0	5	1	0	0	9	1	20	0
4:15 PM	0	0	1	2	0	1	0	0	0	2	8	0	0	0	11	2	27	0
4:30 PM	0	0	0	2	0	0	1	0	0	0	9	1	0	0	12	0	25	0
4:45 PM	**0**	**0**	**3**	**3**	**0**	**1**	**2**	**1**	**0**	**1**	**8**	**0**	**0**	**0**	**6**	**0**	**25**	**97**
5:00 PM	**0**	**1**	**1**	**1**	**0**	**0**	**1**	**0**	**0**	**1**	**5**	**1**	**0**	**0**	**7**	**0**	**18**	**95**
5:15 PM	**0**	**0**	**1**	**0**	**0**	**1**	**1**	**1**	**0**	**1**	**5**	**0**	**0**	**0**	**5**	**3**	**18**	**86**
5:30 PM	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**5**	**1**	**0**	**1**	**2**	**1**	**13**	**74**
5:45 PM	0	1	1	1	0	1	1	0	0	1	5	0	0	1	2	0	14	63
Count Total	0	4	7	10	0	4	9	2	0	7	50	4	0	2	54	7	160	
Pk Hr Heavy	**0**	**2**	**5**	**4**	**0**	**2**	**5**	**2**	**0**	**4**	**23**	**2**	**0**	**1**	**20**	**4**	**74**	

Count Summaries - Bikes

Interval Start	Molalla Ave				S Douglas Loop				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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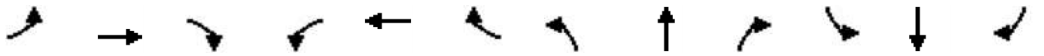
Appendix B: Operations Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	10	10	35	10	5	10	550	15	30	410	10
Future Volume (veh/h)	20	10	10	35	10	5	10	550	15	30	410	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1811	1811	1781	1781	1781	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	22	11	11	38	11	5	11	598	16	33	446	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	8	8	8	4	4	4	4	4	4
Cap, veh/h	264	76	51	327	62	18	667	1050	28	554	1054	26
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.59	0.59	0.59	0.59	0.59	0.59
Sat Flow, veh/h	575	575	383	855	468	135	919	1783	48	795	1789	44
Grp Volume(v), veh/h	44	0	0	54	0	0	11	0	614	33	0	457
Grp Sat Flow(s),veh/h/ln	1533	0	0	1457	0	0	919	0	1831	795	0	1833
Q Serve(g_s), s	0.0	0.0	0.0	0.2	0.0	0.0	0.2	0.0	5.9	0.8	0.0	3.9
Cycle Q Clear(g_c), s	0.7	0.0	0.0	0.8	0.0	0.0	4.1	0.0	5.9	6.7	0.0	3.9
Prop In Lane	0.50		0.25	0.70		0.09	1.00		0.03	1.00		0.02
Lane Grp Cap(c), veh/h	391	0	0	406	0	0	667	0	1079	554	0	1080
V/C Ratio(X)	0.11	0.00	0.00	0.13	0.00	0.00	0.02	0.00	0.57	0.06	0.00	0.42
Avail Cap(c_a), veh/h	1277	0	0	1245	0	0	1918	0	3574	1637	0	3577
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.1	0.0	0.0	11.2	0.0	0.0	4.4	0.0	3.6	5.7	0.0	3.2
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.8	0.1	0.0	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.6	0.1	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	11.2	0.0	0.0	11.3	0.0	0.0	4.4	0.0	4.5	5.8	0.0	3.7
LnGrp LOS	B			B			A		A	A		A
Approach Vol, veh/h		44			54			625			490	
Approach Delay, s/veh		11.2			11.3			4.5			3.8	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	20.9	7.8	20.9	7.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	56.0	21.0	56.0	21.0
Max Q Clear Time (g_c+I1), s	8.7	2.8	7.9	2.7
Green Ext Time (p_c), s	6.3	0.2	9.0	0.1

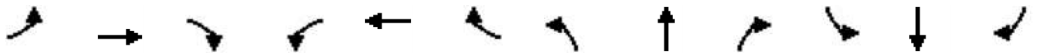
Intersection Summary	
HCM 7th Control Delay, s/veh	4.7
HCM 7th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	4	35	30	5	5	25	450	10	5	400	30
Future Volume (veh/h)	45	4	35	30	5	5	25	450	10	5	400	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1826	1826	1826	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	48	4	38	32	5	5	27	484	11	5	430	32
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	7	7	7	5	5	5	4	4	4	4	4	4
Cap, veh/h	409	238	202	411	111	111	517	808	18	466	790	667
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.03	0.45	0.45	0.01	0.43	0.43
Sat Flow, veh/h	1349	1796	1522	1332	838	838	1753	1792	41	1753	1841	1554
Grp Volume(v), veh/h	48	4	38	32	0	10	27	0	495	5	430	32
Grp Sat Flow(s),veh/h/ln	1349	1796	1522	1332	0	1675	1753	0	1833	1753	1841	1554
Q Serve(g_s), s	1.0	0.1	0.7	0.7	0.0	0.2	0.3	0.0	6.2	0.0	5.3	0.4
Cycle Q Clear(g_c), s	1.1	0.1	0.7	0.7	0.0	0.2	0.3	0.0	6.2	0.0	5.3	0.4
Prop In Lane	1.00		1.00	1.00		0.50	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	409	238	202	411	0	222	517	0	826	466	790	667
V/C Ratio(X)	0.12	0.02	0.19	0.08	0.00	0.05	0.05	0.00	0.60	0.01	0.54	0.05
Avail Cap(c_a), veh/h	1162	1241	1052	1155	0	1157	1105	0	2443	1091	2453	2072
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.0	11.5	11.7	11.8	0.0	11.5	5.0	0.0	6.3	5.4	6.5	5.1
Incr Delay (d2), s/veh	0.1	0.0	0.3	0.1	0.0	0.1	0.0	0.0	1.1	0.0	0.9	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.2	0.2	0.0	0.1	0.0	0.0	1.4	0.0	1.3	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	12.1	11.5	12.1	11.8	0.0	11.6	5.1	0.0	7.4	5.4	7.4	5.1
LnGrp LOS	B	B	B	B		B	A		A	A	A	A
Approach Vol, veh/h		90			42			522			467	
Approach Delay, s/veh		12.0			11.8			7.2			7.2	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.8	17.5		8.0	4.2	18.2		8.0				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	11.0	40.5		21.0	11.0	40.5		21.0				
Max Q Clear Time (g_c+I1), s	2.3	7.3		2.7	2.0	8.2		3.1				
Green Ext Time (p_c), s	0.0	4.8		0.1	0.0	5.5		0.2				

Intersection Summary												
HCM 7th Control Delay, s/veh			7.8									
HCM 7th LOS			A									



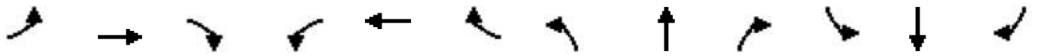
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	10	50	15	5	1	105	490	5	5	345	115
Future Volume (veh/h)	90	10	50	15	5	1	105	490	5	5	345	115
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1900	1900	1900	1826	1826	1826	1841	1841	1841
Adj Flow Rate, veh/h	99	11	55	16	5	1	115	538	5	5	379	126
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	4	4	4	0	0	0	5	5	5	4	4	4
Cap, veh/h	637	80	399	545	383	77	396	1276	12	388	936	307
Arrive On Green	0.07	0.30	0.30	0.02	0.25	0.25	0.36	0.36	0.36	0.36	0.36	0.36
Sat Flow, veh/h	1753	266	1332	1810	1537	307	870	3522	33	847	2583	847
Grp Volume(v), veh/h	99	0	66	16	0	6	115	265	278	5	255	250
Grp Sat Flow(s),veh/h/ln	1753	0	1598	1810	0	1844	870	1735	1820	847	1749	1681
Q Serve(g_s), s	1.7	0.0	1.2	0.3	0.0	0.1	4.6	4.6	4.6	0.2	4.4	4.5
Cycle Q Clear(g_c), s	1.7	0.0	1.2	0.3	0.0	0.1	9.1	4.6	4.6	4.8	4.4	4.5
Prop In Lane	1.00		0.83	1.00		0.17	1.00		0.02	1.00		0.50
Lane Grp Cap(c), veh/h	637	0	479	545	0	460	396	628	659	388	633	609
V/C Ratio(X)	0.16	0.00	0.14	0.03	0.00	0.01	0.29	0.42	0.42	0.01	0.40	0.41
Avail Cap(c_a), veh/h	1432	0	2176	1457	0	2510	641	1116	1171	626	1126	1082
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.0	0.0	10.3	11.0	0.0	11.4	13.1	9.7	9.7	11.5	9.6	9.7
Incr Delay (d2), s/veh	0.1	0.0	0.2	0.0	0.0	0.0	0.3	0.3	0.3	0.0	0.3	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.4	0.1	0.0	0.0	0.8	1.4	1.5	0.0	1.3	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	10.1	0.0	10.5	11.0	0.0	11.4	13.4	10.0	10.0	11.5	9.9	10.0
LnGrp LOS	B		B	B		B	B	B	B	B	A	A
Approach Vol, veh/h		165			22			658			510	
Approach Delay, s/veh		10.3			11.1			10.6			10.0	
Approach LOS		B			B			B			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.7	17.1		18.6	6.7	15.1		18.6				
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	21.0	55.0		26.0	21.0	55.0		26.0				
Max Q Clear Time (g_c+I1), s	2.3	3.2		6.8	3.7	2.1		11.1				
Green Ext Time (p_c), s	0.0	0.6		2.5	0.1	0.0		2.9				

Intersection Summary			
HCM 7th Control Delay, s/veh		10.3	
HCM 7th LOS		B	

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	0	65	0	0	0	80	555	0	0	345	45
Future Volume (veh/h)	50	0	65	0	0	0	80	555	0	0	345	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1870	1856	1856	1856	1841	1841	1841
Adj Flow Rate, veh/h	57	0	74	0	0	0	91	631	0	0	392	51
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	1	1	1	2	2	2	3	3	3	4	4	4
Cap, veh/h	441	0	221	192	261	0	116	1623	0	192	897	116
Arrive On Green	0.14	0.00	0.14	0.00	0.00	0.00	0.07	0.46	0.00	0.00	0.29	0.29
Sat Flow, veh/h	1780	0	1586	1326	1870	0	1767	3618	0	783	3110	402
Grp Volume(v), veh/h	57	0	74	0	0	0	91	631	0	0	219	224
Grp Sat Flow(s),veh/h/ln	1780	0	1586	1326	1870	0	1767	1763	0	783	1749	1763
Q Serve(g_s), s	1.1	0.0	1.6	0.0	0.0	0.0	1.9	4.4	0.0	0.0	3.8	3.9
Cycle Q Clear(g_c), s	1.1	0.0	1.6	0.0	0.0	0.0	1.9	4.4	0.0	0.0	3.8	3.9
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		0.23
Lane Grp Cap(c), veh/h	441	0	221	192	261	0	116	1623	0	192	504	508
V/C Ratio(X)	0.13	0.00	0.33	0.00	0.00	0.00	0.79	0.39	0.00	0.00	0.43	0.44
Avail Cap(c_a), veh/h	1283	0	972	820	1147	0	989	4887	0	1114	2564	2585
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	14.3	0.0	14.6	0.0	0.0	0.0	17.3	6.6	0.0	0.0	10.9	10.9
Incr Delay (d2), s/veh	0.1	0.0	0.5	0.0	0.0	0.0	7.0	0.2	0.0	0.0	0.9	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.5	0.0	0.0	0.0	0.9	1.1	0.0	0.0	1.3	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.4	0.0	15.1	0.0	0.0	0.0	24.2	6.9	0.0	0.0	11.8	11.8
LnGrp LOS	B		B				C	A			B	B
Approach Vol, veh/h		131			0			722			443	
Approach Delay, s/veh		14.8			0.0			9.1			11.8	
Approach LOS		B						A			B	

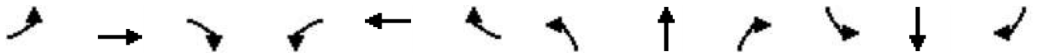
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	6.5	18.8		12.2		25.3		12.2				
Change Period (Y+Rc), s	4.0	* 8		7.0		8.0		7.0				
Max Green Setting (Gmax), s	21.0	* 55		23.0		52.0		23.0				
Max Q Clear Time (g_c+I1), s	3.9	5.9		3.6		6.4		0.0				
Green Ext Time (p_c), s	0.1	4.7		0.4		7.8		0.0				

Intersection Summary			
HCM 7th Control Delay, s/veh		10.6	
HCM 7th LOS		B	

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



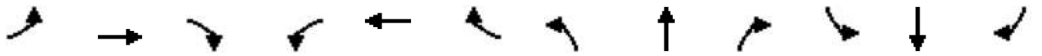
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	235	100	45	450	215	161	310	55	205	175	15
Future Volume (veh/h)	10	235	100	45	450	215	161	310	55	205	175	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1767	1767	1856	1856	1856	1856	1856	1856	1841	1841	1841
Adj Flow Rate, veh/h	10	242	103	46	464	222	166	320	57	211	180	15
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	9	9	9	3	3	3	3	3	3	4	4	4
Cap, veh/h	18	543	423	102	737	518	217	710	125	412	395	33
Arrive On Green	0.01	0.16	0.16	0.06	0.21	0.21	0.12	0.24	0.24	0.12	0.24	0.24
Sat Flow, veh/h	1682	3357	1483	1767	3526	1566	1767	2991	526	3401	1675	140
Grp Volume(v), veh/h	10	242	103	46	464	222	166	187	190	211	0	195
Grp Sat Flow(s),veh/h/ln	1682	1678	1483	1767	1763	1566	1767	1763	1755	1700	0	1814
Q Serve(g_s), s	0.3	3.0	2.5	1.2	5.5	5.1	4.2	4.2	4.3	2.7	0.0	4.3
Cycle Q Clear(g_c), s	0.3	3.0	2.5	1.2	5.5	5.1	4.2	4.2	4.3	2.7	0.0	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.30	1.00		0.08
Lane Grp Cap(c), veh/h	18	543	423	102	737	518	217	418	416	412	0	428
V/C Ratio(X)	0.57	0.45	0.24	0.45	0.63	0.43	0.77	0.45	0.46	0.51	0.00	0.46
Avail Cap(c_a), veh/h	382	1090	665	402	1144	699	765	1144	1140	2208	0	1178
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.8	17.5	12.7	21.1	16.6	12.1	19.6	15.0	15.1	19.0	0.0	15.1
Incr Delay (d2), s/veh	16.5	0.4	0.2	1.9	0.7	0.4	3.5	1.1	1.2	0.6	0.0	1.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	1.0	0.7	0.5	1.9	1.5	1.7	1.6	1.6	1.0	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	39.3	17.9	12.9	22.9	17.3	12.5	23.1	16.2	16.3	19.6	0.0	16.3
LnGrp LOS	D	B	B	C	B	B	C	B	B	B		B
Approach Vol, veh/h		355			732			543			406	
Approach Delay, s/veh		17.1			16.2			18.3			18.0	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.7	15.9	5.0	14.7	10.6	16.0	7.2	12.5
Change Period (Y+Rc), s	5.0	5.0	4.5	5.0	5.0	5.0	4.5	5.0
Max Green Setting (Gmax), s	20.0	30.0	10.5	15.0	30.0	30.0	10.5	15.0
Max Q Clear Time (g_c+I1), s	6.2	6.3	2.3	7.5	4.7	6.3	3.2	5.0
Green Ext Time (p_c), s	0.2	1.6	0.0	1.9	0.5	3.4	0.0	1.0

Intersection Summary	
HCM 7th Control Delay, s/veh	17.3
HCM 7th LOS	B

Notes

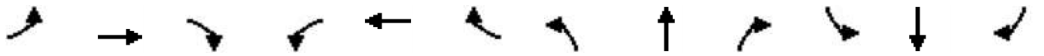
User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	25	45	3	20	15	30	415	10	15	270	30
Future Volume (veh/h)	100	25	45	3	20	15	30	415	10	15	270	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.98		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1826	1826	1826	1841	1841	1841	1826	1826	1826
Adj Flow Rate, veh/h	105	26	47	3	21	16	32	437	11	16	284	32
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	5	5	5	4	4	4	5	5	5
Cap, veh/h	411	78	140	305	55	42	459	594	15	361	512	58
Arrive On Green	0.08	0.13	0.13	0.00	0.06	0.06	0.03	0.33	0.33	0.02	0.32	0.32
Sat Flow, veh/h	1781	595	1075	1739	960	731	1753	1787	45	1739	1610	181
Grp Volume(v), veh/h	105	0	73	3	0	37	32	0	448	16	0	316
Grp Sat Flow(s),veh/h/ln	1781	0	1670	1739	0	1691	1753	0	1832	1739	0	1792
Q Serve(g_s), s	1.7	0.0	1.3	0.1	0.0	0.7	0.4	0.0	6.9	0.2	0.0	4.7
Cycle Q Clear(g_c), s	1.7	0.0	1.3	0.1	0.0	0.7	0.4	0.0	6.9	0.2	0.0	4.7
Prop In Lane	1.00		0.64	1.00		0.43	1.00		0.02	1.00		0.10
Lane Grp Cap(c), veh/h	411	0	218	305	0	98	459	0	609	361	0	570
V/C Ratio(X)	0.26	0.00	0.34	0.01	0.00	0.38	0.07	0.00	0.74	0.04	0.00	0.55
Avail Cap(c_a), veh/h	890	0	1100	627	0	1114	1285	0	2039	1205	0	1994
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.4	0.0	12.6	14.1	0.0	14.5	7.2	0.0	9.4	7.8	0.0	9.0
Incr Delay (d2), s/veh	0.1	0.0	0.3	0.0	0.0	0.9	0.0	0.0	0.7	0.0	0.0	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.4	0.0	0.0	0.2	0.1	0.0	1.9	0.0	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	12.6	0.0	12.9	14.1	0.0	15.4	7.3	0.0	10.1	7.8	0.0	9.3
LnGrp LOS	B		B	B		B	A		B	A		A
Approach Vol, veh/h		178			40			480			332	
Approach Delay, s/veh		12.7			15.3			9.9			9.2	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.0	14.6	6.4	5.8	4.5	15.1	4.1	8.2
Change Period (Y+Rc), s	4.0	4.5	4.0	4.0	4.0	4.5	4.0	4.0
Max Green Setting (Gmax), s	16.0	35.5	11.0	21.0	16.0	35.5	6.0	21.0
Max Q Clear Time (g_c+I1), s	2.4	6.7	3.7	2.7	2.2	8.9	2.1	3.3
Green Ext Time (p_c), s	0.0	0.4	0.0	0.0	0.0	0.6	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	10.4
HCM 7th LOS	B



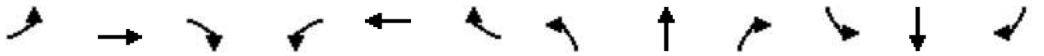
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	35	165	10	30	15	325	955	20	65	575	130
Future Volume (veh/h)	95	35	165	10	30	15	325	955	20	65	575	130
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1722	1722	1722	1811	1811	1811	1781	1781	1781
Adj Flow Rate, veh/h	103	38	179	11	33	16	353	1038	22	71	625	141
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	5	12	12	12	6	6	6	8	8	8
Cap, veh/h	126	218	525	17	98	82	381	2256	1006	90	1652	737
Arrive On Green	0.07	0.12	0.12	0.01	0.06	0.06	0.22	0.66	0.66	0.05	0.49	0.49
Sat Flow, veh/h	1739	1826	1540	1640	1722	1444	1725	3441	1535	1697	3385	1510
Grp Volume(v), veh/h	103	38	179	11	33	16	353	1038	22	71	625	141
Grp Sat Flow(s),veh/h/ln	1739	1826	1540	1640	1722	1444	1725	1721	1535	1697	1692	1510
Q Serve(g_s), s	7.0	2.2	10.4	0.8	2.2	1.3	24.1	17.9	0.6	5.0	13.9	6.3
Cycle Q Clear(g_c), s	7.0	2.2	10.4	0.8	2.2	1.3	24.1	17.9	0.6	5.0	13.9	6.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	126	218	525	17	98	82	381	2256	1006	90	1652	737
V/C Ratio(X)	0.81	0.17	0.34	0.66	0.34	0.19	0.93	0.46	0.02	0.79	0.38	0.19
Avail Cap(c_a), veh/h	203	313	606	164	267	224	489	2256	1006	368	1652	737
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.8	47.5	29.6	59.2	54.4	54.0	45.8	10.2	7.2	56.1	19.3	17.3
Incr Delay (d2), s/veh	5.5	0.1	0.1	23.4	1.2	0.7	19.6	0.7	0.0	8.9	0.7	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	1.0	3.8	0.4	1.0	0.5	11.8	5.8	0.2	2.3	5.2	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	60.4	47.7	29.7	82.6	55.6	54.7	65.4	10.9	7.3	65.1	19.9	17.9
LnGrp LOS	E	D	C	F	E	D	E	B	A	E	B	B
Approach Vol, veh/h		320			60			1413			837	
Approach Delay, s/veh		41.7			60.3			24.4			23.4	
Approach LOS		D			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	30.5	64.6	12.7	12.2	10.4	84.7	5.2	19.7
Change Period (Y+Rc), s	4.0	6.0	4.0	5.4	4.0	6.0	4.0	5.4
Max Green Setting (Gmax), s	34.0	34.0	14.0	18.6	26.0	42.0	12.0	20.6
Max Q Clear Time (g_c+I1), s	26.1	15.9	9.0	4.2	7.0	19.9	2.8	12.4
Green Ext Time (p_c), s	0.4	6.3	0.0	0.1	0.1	10.7	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	27.0
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.



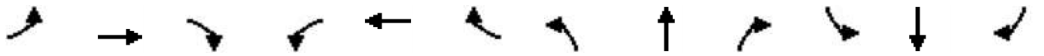
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	480	3	45	815	0	5	0	40	0	0	0
Future Volume (veh/h)	0	480	3	45	815	0	5	0	40	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1737	1737	1737	1856	1856	1856	1900	1900	1900	1870	1870	1870
Adj Flow Rate, veh/h	0	527	3	49	896	0	5	0	44	0	0	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	11	11	11	3	3	3	0	0	0	2	2	2
Cap, veh/h	507	1437	8	652	2244	0	336	0	73	255	85	0
Arrive On Green	0.00	0.43	0.43	0.07	0.64	0.00	0.05	0.00	0.05	0.00	0.00	0.00
Sat Flow, veh/h	1654	3364	19	1767	3618	0	1810	0	1610	1362	1870	0
Grp Volume(v), veh/h	0	258	272	49	896	0	5	0	44	0	0	0
Grp Sat Flow(s),veh/h/ln	1654	1650	1733	1767	1763	0	1810	0	1610	1362	1870	0
Q Serve(g_s), s	0.0	3.0	3.0	0.4	3.5	0.0	0.1	0.0	0.8	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	3.0	3.0	0.4	3.5	0.0	0.1	0.0	0.8	0.0	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	507	705	741	652	2244	0	336	0	73	255	85	0
V/C Ratio(X)	0.00	0.37	0.37	0.08	0.40	0.00	0.01	0.00	0.60	0.00	0.00	0.00
Avail Cap(c_a), veh/h	1145	1780	1870	1220	3803	0	1567	0	1167	458	364	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	5.5	5.5	3.2	2.5	0.0	12.9	0.0	13.3	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.5	0.5	0.0	0.2	0.0	0.0	0.0	5.9	0.0	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.5	0.5	0.0	0.1	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	6.0	6.0	3.2	2.7	0.0	12.9	0.0	19.1	0.0	0.0	0.0
LnGrp LOS		A	A	A	A		B		B			
Approach Vol, veh/h		530			945			49			0	
Approach Delay, s/veh		6.0			2.7			18.5			0.0	
Approach LOS		A			A			B				

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.9	16.6		5.8	0.0	22.5		5.8				
Change Period (Y+Rc), s	4.0	4.5		4.5	4.0	4.5		4.5				
Max Green Setting (Gmax), s	11.0	30.5		5.5	11.0	30.5		20.5				
Max Q Clear Time (g_c+I1), s	2.4	5.0		0.0	0.0	5.5		2.8				
Green Ext Time (p_c), s	0.0	4.9		0.0	0.0	9.7		0.1				

Intersection Summary	
HCM 7th Control Delay, s/veh	4.4
HCM 7th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	320	310	25	115	400	715	40	960	110	385	615	595
Future Volume (veh/h)	320	310	25	115	400	715	40	960	110	385	615	595
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1752	1752	1752	1841	1841	1841	1811	1811	1811	1826	1826	1826
Adj Flow Rate, veh/h	333	323	26	120	417	0	42	1000	0	401	641	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	10	10	10	4	4	4	6	6	6	5	5	5
Cap, veh/h	418	675	54	185	494		52	1149		488	1555	
Arrive On Green	0.13	0.22	0.22	0.05	0.14	0.00	0.03	0.33	0.00	0.14	0.45	0.00
Sat Flow, veh/h	3237	3121	250	3401	3497	1560	1725	3441	1535	3374	3469	1547
Grp Volume(v), veh/h	333	171	178	120	417	0	42	1000	0	401	641	0
Grp Sat Flow(s),veh/h/ln	1618	1664	1707	1700	1749	1560	1725	1721	1535	1687	1735	1547
Q Serve(g_s), s	9.4	8.4	8.5	3.2	10.9	0.0	2.3	25.6	0.0	10.8	11.7	0.0
Cycle Q Clear(g_c), s	9.4	8.4	8.5	3.2	10.9	0.0	2.3	25.6	0.0	10.8	11.7	0.0
Prop In Lane	1.00		0.15	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	418	360	369	185	494		52	1149		488	1555	
V/C Ratio(X)	0.80	0.48	0.48	0.65	0.84		0.80	0.87		0.82	0.41	
Avail Cap(c_a), veh/h	1123	435	446	345	541		175	1212		954	1555	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	39.6	32.1	32.1	43.4	39.2	0.0	45.1	29.3	0.0	38.9	17.5	0.0
Incr Delay (d2), s/veh	2.2	0.6	0.6	2.4	10.3	0.0	15.6	7.4	0.0	2.2	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	3.4	3.5	1.4	5.3	0.0	1.1	10.6	0.0	4.3	4.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	41.8	32.7	32.7	45.8	49.5	0.0	60.7	36.7	0.0	41.1	17.8	0.0
LnGrp LOS	D	C	C	D	D		E	D		D	B	
Approach Vol, veh/h		682			537			1042			1042	
Approach Delay, s/veh		37.1			48.7			37.6			26.8	
Approach LOS		D			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.1	38.3	10.6	25.7	8.3	49.0	17.6	18.7
Change Period (Y+Rc), s	5.5	7.0	5.5	5.5	5.5	7.0	5.5	5.5
Max Green Setting (Gmax), s	26.5	33.0	9.5	24.5	9.5	33.0	32.5	14.5
Max Q Clear Time (g_c+I1), s	12.8	27.6	5.2	10.5	4.3	13.7	11.4	12.9
Green Ext Time (p_c), s	0.8	3.7	0.1	1.2	0.0	6.1	0.7	0.4

Intersection Summary	
HCM 7th Control Delay, s/veh	35.9
HCM 7th LOS	D

Notes

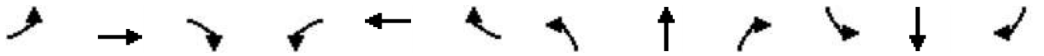
User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	5	15	65	10	25	10	630	20	2	735	10
Future Volume (veh/h)	10	5	15	65	10	25	10	630	20	2	735	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1885	1885	1885	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	11	5	16	68	11	26	11	663	21	2	774	11
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	1	1	1	2	2	2	1	1	1
Cap, veh/h	173	66	108	276	38	51	468	1170	37	533	1203	17
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.65	0.65	0.65	0.65	0.65	0.65
Sat Flow, veh/h	316	487	802	859	280	375	688	1801	57	762	1853	26
Grp Volume(v), veh/h	32	0	0	105	0	0	11	0	684	2	0	785
Grp Sat Flow(s),veh/h/ln	1605	0	0	1514	0	0	688	0	1858	762	0	1880
Q Serve(g_s), s	0.0	0.0	0.0	1.7	0.0	0.0	0.4	0.0	7.6	0.1	0.0	9.3
Cycle Q Clear(g_c), s	0.6	0.0	0.0	2.3	0.0	0.0	9.7	0.0	7.6	7.6	0.0	9.3
Prop In Lane	0.34		0.50	0.65		0.25	1.00		0.03	1.00		0.01
Lane Grp Cap(c), veh/h	347	0	0	364	0	0	468	0	1207	533	0	1221
V/C Ratio(X)	0.09	0.00	0.00	0.29	0.00	0.00	0.02	0.00	0.57	0.00	0.00	0.64
Avail Cap(c_a), veh/h	999	0	0	999	0	0	1059	0	2802	1187	0	2835
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.2	0.0	0.0	14.8	0.0	0.0	6.8	0.0	3.6	5.7	0.0	3.9
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.7	0.0	0.0	1.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.7	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.2	0.0	0.0	15.2	0.0	0.0	6.9	0.0	4.3	5.7	0.0	4.9
LnGrp LOS	B			B			A		A	A		A
Approach Vol, veh/h		32			105			695			787	
Approach Delay, s/veh		14.2			15.2			4.4			4.9	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	28.1	9.0	28.1	9.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	56.0	21.0	56.0	21.0
Max Q Clear Time (g_c+I1), s	11.3	4.3	11.7	2.6
Green Ext Time (p_c), s	12.8	0.4	10.4	0.1

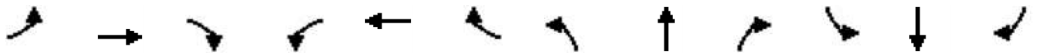
Intersection Summary	
HCM 7th Control Delay, s/veh	5.5
HCM 7th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	20	80	35	10	10	75	555	20	5	680	70
Future Volume (veh/h)	85	20	80	35	10	10	75	555	20	5	680	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.97	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1870	1870	1870	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	92	22	87	38	11	11	82	603	22	5	739	76
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	2	2	2	2	2	2	1	1	1
Cap, veh/h	324	249	209	314	115	115	418	1055	38	472	1015	829
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.06	0.59	0.59	0.01	0.54	0.54
Sat Flow, veh/h	1369	1856	1561	1276	854	854	1781	1791	65	1795	1885	1540
Grp Volume(v), veh/h	92	22	87	38	0	22	82	0	625	5	739	76
Grp Sat Flow(s),veh/h/ln	1369	1856	1561	1276	0	1709	1781	0	1856	1795	1885	1540
Q Serve(g_s), s	2.9	0.5	2.4	1.2	0.0	0.5	0.9	0.0	9.6	0.1	13.7	1.1
Cycle Q Clear(g_c), s	3.4	0.5	2.4	1.7	0.0	0.5	0.9	0.0	9.6	0.1	13.7	1.1
Prop In Lane	1.00		1.00	1.00		0.50	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	324	249	209	314	0	229	418	0	1093	472	1015	829
V/C Ratio(X)	0.28	0.09	0.42	0.12	0.00	0.10	0.20	0.00	0.57	0.01	0.73	0.09
Avail Cap(c_a), veh/h	765	846	711	725	0	779	742	0	1631	891	1657	1354
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.0	17.5	18.3	18.2	0.0	17.5	6.3	0.0	5.9	5.4	8.1	5.2
Incr Delay (d2), s/veh	0.4	0.1	1.0	0.1	0.0	0.1	0.1	0.0	0.7	0.0	1.6	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.2	0.8	0.3	0.0	0.2	0.2	0.0	2.5	0.0	4.1	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	19.4	17.6	19.3	18.4	0.0	17.6	6.4	0.0	6.6	5.4	9.6	5.2
LnGrp LOS	B	B	B	B		B	A		A	A	A	A
Approach Vol, veh/h		201			60			707			820	
Approach Delay, s/veh		19.1			18.1			6.6			9.2	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.6	29.3		10.2	4.2	31.6		10.2				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	11.0	40.5		21.0	11.0	40.5		21.0				
Max Q Clear Time (g_c+I1), s	2.9	15.7		3.7	2.1	11.6		5.4				
Green Ext Time (p_c), s	0.1	9.1		0.1	0.0	7.2		0.4				

Intersection Summary			
HCM 7th Control Delay, s/veh		9.6	
HCM 7th LOS		A	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	10	125	20	10	3	135	540	10	15	705	115
Future Volume (veh/h)	140	10	125	20	10	3	135	540	10	15	705	115
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1811	1811	1811	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	147	11	132	21	11	3	142	568	11	16	742	121
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	6	6	6	2	2	2	2	2	2
Cap, veh/h	574	33	395	412	270	74	321	1627	31	435	1390	227
Arrive On Green	0.09	0.27	0.27	0.02	0.20	0.20	0.46	0.46	0.46	0.46	0.46	0.46
Sat Flow, veh/h	1795	123	1473	1725	1370	374	640	3563	69	832	3045	496
Grp Volume(v), veh/h	147	0	143	21	0	14	142	283	296	16	433	430
Grp Sat Flow(s),veh/h/ln	1795	0	1596	1725	0	1743	640	1777	1856	832	1777	1764
Q Serve(g_s), s	3.1	0.0	3.7	0.5	0.0	0.3	10.5	5.3	5.3	0.6	8.9	8.9
Cycle Q Clear(g_c), s	3.1	0.0	3.7	0.5	0.0	0.3	19.4	5.3	5.3	5.9	8.9	8.9
Prop In Lane	1.00		0.92	1.00		0.21	1.00		0.04	1.00		0.28
Lane Grp Cap(c), veh/h	574	0	428	412	0	343	321	811	847	435	811	806
V/C Ratio(X)	0.26	0.00	0.33	0.05	0.00	0.04	0.44	0.35	0.35	0.04	0.53	0.53
Avail Cap(c_a), veh/h	1149	0	1720	1088	0	1880	355	906	946	480	906	899
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.9	0.0	15.0	15.8	0.0	16.6	16.9	9.0	9.0	10.9	10.0	10.0
Incr Delay (d2), s/veh	0.2	0.0	0.7	0.0	0.0	0.1	0.7	0.2	0.2	0.0	0.4	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	1.3	0.2	0.0	0.1	1.4	1.7	1.7	0.1	2.9	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	13.0	0.0	15.7	15.9	0.0	16.7	17.6	9.1	9.1	10.9	10.4	10.4
LnGrp LOS	B		B	B		B	B	A	A	B	B	B
Approach Vol, veh/h		290			35			721			879	
Approach Delay, s/veh		14.3			16.2			10.8			10.4	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.0	18.7		27.3	8.7	15.1		27.3				
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	21.0	55.0		26.0	21.0	55.0		26.0				
Max Q Clear Time (g_c+I1), s	2.5	5.7		10.9	5.1	2.3		21.4				
Green Ext Time (p_c), s	0.0	1.5		4.2	0.2	0.1		1.7				

Intersection Summary			
HCM 7th Control Delay, s/veh		11.2	
HCM 7th LOS		B	

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	0	140	0	0	0	130	645	0	0	775	70
Future Volume (veh/h)	40	0	140	0	0	0	130	645	0	0	775	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.98		0.98	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1870	1870	1870	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	41	0	144	0	0	0	134	665	0	0	799	72
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	2	2	2	1	1	1	2	2	2
Cap, veh/h	411	0	255	125	301	0	175	2072	0	125	1355	122
Arrive On Green	0.16	0.00	0.16	0.00	0.00	0.00	0.10	0.58	0.00	0.00	0.41	0.41
Sat Flow, veh/h	1779	0	1583	1244	1870	0	1795	3676	0	771	3293	297
Grp Volume(v), veh/h	41	0	144	0	0	0	134	665	0	0	431	440
Grp Sat Flow(s),veh/h/ln	1779	0	1583	1244	1870	0	1795	1791	0	771	1777	1813
Q Serve(g_s), s	1.1	0.0	4.8	0.0	0.0	0.0	4.2	5.5	0.0	0.0	10.9	10.9
Cycle Q Clear(g_c), s	1.1	0.0	4.8	0.0	0.0	0.0	4.2	5.5	0.0	0.0	10.9	10.9
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		0.16
Lane Grp Cap(c), veh/h	411	0	255	125	301	0	175	2072	0	125	731	746
V/C Ratio(X)	0.10	0.00	0.57	0.00	0.00	0.00	0.76	0.32	0.00	0.00	0.59	0.59
Avail Cap(c_a), veh/h	836	0	633	422	747	0	655	3236	0	545	1698	1732
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	20.7	0.0	22.3	0.0	0.0	0.0	25.3	6.3	0.0	0.0	13.2	13.2
Incr Delay (d2), s/veh	0.1	0.0	1.2	0.0	0.0	0.0	4.2	0.1	0.0	0.0	1.2	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	1.8	0.0	0.0	0.0	1.9	1.6	0.0	0.0	3.9	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	20.8	0.0	23.5	0.0	0.0	0.0	29.6	6.4	0.0	0.0	14.3	14.3
LnGrp LOS	C		C				C	A			B	B
Approach Vol, veh/h		185			0			799			871	
Approach Delay, s/veh		22.9			0.0			10.3			14.3	
Approach LOS		C						B			B	

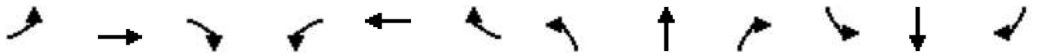
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	9.6	31.7		16.3		41.3		16.3				
Change Period (Y+Rc), s	4.0	* 8		7.0		8.0		7.0				
Max Green Setting (Gmax), s	21.0	* 55		23.0		52.0		23.0				
Max Q Clear Time (g_c+I1), s	6.2	12.9		6.8		7.5		0.0				
Green Ext Time (p_c), s	0.2	10.8		0.6		8.3		0.0				

Intersection Summary												
HCM 7th Control Delay, s/veh			13.4									
HCM 7th LOS			B									

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



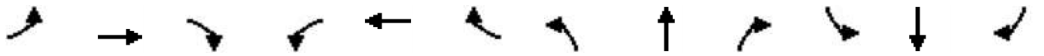
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	455	200	110	335	240	160	400	55	470	455	15
Future Volume (veh/h)	35	455	200	110	335	240	160	400	55	470	455	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1885	1885	1885	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	36	469	206	113	345	247	165	412	57	485	469	15
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	1	1	1	2	2	2	1	1	1
Cap, veh/h	52	639	467	146	830	655	209	836	115	625	598	19
Arrive On Green	0.03	0.18	0.18	0.08	0.23	0.23	0.12	0.27	0.27	0.18	0.33	0.33
Sat Flow, veh/h	1781	3554	1563	1795	3582	1587	1781	3127	429	3483	1815	58
Grp Volume(v), veh/h	36	469	206	113	345	247	165	233	236	485	0	484
Grp Sat Flow(s),veh/h/ln	1781	1777	1563	1795	1791	1587	1781	1777	1780	1742	0	1873
Q Serve(g_s), s	1.3	8.3	7.1	4.1	5.5	7.2	6.0	7.4	7.5	8.9	0.0	15.6
Cycle Q Clear(g_c), s	1.3	8.3	7.1	4.1	5.5	7.2	6.0	7.4	7.5	8.9	0.0	15.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.24	1.00		0.03
Lane Grp Cap(c), veh/h	52	639	467	146	830	655	209	475	476	625	0	617
V/C Ratio(X)	0.69	0.73	0.44	0.78	0.42	0.38	0.79	0.49	0.50	0.78	0.00	0.78
Avail Cap(c_a), veh/h	280	799	538	283	830	655	534	799	800	1566	0	842
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.1	25.9	19.0	30.1	21.8	13.7	28.6	20.6	20.6	26.1	0.0	20.2
Incr Delay (d2), s/veh	9.6	2.3	0.5	5.3	0.2	0.3	4.1	1.2	1.2	1.3	0.0	4.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	3.5	2.4	1.9	2.2	2.3	2.7	3.0	3.1	3.6	0.0	7.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	41.7	28.2	19.5	35.4	22.0	14.0	32.7	21.8	21.9	27.4	0.0	24.6
LnGrp LOS	D	C	B	D	C	B	C	C	C	C		C
Approach Vol, veh/h		711			705			634			969	
Approach Delay, s/veh		26.4			21.4			24.7			26.0	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.8	27.0	6.4	20.5	17.0	22.8	9.9	17.0
Change Period (Y+Rc), s	5.0	5.0	4.5	5.0	5.0	5.0	4.5	5.0
Max Green Setting (Gmax), s	20.0	30.0	10.5	15.0	30.0	30.0	10.5	15.0
Max Q Clear Time (g_c+I1), s	8.0	17.6	3.3	9.2	10.9	9.5	6.1	10.3
Green Ext Time (p_c), s	0.2	3.5	0.0	1.3	1.1	4.1	0.1	1.4

Intersection Summary	
HCM 7th Control Delay, s/veh	24.7
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	40	40	20	40	40	40	440	20	20	525	140
Future Volume (veh/h)	105	40	40	20	40	40	40	440	20	20	525	140
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.96	0.97		0.98	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1900	1900	1900	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	108	41	41	21	41	41	41	454	21	21	541	144
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	0	0	0	3	3	3	3	3	3
Cap, veh/h	361	128	128	326	87	87	273	780	36	422	600	160
Arrive On Green	0.07	0.15	0.15	0.02	0.10	0.10	0.04	0.44	0.44	0.02	0.43	0.43
Sat Flow, veh/h	1795	843	843	1810	864	864	1767	1759	81	1767	1403	373
Grp Volume(v), veh/h	108	0	82	21	0	82	41	0	475	21	0	685
Grp Sat Flow(s),veh/h/ln	1795	0	1687	1810	0	1728	1767	0	1840	1767	0	1776
Q Serve(g_s), s	2.4	0.0	2.0	0.5	0.0	2.0	0.6	0.0	8.8	0.3	0.0	16.3
Cycle Q Clear(g_c), s	2.4	0.0	2.0	0.5	0.0	2.0	0.6	0.0	8.8	0.3	0.0	16.3
Prop In Lane	1.00		0.50	1.00		0.50	1.00		0.04	1.00		0.21
Lane Grp Cap(c), veh/h	361	0	257	326	0	174	273	0	816	422	0	760
V/C Ratio(X)	0.30	0.00	0.32	0.06	0.00	0.47	0.15	0.00	0.58	0.05	0.00	0.90
Avail Cap(c_a), veh/h	667	0	780	528	0	799	833	0	1439	1008	0	1389
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.3	0.0	17.1	17.7	0.0	19.3	9.8	0.0	9.5	7.7	0.0	12.1
Incr Delay (d2), s/veh	0.2	0.0	0.3	0.0	0.0	0.7	0.1	0.0	0.2	0.0	0.0	1.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.7	0.2	0.0	0.8	0.2	0.0	2.7	0.1	0.0	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	16.5	0.0	17.4	17.8	0.0	20.0	9.9	0.0	9.7	7.7	0.0	13.7
LnGrp LOS	B		B	B		B	A		A	A		B
Approach Vol, veh/h		190			103			516			706	
Approach Delay, s/veh		16.9			19.5			9.7			13.6	
Approach LOS		B			B			A			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.6	23.9	7.3	8.6	4.9	24.6	4.9	10.9
Change Period (Y+Rc), s	4.0	4.5	4.0	4.0	4.0	4.5	4.0	4.0
Max Green Setting (Gmax), s	16.0	35.5	11.0	21.0	16.0	35.5	6.0	21.0
Max Q Clear Time (g_c+I1), s	2.6	18.3	4.4	4.0	2.3	10.8	2.5	4.0
Green Ext Time (p_c), s	0.0	1.1	0.0	0.1	0.0	0.7	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	13.1
HCM 7th LOS	B

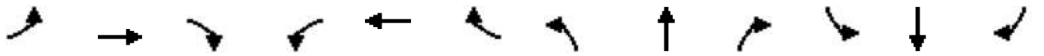
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	40	450	10	35	50	265	700	15	35	1045	165
Future Volume (veh/h)	140	40	450	10	35	50	265	700	15	35	1045	165
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1752	1752	1752	1856	1856	1856	1870	1870	1870
Adj Flow Rate, veh/h	143	41	459	10	36	51	270	714	15	36	1066	168
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	10	10	10	3	3	3	2	2	2
Cap, veh/h	167	304	520	16	137	112	297	2301	1026	46	1815	809
Arrive On Green	0.09	0.16	0.16	0.01	0.08	0.08	0.17	0.65	0.65	0.03	0.51	0.51
Sat Flow, veh/h	1781	1870	1562	1668	1752	1439	1767	3526	1571	1781	3554	1583
Grp Volume(v), veh/h	143	41	459	10	36	51	270	714	15	36	1066	168
Grp Sat Flow(s),veh/h/ln	1781	1870	1562	1668	1752	1439	1767	1763	1571	1781	1777	1583
Q Serve(g_s), s	10.3	2.4	21.2	0.8	2.5	4.4	19.5	11.5	0.4	2.6	27.3	7.5
Cycle Q Clear(g_c), s	10.3	2.4	21.2	0.8	2.5	4.4	19.5	11.5	0.4	2.6	27.3	7.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	167	304	520	16	137	112	297	2301	1026	46	1815	809
V/C Ratio(X)	0.85	0.13	0.88	0.64	0.26	0.45	0.91	0.31	0.01	0.78	0.59	0.21
Avail Cap(c_a), veh/h	219	304	520	205	278	228	421	2301	1026	288	1815	809
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.0	46.6	41.2	64.2	56.4	57.3	53.1	9.8	7.9	62.9	22.2	17.4
Incr Delay (d2), s/veh	17.8	0.1	15.7	23.9	0.6	1.7	16.4	0.4	0.0	15.6	1.4	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	1.1	15.9	0.4	1.1	1.6	9.7	3.9	0.1	1.3	10.7	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	75.8	46.7	56.9	88.1	57.0	59.0	69.5	10.2	7.9	78.6	23.6	18.0
LnGrp LOS	E	D	E	F	E	E	E	B	A	E	C	B
Approach Vol, veh/h		643			97			999			1270	
Approach Delay, s/veh		60.4			61.3			26.2			24.4	
Approach LOS		E			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.8	72.4	16.2	15.5	7.4	90.9	5.2	26.6
Change Period (Y+Rc), s	4.0	6.0	4.0	5.4	4.0	6.0	4.0	5.4
Max Green Setting (Gmax), s	31.0	43.0	16.0	20.6	21.0	53.0	16.0	20.6
Max Q Clear Time (g_c+I1), s	21.5	29.3	12.3	6.4	4.6	13.5	2.8	23.2
Green Ext Time (p_c), s	0.3	8.7	0.0	0.2	0.0	8.5	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	33.9
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	950	50	120	750	0	25	0	60	0	0	1
Future Volume (veh/h)	1	950	50	120	750	0	25	0	60	0	0	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	0.98		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1870	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	1	1022	54	129	806	0	27	0	65	0	0	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	2	2	2	0	0	0	0	0	0
Cap, veh/h	496	1690	89	505	2119	0	308	0	158	167	0	158
Arrive On Green	0.00	0.49	0.49	0.11	0.60	0.00	0.10	0.00	0.10	0.00	0.00	0.10
Sat Flow, veh/h	1795	3459	183	1781	3647	0	1405	0	1572	1358	0	1572
Grp Volume(v), veh/h	1	529	547	129	806	0	27	0	65	0	0	1
Grp Sat Flow(s),veh/h/ln	1795	1791	1851	1781	1777	0	1405	0	1572	1358	0	1572
Q Serve(g_s), s	0.0	9.3	9.3	1.2	5.1	0.0	0.8	0.0	1.7	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	9.3	9.3	1.2	5.1	0.0	0.8	0.0	1.7	0.0	0.0	0.0
Prop In Lane	1.00		0.10	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	496	875	904	505	2119	0	308	0	158	167	0	158
V/C Ratio(X)	0.00	0.60	0.60	0.26	0.38	0.00	0.09	0.00	0.41	0.00	0.00	0.01
Avail Cap(c_a), veh/h	949	1266	1308	764	2512	0	833	0	747	203	0	200
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	5.6	8.0	8.0	4.9	4.5	0.0	17.8	0.0	18.2	0.0	0.0	17.5
Incr Delay (d2), s/veh	0.0	1.0	1.0	0.2	0.2	0.0	0.1	0.0	1.3	0.0	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.5	2.6	0.2	1.0	0.0	0.2	0.0	0.6	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	5.6	9.0	9.0	5.1	4.7	0.0	17.9	0.0	19.5	0.0	0.0	17.5
LnGrp LOS	A	A	A	A	A		B		B			B
Approach Vol, veh/h		1077			935			92			1	
Approach Delay, s/veh		9.0			4.8			19.0			17.5	
Approach LOS		A			A			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.7	25.6		8.8	4.1	30.2		8.8				
Change Period (Y+Rc), s	4.0	4.5		4.5	4.0	4.5		4.5				
Max Green Setting (Gmax), s	11.0	30.5		5.5	11.0	30.5		20.5				
Max Q Clear Time (g_c+I1), s	3.2	11.3		2.0	2.0	7.1		3.7				
Green Ext Time (p_c), s	0.1	9.8		0.0	0.0	8.3		0.3				

Intersection Summary		
HCM 7th Control Delay, s/veh	7.6	
HCM 7th LOS	A	

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	630	725	90	130	455	450	50	675	160	705	960	590
Future Volume (veh/h)	630	725	90	130	455	450	50	675	160	705	960	590
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1856	1856	1856	1870	1870	1870
Adj Flow Rate, veh/h	643	740	92	133	464	0	51	689	0	719	980	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	3	3	3	2	2	2
Cap, veh/h	723	892	111	191	450		66	844		772	1513	
Arrive On Green	0.21	0.28	0.28	0.05	0.13	0.00	0.04	0.24	0.00	0.22	0.43	0.00
Sat Flow, veh/h	3483	3200	398	3483	3582	1598	1767	3526	1572	3456	3554	1585
Grp Volume(v), veh/h	643	414	418	133	464	0	51	689	0	719	980	0
Grp Sat Flow(s),veh/h/ln	1742	1791	1807	1742	1791	1598	1767	1763	1572	1728	1777	1585
Q Serve(g_s), s	20.7	25.0	25.0	4.3	14.5	0.0	3.3	21.3	0.0	23.5	25.2	0.0
Cycle Q Clear(g_c), s	20.7	25.0	25.0	4.3	14.5	0.0	3.3	21.3	0.0	23.5	25.2	0.0
Prop In Lane	1.00		0.22	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	723	499	503	191	450		66	844		772	1513	
V/C Ratio(X)	0.89	0.83	0.83	0.70	1.03		0.78	0.82		0.93	0.65	
Avail Cap(c_a), veh/h	982	499	503	287	450		146	1009		794	1513	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	44.4	39.0	39.0	53.6	50.4	0.0	55.1	41.5	0.0	43.9	26.3	0.0
Incr Delay (d2), s/veh	7.0	10.8	10.8	2.8	50.4	0.0	11.4	5.5	0.0	17.0	1.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.5	12.3	12.4	2.0	9.6	0.0	1.6	9.4	0.0	11.3	10.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	51.4	49.9	49.8	56.4	100.8	0.0	66.5	47.0	0.0	60.9	27.5	0.0
LnGrp LOS	D	D	D	E	F		E	D		E	C	
Approach Vol, veh/h		1475			597			740			1699	
Approach Delay, s/veh		50.5			90.9			48.3			41.6	
Approach LOS		D			F			D			D	

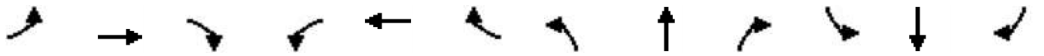
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	31.3	34.6	11.8	37.6	9.8	56.1	29.4	20.0
Change Period (Y+Rc), s	5.5	7.0	5.5	5.5	5.5	7.0	5.5	5.5
Max Green Setting (Gmax), s	26.5	33.0	9.5	24.5	9.5	33.0	32.5	14.5
Max Q Clear Time (g_c+I1), s	25.5	23.3	6.3	27.0	5.3	27.2	22.7	16.5
Green Ext Time (p_c), s	0.2	4.3	0.1	0.0	0.0	3.9	1.3	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	52.2
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

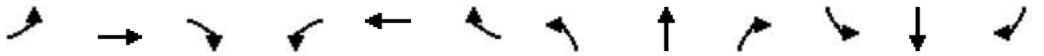
Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	10	10	40	10	5	10	625	15	35	465	10
Future Volume (veh/h)	20	10	10	40	10	5	10	625	15	35	465	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1811	1811	1781	1781	1781	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	22	11	11	43	11	5	11	679	16	38	505	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	8	8	8	4	4	4	4	4	4
Cap, veh/h	238	79	50	305	60	16	636	1116	26	512	1119	24
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.62	0.62	0.62	0.62	0.62	0.62
Sat Flow, veh/h	547	609	385	868	461	123	870	1790	42	737	1794	39
Grp Volume(v), veh/h	44	0	0	59	0	0	11	0	695	38	0	516
Grp Sat Flow(s),veh/h/ln	1542	0	0	1452	0	0	870	0	1832	737	0	1834
Q Serve(g_s), s	0.0	0.0	0.0	0.3	0.0	0.0	0.2	0.0	7.5	1.1	0.0	4.8
Cycle Q Clear(g_c), s	0.7	0.0	0.0	1.1	0.0	0.0	5.0	0.0	7.5	8.5	0.0	4.8
Prop In Lane	0.50		0.25	0.73		0.08	1.00		0.02	1.00		0.02
Lane Grp Cap(c), veh/h	367	0	0	381	0	0	636	0	1142	512	0	1143
V/C Ratio(X)	0.12	0.00	0.00	0.15	0.00	0.00	0.02	0.00	0.61	0.07	0.00	0.45
Avail Cap(c_a), veh/h	1131	0	0	1099	0	0	1595	0	3162	1325	0	3165
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.6	0.0	0.0	12.7	0.0	0.0	4.5	0.0	3.7	6.3	0.0	3.2
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.9	0.1	0.0	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.9	0.1	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	12.7	0.0	0.0	12.9	0.0	0.0	4.5	0.0	4.6	6.4	0.0	3.7
LnGrp LOS	B			B			A		A	A		A
Approach Vol, veh/h		44			59			706			554	
Approach Delay, s/veh		12.7			12.9			4.6			3.9	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	24.2	8.2	24.2	8.2
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	56.0	21.0	56.0	21.0
Max Q Clear Time (g_c+I1), s	10.5	3.1	9.5	2.7
Green Ext Time (p_c), s	7.4	0.2	10.8	0.1

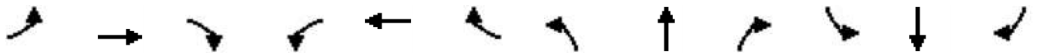
Intersection Summary	
HCM 7th Control Delay, s/veh	4.9
HCM 7th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	4	40	35	5	5	30	510	10	5	455	35
Future Volume (veh/h)	50	4	40	35	5	5	30	510	10	5	455	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1826	1826	1826	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	54	4	43	38	5	5	32	548	11	5	489	38
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	7	7	7	5	5	5	4	4	4	4	4	4
Cap, veh/h	393	243	206	395	113	113	495	865	17	439	839	708
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.03	0.48	0.48	0.01	0.46	0.46
Sat Flow, veh/h	1349	1796	1522	1326	838	838	1753	1798	36	1753	1841	1555
Grp Volume(v), veh/h	54	4	43	38	0	10	32	0	559	5	489	38
Grp Sat Flow(s),veh/h/ln	1349	1796	1522	1326	0	1675	1753	0	1834	1753	1841	1555
Q Serve(g_s), s	1.2	0.1	0.8	0.8	0.0	0.2	0.3	0.0	7.5	0.1	6.5	0.5
Cycle Q Clear(g_c), s	1.4	0.1	0.8	0.9	0.0	0.2	0.3	0.0	7.5	0.1	6.5	0.5
Prop In Lane	1.00		1.00	1.00		0.50	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	393	243	206	395	0	227	495	0	882	439	839	708
V/C Ratio(X)	0.14	0.02	0.21	0.10	0.00	0.04	0.06	0.00	0.63	0.01	0.58	0.05
Avail Cap(c_a), veh/h	1068	1141	967	1058	0	1065	1024	0	2248	1013	2256	1905
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.0	12.4	12.7	12.8	0.0	12.4	5.1	0.0	6.4	5.5	6.7	5.0
Incr Delay (d2), s/veh	0.1	0.0	0.4	0.1	0.0	0.1	0.0	0.0	1.2	0.0	1.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.3	0.2	0.0	0.1	0.1	0.0	1.8	0.0	1.6	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	13.1	12.4	13.1	12.9	0.0	12.5	5.1	0.0	7.6	5.5	7.7	5.1
LnGrp LOS	B	B	B	B		B	A		A	A	A	A
Approach Vol, veh/h		101			48			591			532	
Approach Delay, s/veh		13.1			12.8			7.4			7.4	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.0	19.6		8.5	4.2	20.4		8.5				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	11.0	40.5		21.0	11.0	40.5		21.0				
Max Q Clear Time (g_c+I1), s	2.3	8.5		2.9	2.1	9.5		3.4				
Green Ext Time (p_c), s	0.0	5.6		0.1	0.0	6.4		0.2				

Intersection Summary												
HCM 7th Control Delay, s/veh			8.1									
HCM 7th LOS			A									



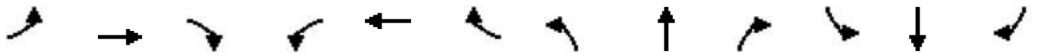
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	10	65	15	5	1	120	555	5	5	395	125
Future Volume (veh/h)	105	10	65	15	5	1	120	555	5	5	395	125
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1900	1900	1900	1826	1826	1826	1841	1841	1841
Adj Flow Rate, veh/h	115	11	71	16	5	1	132	610	5	5	434	137
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	4	4	4	0	0	0	5	5	5	4	4	4
Cap, veh/h	614	62	400	506	358	72	389	1387	11	377	1030	322
Arrive On Green	0.07	0.29	0.29	0.02	0.23	0.23	0.39	0.39	0.39	0.39	0.39	0.39
Sat Flow, veh/h	1753	213	1376	1810	1536	307	819	3526	29	793	2618	818
Grp Volume(v), veh/h	115	0	82	16	0	6	132	300	315	5	289	282
Grp Sat Flow(s),veh/h/ln	1753	0	1590	1810	0	1844	819	1735	1820	793	1749	1687
Q Serve(g_s), s	2.1	0.0	1.7	0.3	0.0	0.1	6.1	5.5	5.5	0.2	5.2	5.3
Cycle Q Clear(g_c), s	2.1	0.0	1.7	0.3	0.0	0.1	11.3	5.5	5.5	5.7	5.2	5.3
Prop In Lane	1.00		0.87	1.00		0.17	1.00		0.02	1.00		0.49
Lane Grp Cap(c), veh/h	614	0	461	506	0	429	389	682	716	377	688	664
V/C Ratio(X)	0.19	0.00	0.18	0.03	0.00	0.01	0.34	0.44	0.44	0.01	0.42	0.43
Avail Cap(c_a), veh/h	1335	0	2019	1354	0	2342	558	1041	1093	542	1050	1013
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.8	0.0	11.5	12.3	0.0	12.8	13.7	9.6	9.6	11.7	9.5	9.6
Incr Delay (d2), s/veh	0.1	0.0	0.3	0.0	0.0	0.0	0.4	0.3	0.3	0.0	0.3	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.5	0.1	0.0	0.0	1.0	1.7	1.7	0.0	1.6	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	10.9	0.0	11.8	12.3	0.0	12.8	14.1	10.0	10.0	11.7	9.8	9.9
LnGrp LOS	B		B	B		B	B	A	A	B	A	A
Approach Vol, veh/h		197			22			747			576	
Approach Delay, s/veh		11.3			12.5			10.7			9.9	
Approach LOS		B			B			B			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.7	17.6		21.0	7.2	15.1		21.0				
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	21.0	55.0		26.0	21.0	55.0		26.0				
Max Q Clear Time (g_c+I1), s	2.3	3.7		7.7	4.1	2.1		13.3				
Green Ext Time (p_c), s	0.0	0.8		2.8	0.2	0.0		3.2				

Intersection Summary		
HCM 7th Control Delay, s/veh	10.5	
HCM 7th LOS	B	

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	0	70	0	0	0	90	625	0	0	400	50
Future Volume (veh/h)	55	0	70	0	0	0	90	625	0	0	400	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1870	1856	1856	1856	1841	1841	1841
Adj Flow Rate, veh/h	63	0	80	0	0	0	102	710	0	0	455	57
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	1	1	1	2	2	2	3	3	3	4	4	4
Cap, veh/h	428	0	221	180	261	0	132	1714	0	180	974	121
Arrive On Green	0.14	0.00	0.14	0.00	0.00	0.00	0.07	0.49	0.00	0.00	0.31	0.31
Sat Flow, veh/h	1780	0	1585	1319	1870	0	1767	3618	0	728	3125	390
Grp Volume(v), veh/h	63	0	80	0	0	0	102	710	0	0	254	258
Grp Sat Flow(s),veh/h/ln	1780	0	1585	1319	1870	0	1767	1763	0	728	1749	1766
Q Serve(g_s), s	1.3	0.0	1.8	0.0	0.0	0.0	2.3	5.2	0.0	0.0	4.7	4.7
Cycle Q Clear(g_c), s	1.3	0.0	1.8	0.0	0.0	0.0	2.3	5.2	0.0	0.0	4.7	4.7
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		0.22
Lane Grp Cap(c), veh/h	428	0	221	180	261	0	132	1714	0	180	545	550
V/C Ratio(X)	0.15	0.00	0.36	0.00	0.00	0.00	0.77	0.41	0.00	0.00	0.47	0.47
Avail Cap(c_a), veh/h	1202	0	910	753	1074	0	926	4576	0	952	2401	2425
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	15.4	0.0	15.6	0.0	0.0	0.0	18.2	6.6	0.0	0.0	11.1	11.1
Incr Delay (d2), s/veh	0.1	0.0	0.6	0.0	0.0	0.0	5.8	0.2	0.0	0.0	0.9	1.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.6	0.0	0.0	0.0	1.0	1.3	0.0	0.0	1.6	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	15.5	0.0	16.2	0.0	0.0	0.0	24.0	6.9	0.0	0.0	12.0	12.1
LnGrp LOS	B		B				C	A			B	B
Approach Vol, veh/h		143			0			812			512	
Approach Delay, s/veh		15.9			0.0			9.0			12.1	
Approach LOS		B						A			B	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	7.0	20.5		12.6		27.5		12.6				
Change Period (Y+Rc), s	4.0	* 8		7.0		8.0		7.0				
Max Green Setting (Gmax), s	21.0	* 55		23.0		52.0		23.0				
Max Q Clear Time (g_c+I1), s	4.3	6.7		3.8		7.2		0.0				
Green Ext Time (p_c), s	0.1	5.6		0.4		9.1		0.0				

Intersection Summary												
HCM 7th Control Delay, s/veh			10.8									
HCM 7th LOS			B									

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

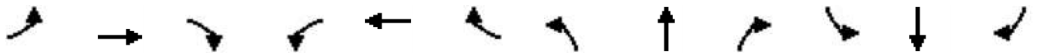
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	260	110	50	495	250	176	345	60	240	200	15
Future Volume (veh/h)	10	260	110	50	495	250	176	345	60	240	200	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1767	1767	1856	1856	1856	1856	1856	1856	1841	1841	1841
Adj Flow Rate, veh/h	10	268	113	52	510	258	181	356	62	247	206	15
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	9	9	9	3	3	3	3	3	3	4	4	4
Cap, veh/h	18	561	447	111	774	533	235	727	125	410	390	28
Arrive On Green	0.01	0.17	0.17	0.06	0.22	0.22	0.13	0.24	0.24	0.12	0.23	0.23
Sat Flow, veh/h	1682	3357	1484	1767	3526	1566	1767	3002	518	3401	1694	123
Grp Volume(v), veh/h	10	268	113	52	510	258	181	208	210	247	0	221
Grp Sat Flow(s),veh/h/ln	1682	1678	1484	1767	1763	1566	1767	1763	1757	1700	0	1817
Q Serve(g_s), s	0.3	3.5	2.8	1.4	6.3	6.2	4.7	4.8	4.9	3.3	0.0	5.1
Cycle Q Clear(g_c), s	0.3	3.5	2.8	1.4	6.3	6.2	4.7	4.8	4.9	3.3	0.0	5.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.29	1.00		0.07
Lane Grp Cap(c), veh/h	18	561	447	111	774	533	235	427	426	410	0	418
V/C Ratio(X)	0.57	0.48	0.25	0.47	0.66	0.48	0.77	0.49	0.49	0.60	0.00	0.53
Avail Cap(c_a), veh/h	369	1052	664	388	1105	680	738	1105	1101	2131	0	1139
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.6	18.0	12.7	21.7	17.1	12.5	20.1	15.6	15.6	20.0	0.0	16.2
Incr Delay (d2), s/veh	16.6	0.5	0.2	1.9	0.7	0.5	3.3	1.3	1.4	0.9	0.0	1.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	1.2	0.8	0.6	2.2	1.8	2.0	1.8	1.9	1.2	0.0	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	40.2	18.5	12.9	23.6	17.8	13.0	23.4	16.9	17.0	20.8	0.0	17.7
LnGrp LOS	D	B	B	C	B	B	C	B	B	C		B
Approach Vol, veh/h		391			820			599			468	
Approach Delay, s/veh		17.4			16.6			18.9			19.4	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.4	16.0	5.0	15.5	10.8	16.6	7.5	13.0
Change Period (Y+Rc), s	5.0	5.0	4.5	5.0	5.0	5.0	4.5	5.0
Max Green Setting (Gmax), s	20.0	30.0	10.5	15.0	30.0	30.0	10.5	15.0
Max Q Clear Time (g_c+I1), s	6.7	7.1	2.3	8.3	5.3	6.9	3.4	5.5
Green Ext Time (p_c), s	0.3	1.9	0.0	2.0	0.6	3.8	0.0	1.1

Intersection Summary	
HCM 7th Control Delay, s/veh	17.9
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	30	50	3	20	15	35	460	10	15	305	35
Future Volume (veh/h)	110	30	50	3	20	15	35	460	10	15	305	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.98		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1826	1826	1826	1841	1841	1841	1826	1826	1826
Adj Flow Rate, veh/h	116	32	53	3	21	16	37	484	11	16	321	37
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	5	5	5	4	4	4	5	5	5
Cap, veh/h	415	85	140	301	55	42	432	602	14	331	510	59
Arrive On Green	0.08	0.13	0.13	0.00	0.06	0.06	0.03	0.34	0.34	0.02	0.32	0.32
Sat Flow, veh/h	1781	631	1045	1739	960	731	1753	1792	41	1739	1606	185
Grp Volume(v), veh/h	116	0	85	3	0	37	37	0	495	16	0	358
Grp Sat Flow(s),veh/h/ln	1781	0	1676	1739	0	1691	1753	0	1833	1739	0	1791
Q Serve(g_s), s	1.9	0.0	1.5	0.1	0.0	0.7	0.5	0.0	8.0	0.2	0.0	5.5
Cycle Q Clear(g_c), s	1.9	0.0	1.5	0.1	0.0	0.7	0.5	0.0	8.0	0.2	0.0	5.5
Prop In Lane	1.00		0.62	1.00		0.43	1.00		0.02	1.00		0.10
Lane Grp Cap(c), veh/h	415	0	225	301	0	97	432	0	616	331	0	569
V/C Ratio(X)	0.28	0.00	0.38	0.01	0.00	0.38	0.09	0.00	0.80	0.05	0.00	0.63
Avail Cap(c_a), veh/h	877	0	1087	617	0	1097	1237	0	2010	1161	0	1964
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.5	0.0	12.8	14.3	0.0	14.7	7.4	0.0	9.8	8.1	0.0	9.4
Incr Delay (d2), s/veh	0.1	0.0	0.4	0.0	0.0	0.9	0.0	0.0	0.9	0.0	0.0	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.5	0.0	0.0	0.2	0.1	0.0	2.3	0.1	0.0	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	12.6	0.0	13.2	14.3	0.0	15.6	7.4	0.0	10.7	8.1	0.0	9.8
LnGrp LOS	B		B	B		B	A		B	A		A
Approach Vol, veh/h		201			40			532			374	
Approach Delay, s/veh		12.8			15.5			10.5			9.8	
Approach LOS		B			B			B			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.1	14.8	6.6	5.9	4.5	15.4	4.1	8.3
Change Period (Y+Rc), s	4.0	4.5	4.0	4.0	4.0	4.5	4.0	4.0
Max Green Setting (Gmax), s	16.0	35.5	11.0	21.0	16.0	35.5	6.0	21.0
Max Q Clear Time (g_c+I1), s	2.5	7.5	3.9	2.7	2.2	10.0	2.1	3.5
Green Ext Time (p_c), s	0.0	0.5	0.0	0.0	0.0	0.7	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	10.8
HCM 7th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	45	185	10	35	15	360	1075	20	70	680	145
Future Volume (veh/h)	105	45	185	10	35	15	360	1075	20	70	680	145
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1722	1722	1722	1811	1811	1811	1781	1781	1781
Adj Flow Rate, veh/h	114	49	201	11	38	16	391	1168	22	76	739	158
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	5	12	12	12	6	6	6	8	8	8
Cap, veh/h	138	230	569	17	98	82	417	2220	990	96	1557	694
Arrive On Green	0.08	0.13	0.13	0.01	0.06	0.06	0.24	0.65	0.65	0.06	0.46	0.46
Sat Flow, veh/h	1739	1826	1540	1640	1722	1444	1725	3441	1535	1697	3385	1510
Grp Volume(v), veh/h	114	49	201	11	38	16	391	1168	22	76	739	158
Grp Sat Flow(s),veh/h/ln	1739	1826	1540	1640	1722	1444	1725	1721	1535	1697	1692	1510
Q Serve(g_s), s	7.7	2.9	11.4	0.8	2.6	1.3	26.7	21.9	0.6	5.3	18.1	7.6
Cycle Q Clear(g_c), s	7.7	2.9	11.4	0.8	2.6	1.3	26.7	21.9	0.6	5.3	18.1	7.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	138	230	569	17	98	82	417	2220	990	96	1557	694
V/C Ratio(X)	0.82	0.21	0.35	0.66	0.39	0.19	0.94	0.53	0.02	0.79	0.47	0.23
Avail Cap(c_a), veh/h	203	313	639	164	267	224	489	2220	990	368	1557	694
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.4	47.1	27.5	59.2	54.6	54.0	44.6	11.4	7.7	55.9	22.4	19.5
Incr Delay (d2), s/veh	10.5	0.2	0.1	23.4	1.5	0.7	23.0	0.9	0.0	8.5	1.0	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.8	2.4	7.5	0.8	2.1	0.9	19.4	11.6	0.4	4.3	11.1	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	64.9	47.2	27.7	82.6	56.1	54.7	67.6	12.3	7.7	64.4	23.4	20.3
LnGrp LOS	E	D	C	F	E	D	E	B	A	E	C	C
Approach Vol, veh/h		364			65			1581			973	
Approach Delay, s/veh		42.0			60.2			25.9			26.1	
Approach LOS		D			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	33.0	61.2	13.5	12.2	10.8	83.4	5.2	20.5
Change Period (Y+Rc), s	4.0	6.0	4.0	5.4	4.0	6.0	4.0	5.4
Max Green Setting (Gmax), s	34.0	34.0	14.0	18.6	26.0	42.0	12.0	20.6
Max Q Clear Time (g_c+I1), s	28.7	20.1	9.7	4.6	7.3	23.9	2.8	13.4
Green Ext Time (p_c), s	0.4	6.4	0.0	0.1	0.1	10.7	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	28.7
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	545	3	65	910	0	5	0	50	0	0	0
Future Volume (veh/h)	0	545	3	65	910	0	5	0	50	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1737	1737	1737	1856	1856	1856	1900	1900	1900	1870	1870	1870
Adj Flow Rate, veh/h	0	599	3	71	1000	0	5	0	55	0	0	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	11	11	11	3	3	3	0	0	0	2	2	2
Cap, veh/h	468	1391	7	637	2255	0	342	0	85	246	99	0
Arrive On Green	0.00	0.41	0.41	0.09	0.64	0.00	0.05	0.00	0.05	0.00	0.00	0.00
Sat Flow, veh/h	1654	3367	17	1767	3618	0	1810	0	1610	1349	1870	0
Grp Volume(v), veh/h	0	294	308	71	1000	0	5	0	55	0	0	0
Grp Sat Flow(s),veh/h/ln	1654	1650	1734	1767	1763	0	1810	0	1610	1349	1870	0
Q Serve(g_s), s	0.0	3.7	3.7	0.5	4.2	0.0	0.1	0.0	1.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	3.7	3.7	0.5	4.2	0.0	0.1	0.0	1.0	0.0	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	468	681	716	637	2255	0	342	0	85	246	99	0
V/C Ratio(X)	0.00	0.43	0.43	0.11	0.44	0.00	0.01	0.00	0.65	0.00	0.00	0.00
Avail Cap(c_a), veh/h	1084	1720	1808	1142	3675	0	1514	0	1128	428	352	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	6.1	6.1	3.4	2.7	0.0	13.2	0.0	13.6	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.7	0.6	0.0	0.2	0.0	0.0	0.0	6.0	0.0	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.7	0.7	0.0	0.1	0.0	0.0	0.0	0.4	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	6.8	6.8	3.5	2.9	0.0	13.2	0.0	19.6	0.0	0.0	0.0
LnGrp LOS		A	A	A	A		B		B			
Approach Vol, veh/h		602			1071			60			0	
Approach Delay, s/veh		6.8			2.9			19.1			0.0	
Approach LOS		A			A			B				

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.6	16.6		6.0	0.0	23.2		6.0				
Change Period (Y+Rc), s	4.0	4.5		4.5	4.0	4.5		4.5				
Max Green Setting (Gmax), s	11.0	30.5		5.5	11.0	30.5		20.5				
Max Q Clear Time (g_c+I1), s	2.5	5.7		0.0	0.0	6.2		3.0				
Green Ext Time (p_c), s	0.0	5.6		0.0	0.0	10.9		0.2				

Intersection Summary	
HCM 7th Control Delay, s/veh	4.8
HCM 7th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	365	350	30	130	450	800	45	1080	125	430	720	675
Future Volume (veh/h)	365	350	30	130	450	800	45	1080	125	430	720	675
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1752	1752	1752	1841	1841	1841	1811	1811	1811	1826	1826	1826
Adj Flow Rate, veh/h	380	365	31	135	469	0	47	1125	0	448	750	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	10	10	10	4	4	4	6	6	6	5	5	5
Cap, veh/h	460	706	60	198	501		59	1121		529	1555	
Arrive On Green	0.14	0.23	0.23	0.06	0.14	0.00	0.03	0.33	0.00	0.16	0.45	0.00
Sat Flow, veh/h	3237	3106	262	3401	3497	1560	1725	3441	1535	3374	3469	1547
Grp Volume(v), veh/h	380	195	201	135	469	0	47	1125	0	448	750	0
Grp Sat Flow(s),veh/h/ln	1618	1664	1705	1700	1749	1560	1725	1721	1535	1687	1735	1547
Q Serve(g_s), s	11.6	10.4	10.5	3.9	13.4	0.0	2.7	33.0	0.0	13.1	15.4	0.0
Cycle Q Clear(g_c), s	11.6	10.4	10.5	3.9	13.4	0.0	2.7	33.0	0.0	13.1	15.4	0.0
Prop In Lane	1.00		0.15	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	460	378	387	198	501		59	1121		529	1555	
V/C Ratio(X)	0.83	0.51	0.52	0.68	0.94		0.79	1.00		0.85	0.48	
Avail Cap(c_a), veh/h	1039	403	412	319	501		162	1121		883	1555	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	42.2	34.3	34.3	46.8	42.9	0.0	48.5	34.1	0.0	41.5	19.7	0.0
Incr Delay (d2), s/veh	2.4	0.7	0.7	2.5	25.2	0.0	13.3	27.7	0.0	2.6	0.4	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.2	7.5	7.7	3.1	11.9	0.0	2.4	23.5	0.0	9.1	9.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	44.6	34.9	35.0	49.3	68.1	0.0	61.8	61.9	0.0	44.1	20.1	0.0
LnGrp LOS	D	C	C	D	E		E	F		D	C	
Approach Vol, veh/h		776			604			1172			1198	
Approach Delay, s/veh		39.7			63.9			61.9			29.1	
Approach LOS		D			E			E			C	

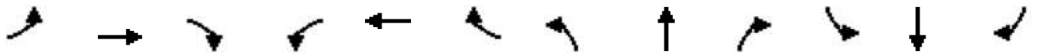
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.4	40.0	11.4	28.5	9.0	52.4	19.9	20.0
Change Period (Y+Rc), s	5.5	7.0	5.5	5.5	5.5	7.0	5.5	5.5
Max Green Setting (Gmax), s	26.5	33.0	9.5	24.5	9.5	33.0	32.5	14.5
Max Q Clear Time (g_c+I1), s	15.1	35.0	5.9	12.5	4.7	17.4	13.6	15.4
Green Ext Time (p_c), s	0.8	0.0	0.1	1.3	0.0	6.4	0.8	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	47.1
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

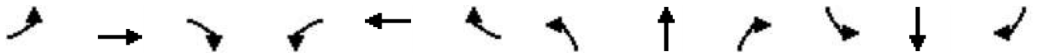
Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	5	15	70	10	30	10	710	20	2	825	10
Future Volume (veh/h)	10	5	15	70	10	30	10	710	20	2	825	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1885	1885	1885	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	11	5	16	74	11	32	11	747	21	2	868	11
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	1	1	1	2	2	2	1	1	1
Cap, veh/h	154	65	105	249	32	54	424	1235	35	493	1268	16
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.68	0.68	0.68	0.68	0.68	0.68
Sat Flow, veh/h	312	501	813	856	245	414	631	1809	51	705	1857	24
Grp Volume(v), veh/h	32	0	0	117	0	0	11	0	768	2	0	879
Grp Sat Flow(s),veh/h/ln	1627	0	0	1515	0	0	631	0	1860	705	0	1880
Q Serve(g_s), s	0.0	0.0	0.0	2.3	0.0	0.0	0.5	0.0	9.5	0.1	0.0	11.9
Cycle Q Clear(g_c), s	0.7	0.0	0.0	3.0	0.0	0.0	12.3	0.0	9.5	9.6	0.0	11.9
Prop In Lane	0.34		0.50	0.63		0.27	1.00		0.03	1.00		0.01
Lane Grp Cap(c), veh/h	324	0	0	334	0	0	424	0	1270	493	0	1284
V/C Ratio(X)	0.10	0.00	0.00	0.35	0.00	0.00	0.03	0.00	0.60	0.00	0.00	0.68
Avail Cap(c_a), veh/h	874	0	0	870	0	0	823	0	2446	939	0	2473
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.5	0.0	0.0	17.4	0.0	0.0	7.7	0.0	3.6	6.2	0.0	4.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.8	0.0	0.0	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.0	1.0	0.0	0.0	0.1	0.0	1.4	0.0	0.0	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	16.5	0.0	0.0	17.9	0.0	0.0	7.7	0.0	4.4	6.2	0.0	5.1
LnGrp LOS	B			B			A		A	A		A
Approach Vol, veh/h		32			117			779			881	
Approach Delay, s/veh		16.5			17.9			4.5			5.1	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	33.1	9.5	33.1	9.5
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	56.0	21.0	56.0	21.0
Max Q Clear Time (g_c+I1), s	13.9	5.0	14.3	2.7
Green Ext Time (p_c), s	15.2	0.4	12.3	0.1

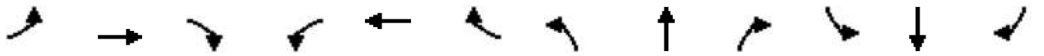
Intersection Summary	
HCM 7th Control Delay, s/veh	5.9
HCM 7th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	20	90	40	10	10	85	625	20	5	765	75
Future Volume (veh/h)	95	20	90	40	10	10	85	625	20	5	765	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.97	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1870	1870	1870	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	103	22	98	43	11	11	92	679	22	5	832	82
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	2	2	2	2	2	2	1	1	1
Cap, veh/h	308	250	210	296	115	115	378	1114	36	439	1070	875
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.06	0.62	0.62	0.01	0.57	0.57
Sat Flow, veh/h	1369	1856	1561	1264	854	854	1781	1799	58	1795	1885	1542
Grp Volume(v), veh/h	103	22	98	43	0	22	92	0	701	5	832	82
Grp Sat Flow(s),veh/h/ln	1369	1856	1561	1264	0	1709	1781	0	1857	1795	1885	1542
Q Serve(g_s), s	3.7	0.5	3.0	1.6	0.0	0.6	1.0	0.0	12.0	0.1	17.7	1.3
Cycle Q Clear(g_c), s	4.3	0.5	3.0	2.1	0.0	0.6	1.0	0.0	12.0	0.1	17.7	1.3
Prop In Lane	1.00		1.00	1.00		0.50	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	308	250	210	296	0	230	378	0	1150	439	1070	875
V/C Ratio(X)	0.33	0.09	0.47	0.15	0.00	0.10	0.24	0.00	0.61	0.01	0.78	0.09
Avail Cap(c_a), veh/h	678	752	632	638	0	693	655	0	1452	811	1473	1205
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.5	19.6	20.7	20.6	0.0	19.7	7.4	0.0	6.0	5.6	8.7	5.1
Incr Delay (d2), s/veh	0.5	0.1	1.2	0.2	0.0	0.1	0.2	0.0	0.8	0.0	2.4	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.2	1.1	0.5	0.0	0.2	0.3	0.0	3.2	0.0	5.7	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	22.0	19.8	21.9	20.7	0.0	19.8	7.6	0.0	6.8	5.6	11.1	5.2
LnGrp LOS	C	B	C	C		B	A		A	A	B	A
Approach Vol, veh/h		223			65			793			919	
Approach Delay, s/veh		21.7			20.4			6.9			10.5	
Approach LOS		C			C			A			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.9	33.9		11.0	4.3	36.6		11.0				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	11.0	40.5		21.0	11.0	40.5		21.0				
Max Q Clear Time (g_c+I1), s	3.0	19.7		4.1	2.1	14.0		6.3				
Green Ext Time (p_c), s	0.1	9.7		0.1	0.0	8.2		0.5				

Intersection Summary												
HCM 7th Control Delay, s/veh			10.7									
HCM 7th LOS			B									



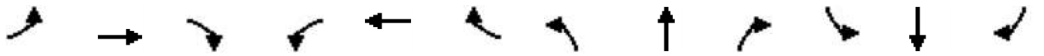
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	10	145	20	10	3	155	605	10	15	790	130
Future Volume (veh/h)	160	10	145	20	10	3	155	605	10	15	790	130
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1811	1811	1811	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	168	11	153	21	11	3	163	637	11	16	832	137
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	6	6	6	2	2	2	2	2	2
Cap, veh/h	566	28	396	382	252	69	293	1699	29	414	1445	238
Arrive On Green	0.10	0.27	0.27	0.02	0.18	0.18	0.48	0.48	0.48	0.48	0.48	0.48
Sat Flow, veh/h	1795	107	1486	1725	1370	374	579	3572	62	781	3040	501
Grp Volume(v), veh/h	168	0	164	21	0	14	163	317	331	16	486	483
Grp Sat Flow(s),veh/h/ln	1795	0	1593	1725	0	1743	579	1777	1857	781	1777	1763
Q Serve(g_s), s	3.8	0.0	4.6	0.5	0.0	0.4	15.2	6.2	6.2	0.7	10.8	10.8
Cycle Q Clear(g_c), s	3.8	0.0	4.6	0.5	0.0	0.4	26.0	6.2	6.2	7.0	10.8	10.8
Prop In Lane	1.00		0.93	1.00		0.21	1.00		0.03	1.00		0.28
Lane Grp Cap(c), veh/h	566	0	425	382	0	321	293	845	883	414	845	839
V/C Ratio(X)	0.30	0.00	0.39	0.05	0.00	0.04	0.56	0.37	0.38	0.04	0.58	0.58
Avail Cap(c_a), veh/h	1071	0	1602	1010	0	1753	293	845	883	414	845	839
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.9	0.0	16.4	17.5	0.0	18.4	19.8	9.2	9.2	11.4	10.4	10.4
Incr Delay (d2), s/veh	0.2	0.0	0.9	0.0	0.0	0.1	2.0	0.2	0.2	0.0	0.8	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	1.6	0.2	0.0	0.1	2.0	2.0	2.1	0.1	3.6	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.1	0.0	17.3	17.6	0.0	18.4	21.8	9.4	9.3	11.4	11.2	11.2
LnGrp LOS	B		B	B		B	C	A	A	B	B	B
Approach Vol, veh/h		332			35			811			985	
Approach Delay, s/veh		15.7			17.9			11.9			11.2	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.1	19.6		30.0	9.6	15.1		30.0				
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	21.0	55.0		26.0	21.0	55.0		26.0				
Max Q Clear Time (g_c+I1), s	2.5	6.6		12.8	5.8	2.4		28.0				
Green Ext Time (p_c), s	0.0	1.8		4.6	0.3	0.1		0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	12.2
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	0	155	0	0	0	145	730	0	0	875	75
Future Volume (veh/h)	45	0	155	0	0	0	145	730	0	0	875	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.98		0.98	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1870	1870	1870	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	46	0	160	0	0	0	149	753	0	0	902	77
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	2	2	2	1	1	1	2	2	2
Cap, veh/h	406	0	263	111	310	0	192	2161	0	111	1440	123
Arrive On Green	0.17	0.00	0.17	0.00	0.00	0.00	0.11	0.60	0.00	0.00	0.43	0.43
Sat Flow, veh/h	1780	0	1584	1226	1870	0	1795	3676	0	710	3310	283
Grp Volume(v), veh/h	46	0	160	0	0	0	149	753	0	0	484	495
Grp Sat Flow(s),veh/h/ln	1780	0	1584	1226	1870	0	1795	1791	0	710	1777	1816
Q Serve(g_s), s	1.4	0.0	6.1	0.0	0.0	0.0	5.3	6.9	0.0	0.0	13.8	13.8
Cycle Q Clear(g_c), s	1.4	0.0	6.1	0.0	0.0	0.0	5.3	6.9	0.0	0.0	13.8	13.8
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		0.16
Lane Grp Cap(c), veh/h	406	0	263	111	310	0	192	2161	0	111	773	790
V/C Ratio(X)	0.11	0.00	0.61	0.00	0.00	0.00	0.78	0.35	0.00	0.00	0.63	0.63
Avail Cap(c_a), veh/h	740	0	560	341	662	0	580	2865	0	403	1503	1536
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	23.2	0.0	25.2	0.0	0.0	0.0	28.3	6.5	0.0	0.0	14.3	14.3
Incr Delay (d2), s/veh	0.1	0.0	1.4	0.0	0.0	0.0	4.1	0.1	0.0	0.0	1.3	1.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	2.3	0.0	0.0	0.0	2.4	2.1	0.0	0.0	5.1	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	23.3	0.0	26.5	0.0	0.0	0.0	32.4	6.6	0.0	0.0	15.5	15.5
LnGrp LOS	C		C				C	A			B	B
Approach Vol, veh/h		206			0			902			979	
Approach Delay, s/veh		25.8			0.0			10.9			15.5	
Approach LOS		C						B			B	

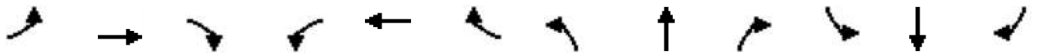
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	10.9	36.3		17.8		47.2		17.8				
Change Period (Y+Rc), s	4.0	* 8		7.0		8.0		7.0				
Max Green Setting (Gmax), s	21.0	* 55		23.0		52.0		23.0				
Max Q Clear Time (g_c+I1), s	7.3	15.8		8.1		8.9		0.0				
Green Ext Time (p_c), s	0.2	12.5		0.7		9.7		0.0				

Intersection Summary												
HCM 7th Control Delay, s/veh			14.5									
HCM 7th LOS			B									

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



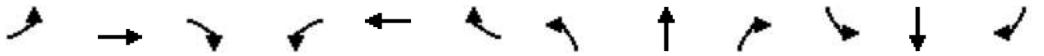
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	500	220	120	370	280	175	445	60	535	505	15
Future Volume (veh/h)	40	500	220	120	370	280	175	445	60	535	505	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1885	1885	1885	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	41	515	227	124	381	289	180	459	62	552	521	15
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	1	1	1	2	2	2	1	1	1
Cap, veh/h	55	646	483	158	856	692	223	848	114	682	621	18
Arrive On Green	0.03	0.18	0.18	0.09	0.24	0.24	0.13	0.27	0.27	0.20	0.34	0.34
Sat Flow, veh/h	1781	3554	1563	1795	3582	1588	1781	3137	421	3483	1822	52
Grp Volume(v), veh/h	41	515	227	124	381	289	180	259	262	552	0	536
Grp Sat Flow(s),veh/h/ln	1781	1777	1563	1795	1791	1588	1781	1777	1782	1742	0	1874
Q Serve(g_s), s	1.7	10.2	8.7	5.0	6.7	9.3	7.3	9.2	9.3	11.2	0.0	19.5
Cycle Q Clear(g_c), s	1.7	10.2	8.7	5.0	6.7	9.3	7.3	9.2	9.3	11.2	0.0	19.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.24	1.00		0.03
Lane Grp Cap(c), veh/h	55	646	483	158	856	692	223	480	482	682	0	639
V/C Ratio(X)	0.75	0.80	0.47	0.78	0.45	0.42	0.81	0.54	0.54	0.81	0.00	0.84
Avail Cap(c_a), veh/h	253	722	516	255	856	692	483	722	724	1416	0	762
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.5	28.9	20.7	33.0	23.9	14.4	31.4	23.0	23.0	28.4	0.0	22.5
Incr Delay (d2), s/veh	11.6	5.4	0.5	5.2	0.3	0.3	4.2	1.4	1.5	1.5	0.0	8.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	4.6	3.0	2.3	2.7	3.0	3.3	3.9	3.9	4.6	0.0	9.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	47.1	34.3	21.3	38.2	24.2	14.7	35.6	24.4	24.5	29.8	0.0	30.4
LnGrp LOS	D	C	C	D	C	B	D	C	C	C		C
Approach Vol, veh/h		783			794			701			1088	
Approach Delay, s/veh		31.2			22.9			27.3			30.1	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.2	30.1	6.8	22.6	19.4	24.9	11.0	18.4
Change Period (Y+Rc), s	5.0	5.0	4.5	5.0	5.0	5.0	4.5	5.0
Max Green Setting (Gmax), s	20.0	30.0	10.5	15.0	30.0	30.0	10.5	15.0
Max Q Clear Time (g_c+I1), s	9.3	21.5	3.7	11.3	13.2	11.3	7.0	12.2
Green Ext Time (p_c), s	0.2	3.1	0.0	1.1	1.3	4.4	0.1	1.0

Intersection Summary	
HCM 7th Control Delay, s/veh	28.1
HCM 7th LOS	C

Notes

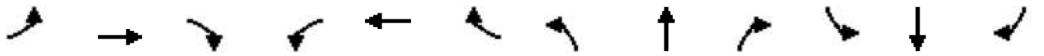
User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	45	45	20	45	45	45	490	20	20	585	155
Future Volume (veh/h)	115	45	45	20	45	45	45	490	20	20	585	155
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.96	0.97		0.98	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1900	1900	1900	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	119	46	46	21	46	46	46	505	21	21	603	160
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	0	0	0	3	3	3	3	3	3
Cap, veh/h	344	134	134	304	86	86	249	853	35	414	653	173
Arrive On Green	0.08	0.16	0.16	0.02	0.10	0.10	0.04	0.48	0.48	0.02	0.47	0.47
Sat Flow, veh/h	1795	844	844	1810	863	863	1767	1768	74	1767	1404	373
Grp Volume(v), veh/h	119	0	92	21	0	92	46	0	526	21	0	763
Grp Sat Flow(s),veh/h/ln	1795	0	1688	1810	0	1726	1767	0	1842	1767	0	1776
Q Serve(g_s), s	2.9	0.0	2.5	0.5	0.0	2.6	0.7	0.0	10.7	0.3	0.0	20.8
Cycle Q Clear(g_c), s	2.9	0.0	2.5	0.5	0.0	2.6	0.7	0.0	10.7	0.3	0.0	20.8
Prop In Lane	1.00		0.50	1.00		0.50	1.00		0.04	1.00		0.21
Lane Grp Cap(c), veh/h	344	0	267	304	0	173	249	0	889	414	0	826
V/C Ratio(X)	0.35	0.00	0.34	0.07	0.00	0.53	0.18	0.00	0.59	0.05	0.00	0.92
Avail Cap(c_a), veh/h	585	0	685	477	0	700	729	0	1263	925	0	1218
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.0	0.0	19.4	20.3	0.0	22.1	11.1	0.0	9.7	7.9	0.0	13.0
Incr Delay (d2), s/veh	0.2	0.0	0.3	0.0	0.0	0.9	0.1	0.0	0.2	0.0	0.0	6.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.9	0.2	0.0	1.0	0.2	0.0	3.4	0.1	0.0	8.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	18.2	0.0	19.7	20.3	0.0	23.1	11.2	0.0	9.9	7.9	0.0	19.8
LnGrp LOS	B		B	C		C	B		A	A		B
Approach Vol, veh/h		211			113			572			784	
Approach Delay, s/veh		18.8			22.6			10.0			19.5	
Approach LOS		B			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.9	28.6	8.1	9.2	5.0	29.5	5.0	12.2
Change Period (Y+Rc), s	4.0	4.5	4.0	4.0	4.0	4.5	4.0	4.0
Max Green Setting (Gmax), s	16.0	35.5	11.0	21.0	16.0	35.5	6.0	21.0
Max Q Clear Time (g_c+I1), s	2.7	22.8	4.9	4.6	2.3	12.7	2.5	4.5
Green Ext Time (p_c), s	0.0	1.2	0.0	0.1	0.0	0.8	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	16.4
HCM 7th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	155	45	500	10	40	55	295	835	15	40	1210	180
Future Volume (veh/h)	155	45	500	10	40	55	295	835	15	40	1210	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1752	1752	1752	1856	1856	1856	1870	1870	1870
Adj Flow Rate, veh/h	158	46	510	10	41	56	301	852	15	41	1235	184
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	10	10	10	3	3	3	2	2	2
Cap, veh/h	183	325	565	16	141	116	327	2249	1002	53	1715	764
Arrive On Green	0.10	0.17	0.17	0.01	0.08	0.08	0.19	0.64	0.64	0.03	0.48	0.48
Sat Flow, veh/h	1781	1870	1563	1668	1752	1440	1767	3526	1571	1781	3554	1583
Grp Volume(v), veh/h	158	46	510	10	41	56	301	852	15	41	1235	184
Grp Sat Flow(s),veh/h/ln	1781	1870	1563	1668	1752	1440	1767	1763	1571	1781	1777	1583
Q Serve(g_s), s	11.4	2.7	22.6	0.8	2.9	4.8	21.7	15.0	0.5	3.0	35.8	8.8
Cycle Q Clear(g_c), s	11.4	2.7	22.6	0.8	2.9	4.8	21.7	15.0	0.5	3.0	35.8	8.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	183	325	565	16	141	116	327	2249	1002	53	1715	764
V/C Ratio(X)	0.87	0.14	0.90	0.64	0.29	0.48	0.92	0.38	0.01	0.77	0.72	0.24
Avail Cap(c_a), veh/h	219	325	565	205	278	228	421	2249	1002	288	1715	764
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.5	45.5	39.6	64.2	56.3	57.2	52.0	11.2	8.6	62.6	26.7	19.7
Incr Delay (d2), s/veh	22.5	0.1	17.3	23.9	0.7	1.9	20.4	0.5	0.0	13.6	2.6	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	10.3	2.3	24.8	0.8	2.4	3.3	16.5	9.0	0.3	2.7	20.8	6.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	79.9	45.6	56.9	88.1	56.9	59.0	72.4	11.7	8.6	76.2	29.3	20.4
LnGrp LOS	E	D	E	F	E	E	E	B	A	E	C	C
Approach Vol, veh/h		714			107			1168			1460	
Approach Delay, s/veh		61.3			60.9			27.3			29.5	
Approach LOS		E			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	28.1	68.7	17.3	15.9	7.9	88.9	5.2	28.0
Change Period (Y+Rc), s	4.0	6.0	4.0	5.4	4.0	6.0	4.0	5.4
Max Green Setting (Gmax), s	31.0	43.0	16.0	20.6	21.0	53.0	16.0	20.6
Max Q Clear Time (g_c+I1), s	23.7	37.8	13.4	6.8	5.0	17.0	2.8	24.6
Green Ext Time (p_c), s	0.3	4.2	0.0	0.2	0.0	10.3	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	36.3
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	1065	55	140	840	0	30	0	80	0	0	1
Future Volume (veh/h)	1	1065	55	140	840	0	30	0	80	0	0	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	0.98		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1870	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	1	1145	59	151	903	0	32	0	86	0	0	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	2	2	2	0	0	0	0	0	0
Cap, veh/h	450	1735	89	464	2162	0	314	0	183	152	0	183
Arrive On Green	0.00	0.50	0.50	0.11	0.61	0.00	0.12	0.00	0.12	0.00	0.00	0.12
Sat Flow, veh/h	1795	3464	178	1781	3647	0	1409	0	1577	1332	0	1577
Grp Volume(v), veh/h	1	592	612	151	903	0	32	0	86	0	0	1
Grp Sat Flow(s),veh/h/ln	1795	1791	1851	1781	1777	0	1409	0	1577	1332	0	1577
Q Serve(g_s), s	0.0	11.7	11.7	1.5	6.3	0.0	1.0	0.0	2.4	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	11.7	11.7	1.5	6.3	0.0	1.0	0.0	2.4	0.0	0.0	0.0
Prop In Lane	1.00		0.10	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	450	897	928	464	2162	0	314	0	183	152	0	183
V/C Ratio(X)	0.00	0.66	0.66	0.33	0.42	0.00	0.10	0.00	0.47	0.00	0.00	0.01
Avail Cap(c_a), veh/h	863	1151	1190	683	2284	0	760	0	681	152	0	183
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	5.9	8.8	8.8	6.1	4.9	0.0	19.0	0.0	19.6	0.0	0.0	18.6
Incr Delay (d2), s/veh	0.0	1.3	1.3	0.2	0.2	0.0	0.1	0.0	1.4	0.0	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.4	3.5	0.3	1.3	0.0	0.3	0.0	0.9	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	5.9	10.2	10.1	6.3	5.1	0.0	19.1	0.0	21.0	0.0	0.0	18.6
LnGrp LOS	A	B	B	A	A		B		C			B
Approach Vol, veh/h		1205			1054			118			1	
Approach Delay, s/veh		10.1			5.3			20.5			18.6	
Approach LOS		B			A			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.2	28.3		10.0	4.1	33.4		10.0				
Change Period (Y+Rc), s	4.0	4.5		4.5	4.0	4.5		4.5				
Max Green Setting (Gmax), s	11.0	30.5		5.5	11.0	30.5		20.5				
Max Q Clear Time (g_c+I1), s	3.5	13.7		2.0	2.0	8.3		4.4				
Green Ext Time (p_c), s	0.1	10.1		0.0	0.0	9.2		0.4				

Intersection Summary	
HCM 7th Control Delay, s/veh	8.5
HCM 7th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	715	810	100	145	510	505	55	805	180	790	1115	665
Future Volume (veh/h)	715	810	100	145	510	505	55	805	180	790	1115	665
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1856	1856	1856	1870	1870	1870
Adj Flow Rate, veh/h	730	827	102	148	520	0	56	821	0	806	1138	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	3	3	3	2	2	2
Cap, veh/h	796	918	113	202	415		72	902		732	1517	
Arrive On Green	0.23	0.29	0.29	0.06	0.12	0.00	0.04	0.26	0.00	0.21	0.43	0.00
Sat Flow, veh/h	3483	3203	395	3483	3582	1598	1767	3526	1572	3456	3554	1585
Grp Volume(v), veh/h	730	462	467	148	520	0	56	821	0	806	1138	0
Grp Sat Flow(s),veh/h/ln	1742	1791	1808	1742	1791	1598	1767	1763	1572	1728	1777	1585
Q Serve(g_s), s	25.6	31.1	31.1	5.2	14.5	0.0	3.9	28.3	0.0	26.5	33.8	0.0
Cycle Q Clear(g_c), s	25.6	31.1	31.1	5.2	14.5	0.0	3.9	28.3	0.0	26.5	33.8	0.0
Prop In Lane	1.00		0.22	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	796	513	518	202	415		72	902		732	1517	
V/C Ratio(X)	0.92	0.90	0.90	0.73	1.25		0.78	0.91		1.10	0.75	
Avail Cap(c_a), veh/h	905	513	518	265	415		134	930		732	1517	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	47.1	42.9	42.9	58.0	55.3	0.0	59.4	45.2	0.0	49.3	30.2	0.0
Incr Delay (d2), s/veh	12.4	18.6	18.5	5.5	132.0	0.0	10.5	13.2	0.0	64.3	2.4	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	18.1	22.8	22.9	4.4	22.1	0.0	3.4	19.3	0.0	25.5	19.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	59.5	61.5	61.4	63.5	187.3	0.0	69.9	58.3	0.0	113.6	32.7	0.0
LnGrp LOS	E	E	E	E	F		E	E		F	C	
Approach Vol, veh/h		1659			668			877			1944	
Approach Delay, s/veh		60.6			159.9			59.1			66.2	
Approach LOS		E			F			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	32.0	39.0	12.7	41.3	10.6	60.4	34.1	20.0
Change Period (Y+Rc), s	5.5	7.0	5.5	5.5	5.5	7.0	5.5	5.5
Max Green Setting (Gmax), s	26.5	33.0	9.5	24.5	9.5	33.0	32.5	14.5
Max Q Clear Time (g_c+I1), s	28.5	30.3	7.2	33.1	5.9	35.8	27.6	16.5
Green Ext Time (p_c), s	0.0	1.7	0.1	0.0	0.0	0.0	1.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	75.4
HCM 7th LOS	E

Notes

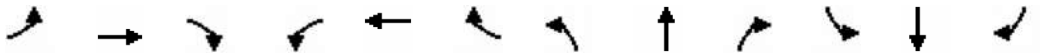
User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	10	17	47	10	5	17	691	22	35	521	10
Future Volume (veh/h)	20	10	17	47	10	5	17	691	22	35	521	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1811	1811	1781	1781	1781	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	22	11	18	51	11	5	18	751	24	38	566	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	8	8	8	4	4	4	4	4	4
Cap, veh/h	197	73	72	293	53	14	601	1158	37	467	1176	23
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.65	0.65	0.65	0.65	0.65	0.65
Sat Flow, veh/h	446	555	546	934	404	108	823	1772	57	684	1799	35
Grp Volume(v), veh/h	51	0	0	67	0	0	18	0	775	38	0	577
Grp Sat Flow(s),veh/h/ln	1546	0	0	1447	0	0	823	0	1829	684	0	1834
Q Serve(g_s), s	0.0	0.0	0.0	0.4	0.0	0.0	0.4	0.0	9.5	1.3	0.0	5.9
Cycle Q Clear(g_c), s	1.0	0.0	0.0	1.4	0.0	0.0	6.3	0.0	9.5	10.8	0.0	5.9
Prop In Lane	0.43		0.35	0.76		0.07	1.00		0.03	1.00		0.02
Lane Grp Cap(c), veh/h	342	0	0	360	0	0	601	0	1195	467	0	1199
V/C Ratio(X)	0.15	0.00	0.00	0.19	0.00	0.00	0.03	0.00	0.65	0.08	0.00	0.48
Avail Cap(c_a), veh/h	984	0	0	956	0	0	1302	0	2756	1051	0	2764
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.5	0.0	0.0	14.6	0.0	0.0	4.9	0.0	3.9	7.1	0.0	3.3
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.0	1.0	0.1	0.0	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.6	0.0	0.0	0.8	0.0	0.0	0.1	0.0	2.3	0.3	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.6	0.0	0.0	14.8	0.0	0.0	4.9	0.0	4.9	7.2	0.0	3.8
LnGrp LOS	B			B			A		A	A		A
Approach Vol, veh/h		51			67			793			615	
Approach Delay, s/veh		14.6			14.8			4.9			4.0	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	28.3	8.9	28.3	8.9
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	56.0	21.0	56.0	21.0
Max Q Clear Time (g_c+I1), s	12.8	3.4	11.5	3.0
Green Ext Time (p_c), s	8.6	0.2	12.8	0.1

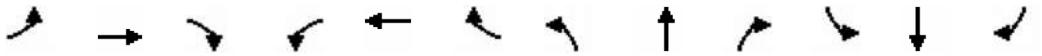
Intersection Summary	
HCM 7th Control Delay, s/veh	5.3
HCM 7th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	4	54	35	5	5	44	590	10	5	525	35
Future Volume (veh/h)	50	4	54	35	5	5	44	590	10	5	525	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1826	1826	1826	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	54	4	58	38	5	5	47	634	11	5	565	38
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	7	7	7	5	5	5	4	4	4	4	4	4
Cap, veh/h	369	239	202	368	111	111	475	940	16	408	892	754
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.04	0.52	0.52	0.01	0.48	0.48
Sat Flow, veh/h	1349	1796	1522	1308	838	838	1753	1804	31	1753	1841	1555
Grp Volume(v), veh/h	54	4	58	38	0	10	47	0	645	5	565	38
Grp Sat Flow(s),veh/h/ln	1349	1796	1522	1308	0	1675	1753	0	1835	1753	1841	1555
Q Serve(g_s), s	1.3	0.1	1.3	1.0	0.0	0.2	0.5	0.0	9.5	0.1	8.4	0.5
Cycle Q Clear(g_c), s	1.5	0.1	1.3	1.0	0.0	0.2	0.5	0.0	9.5	0.1	8.4	0.5
Prop In Lane	1.00		1.00	1.00		0.50	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	369	239	202	368	0	223	475	0	956	408	892	754
V/C Ratio(X)	0.15	0.02	0.29	0.10	0.00	0.04	0.10	0.00	0.67	0.01	0.63	0.05
Avail Cap(c_a), veh/h	962	1029	872	943	0	959	928	0	2027	924	2033	1717
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.5	13.8	14.3	14.3	0.0	13.9	5.2	0.0	6.5	5.7	7.0	5.0
Incr Delay (d2), s/veh	0.1	0.0	0.6	0.1	0.0	0.1	0.1	0.0	1.3	0.0	1.1	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.7	0.0	0.7	0.5	0.0	0.1	0.2	0.0	4.2	0.0	4.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.7	13.8	14.9	14.4	0.0	13.9	5.3	0.0	7.8	5.7	8.2	5.0
LnGrp LOS	B	B	B	B		B	A		A	A	A	A
Approach Vol, veh/h		116			48			692			608	
Approach Delay, s/veh		14.8			14.3			7.6			7.9	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.5	22.3		8.9	4.2	23.6		8.9				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	11.0	40.5		21.0	11.0	40.5		21.0				
Max Q Clear Time (g_c+I1), s	2.5	10.4		3.0	2.1	11.5		3.5				
Green Ext Time (p_c), s	0.0	6.6		0.1	0.0	7.6		0.2				

Intersection Summary												
HCM 7th Control Delay, s/veh			8.5									
HCM 7th LOS			A									



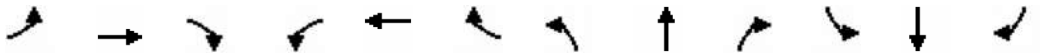
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	10	79	15	5	1	134	649	5	5	479	125
Future Volume (veh/h)	105	10	79	15	5	1	134	649	5	5	479	125
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1900	1900	1900	1826	1826	1826	1841	1841	1841
Adj Flow Rate, veh/h	115	11	87	16	5	1	147	713	5	5	526	137
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	4	4	4	0	0	0	5	5	5	4	4	4
Cap, veh/h	581	49	387	469	333	67	376	1516	11	360	1179	306
Arrive On Green	0.07	0.27	0.27	0.02	0.22	0.22	0.43	0.43	0.43	0.43	0.43	0.43
Sat Flow, veh/h	1753	178	1406	1810	1536	307	752	3531	25	721	2745	712
Grp Volume(v), veh/h	115	0	98	16	0	6	147	350	368	5	334	329
Grp Sat Flow(s),veh/h/ln	1753	0	1584	1810	0	1844	752	1735	1821	721	1749	1708
Q Serve(g_s), s	2.3	0.0	2.2	0.3	0.0	0.1	8.0	6.7	6.7	0.2	6.3	6.3
Cycle Q Clear(g_c), s	2.3	0.0	2.2	0.3	0.0	0.1	14.3	6.7	6.7	6.9	6.3	6.3
Prop In Lane	1.00		0.89	1.00		0.17	1.00		0.01	1.00		0.42
Lane Grp Cap(c), veh/h	581	0	435	469	0	400	376	745	782	360	751	733
V/C Ratio(X)	0.20	0.00	0.23	0.03	0.00	0.01	0.39	0.47	0.47	0.01	0.45	0.45
Avail Cap(c_a), veh/h	1244	0	1874	1257	0	2181	473	970	1018	454	978	955
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.0	0.0	13.0	13.8	0.0	14.3	14.4	9.5	9.5	12.0	9.4	9.4
Incr Delay (d2), s/veh	0.1	0.0	0.4	0.0	0.0	0.0	0.5	0.3	0.3	0.0	0.3	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.4	0.0	1.3	0.2	0.0	0.1	2.1	3.7	3.8	0.1	3.5	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	12.1	0.0	13.4	13.8	0.0	14.3	14.9	9.8	9.8	12.0	9.7	9.7
LnGrp LOS	B		B	B		B	B	A	A	B	A	A
Approach Vol, veh/h		213			22			865			668	
Approach Delay, s/veh		12.7			14.0			10.7			9.7	
Approach LOS		B			B			B			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.7	17.8		24.0	7.4	15.1		24.0				
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	21.0	55.0		26.0	21.0	55.0		26.0				
Max Q Clear Time (g_c+I1), s	2.3	4.2		8.9	4.3	2.1		16.3				
Green Ext Time (p_c), s	0.0	1.0		3.3	0.2	0.0		3.3				

Intersection Summary	
HCM 7th Control Delay, s/veh	10.6
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	0	70	47	0	149	90	584	58	130	368	50
Future Volume (veh/h)	55	0	70	47	0	149	90	584	58	130	368	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1870	1856	1856	1856	1841	1841	1841
Adj Flow Rate, veh/h	63	0	80	53	0	169	102	664	66	148	418	57
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	1	1	1	2	2	2	3	3	3	4	4	4
Cap, veh/h	272	0	324	352	0	321	133	1633	162	390	1087	147
Arrive On Green	0.20	0.00	0.20	0.20	0.00	0.20	0.08	0.50	0.50	0.35	0.35	0.35
Sat Flow, veh/h	1222	0	1588	1312	0	1576	1767	3237	321	712	3091	419
Grp Volume(v), veh/h	63	0	80	53	0	169	102	361	369	148	235	240
Grp Sat Flow(s),veh/h/ln	1222	0	1588	1312	0	1576	1767	1763	1795	712	1749	1761
Q Serve(g_s), s	2.5	0.0	2.2	1.8	0.0	4.9	2.9	6.6	6.6	8.8	5.2	5.3
Cycle Q Clear(g_c), s	7.4	0.0	2.2	4.0	0.0	4.9	2.9	6.6	6.6	8.8	5.2	5.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.18	1.00		0.24
Lane Grp Cap(c), veh/h	272	0	324	352	0	321	133	889	906	390	615	619
V/C Ratio(X)	0.23	0.00	0.25	0.15	0.00	0.53	0.77	0.41	0.41	0.38	0.38	0.39
Avail Cap(c_a), veh/h	569	0	710	671	0	704	721	1782	1815	901	1869	1883
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.6	0.0	17.2	18.8	0.0	18.3	23.3	7.9	7.9	13.7	12.5	12.5
Incr Delay (d2), s/veh	0.3	0.0	0.2	0.1	0.0	0.8	5.6	0.5	0.4	0.9	0.6	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.2	0.0	1.4	0.9	0.0	3.1	2.4	3.6	3.7	2.3	3.3	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	21.8	0.0	17.4	19.0	0.0	19.1	28.9	8.4	8.4	14.6	13.1	13.1
LnGrp LOS	C		B	B		B	C	A	A	B	B	B
Approach Vol, veh/h		143			222			832			623	
Approach Delay, s/veh		19.4			19.1			10.9			13.5	
Approach LOS		B			B			B			B	

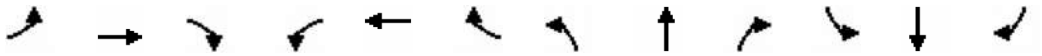
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	7.9	26.1		17.5		34.0		17.5				
Change Period (Y+Rc), s	4.0	* 8		7.0		8.0		7.0				
Max Green Setting (Gmax), s	21.0	* 55		23.0		52.0		23.0				
Max Q Clear Time (g_c+I1), s	4.9	10.8		9.4		8.6		6.9				
Green Ext Time (p_c), s	0.1	7.3		0.4		8.6		0.8				

Intersection Summary												
HCM 7th Control Delay, s/veh			13.4									
HCM 7th LOS			B									

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



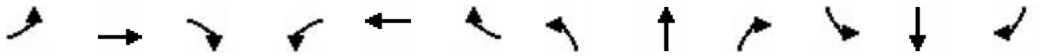
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	260	110	50	495	244	176	368	60	230	225	15
Future Volume (veh/h)	10	260	110	50	495	244	176	368	60	230	225	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1767	1767	1856	1856	1856	1856	1856	1856	1841	1841	1841
Adj Flow Rate, veh/h	10	268	113	52	510	252	181	379	62	237	232	15
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	9	9	9	3	3	3	3	3	3	4	4	4
Cap, veh/h	17	558	445	110	769	528	234	758	123	404	403	26
Arrive On Green	0.01	0.17	0.17	0.06	0.22	0.22	0.13	0.25	0.25	0.12	0.24	0.24
Sat Flow, veh/h	1682	3357	1484	1767	3526	1566	1767	3033	492	3401	1709	111
Grp Volume(v), veh/h	10	268	113	52	510	252	181	219	222	237	0	247
Grp Sat Flow(s),veh/h/ln	1682	1678	1484	1767	1763	1566	1767	1763	1762	1700	0	1820
Q Serve(g_s), s	0.3	3.5	2.8	1.4	6.4	6.2	4.8	5.1	5.2	3.2	0.0	5.8
Cycle Q Clear(g_c), s	0.3	3.5	2.8	1.4	6.4	6.2	4.8	5.1	5.2	3.2	0.0	5.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.28	1.00		0.06
Lane Grp Cap(c), veh/h	17	558	445	110	769	528	234	441	440	404	0	430
V/C Ratio(X)	0.57	0.48	0.25	0.47	0.66	0.48	0.77	0.50	0.50	0.59	0.00	0.58
Avail Cap(c_a), veh/h	365	1040	658	383	1092	672	730	1092	1092	2107	0	1127
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.8	18.3	12.9	21.9	17.3	12.7	20.3	15.6	15.6	20.2	0.0	16.3
Incr Delay (d2), s/veh	16.7	0.5	0.2	1.9	0.7	0.5	3.3	1.3	1.4	0.8	0.0	1.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	2.2	1.4	1.0	4.1	3.3	3.6	3.5	3.6	2.1	0.0	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	40.5	18.8	13.1	23.8	18.0	13.2	23.6	16.9	17.0	21.0	0.0	18.2
LnGrp LOS	D	B	B	C	B	B	C	B	B	C		B
Approach Vol, veh/h		391			814			622			484	
Approach Delay, s/veh		17.7			16.9			18.9			19.6	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.4	16.4	5.0	15.6	10.8	17.1	7.5	13.0
Change Period (Y+Rc), s	5.0	5.0	4.5	5.0	5.0	5.0	4.5	5.0
Max Green Setting (Gmax), s	20.0	30.0	10.5	15.0	30.0	30.0	10.5	15.0
Max Q Clear Time (g_c+I1), s	6.8	7.8	2.3	8.4	5.2	7.2	3.4	5.5
Green Ext Time (p_c), s	0.3	2.1	0.0	2.0	0.5	4.0	0.0	1.1

Intersection Summary	
HCM 7th Control Delay, s/veh	18.1
HCM 7th LOS	B

Notes

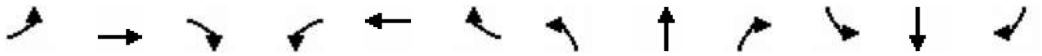
User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	117	30	50	3	20	15	35	476	10	15	323	42
Future Volume (veh/h)	117	30	50	3	20	15	35	476	10	15	323	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.98		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1826	1826	1826	1841	1841	1841	1826	1826	1826
Adj Flow Rate, veh/h	123	32	53	3	21	16	37	501	11	16	340	44
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	5	5	5	4	4	4	5	5	5
Cap, veh/h	416	87	144	296	55	42	417	617	14	324	515	67
Arrive On Green	0.08	0.14	0.14	0.00	0.06	0.06	0.03	0.34	0.34	0.02	0.33	0.33
Sat Flow, veh/h	1781	631	1045	1739	960	731	1753	1794	39	1739	1583	205
Grp Volume(v), veh/h	123	0	85	3	0	37	37	0	512	16	0	384
Grp Sat Flow(s),veh/h/ln	1781	0	1675	1739	0	1691	1753	0	1833	1739	0	1788
Q Serve(g_s), s	2.1	0.0	1.5	0.1	0.0	0.7	0.5	0.0	8.4	0.2	0.0	6.1
Cycle Q Clear(g_c), s	2.1	0.0	1.5	0.1	0.0	0.7	0.5	0.0	8.4	0.2	0.0	6.1
Prop In Lane	1.00		0.62	1.00		0.43	1.00		0.02	1.00		0.11
Lane Grp Cap(c), veh/h	416	0	230	296	0	97	417	0	630	324	0	582
V/C Ratio(X)	0.30	0.00	0.37	0.01	0.00	0.38	0.09	0.00	0.81	0.05	0.00	0.66
Avail Cap(c_a), veh/h	860	0	1064	606	0	1074	1204	0	1968	1136	0	1919
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.5	0.0	13.0	14.6	0.0	15.0	7.5	0.0	9.9	8.2	0.0	9.6
Incr Delay (d2), s/veh	0.1	0.0	0.4	0.0	0.0	0.9	0.0	0.0	1.0	0.0	0.0	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.2	0.0	0.9	0.0	0.0	0.5	0.2	0.0	4.4	0.1	0.0	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	12.7	0.0	13.3	14.6	0.0	15.9	7.5	0.0	10.9	8.2	0.0	10.1
LnGrp LOS	B		B	B		B	A		B	A		B
Approach Vol, veh/h		208			40			549			400	
Approach Delay, s/veh		12.9			15.8			10.6			10.0	
Approach LOS		B			B			B			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.2	15.3	6.8	5.9	4.5	15.9	4.1	8.5
Change Period (Y+Rc), s	4.0	4.5	4.0	4.0	4.0	4.5	4.0	4.0
Max Green Setting (Gmax), s	16.0	35.5	11.0	21.0	16.0	35.5	6.0	21.0
Max Q Clear Time (g_c+I1), s	2.5	8.1	4.1	2.7	2.2	10.4	2.1	3.5
Green Ext Time (p_c), s	0.0	0.6	0.0	0.0	0.0	0.8	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	11.0
HCM 7th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	53	195	10	43	15	368	1075	20	70	680	145
Future Volume (veh/h)	105	53	195	10	43	15	368	1075	20	70	680	145
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1722	1722	1722	1811	1811	1811	1781	1781	1781
Adj Flow Rate, veh/h	114	58	212	11	47	16	400	1168	22	76	739	158
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	5	12	12	12	6	6	6	8	8	8
Cap, veh/h	138	230	577	17	98	82	426	2220	990	96	1540	687
Arrive On Green	0.08	0.13	0.13	0.01	0.06	0.06	0.25	0.65	0.65	0.06	0.45	0.45
Sat Flow, veh/h	1739	1826	1540	1640	1722	1444	1725	3441	1535	1697	3385	1510
Grp Volume(v), veh/h	114	58	212	11	47	16	400	1168	22	76	739	158
Grp Sat Flow(s),veh/h/ln	1739	1826	1540	1640	1722	1444	1725	1721	1535	1697	1692	1510
Q Serve(g_s), s	7.7	3.4	12.0	0.8	3.2	1.3	27.3	21.9	0.6	5.3	18.3	7.6
Cycle Q Clear(g_c), s	7.7	3.4	12.0	0.8	3.2	1.3	27.3	21.9	0.6	5.3	18.3	7.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	138	230	577	17	98	82	426	2220	990	96	1540	687
V/C Ratio(X)	0.82	0.25	0.37	0.66	0.48	0.19	0.94	0.53	0.02	0.79	0.48	0.23
Avail Cap(c_a), veh/h	203	313	647	164	267	224	489	2220	990	368	1540	687
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.4	47.3	27.3	59.2	54.9	54.0	44.3	11.4	7.7	55.9	22.8	19.9
Incr Delay (d2), s/veh	10.5	0.2	0.1	23.4	2.2	0.7	23.8	0.9	0.0	8.5	1.1	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.8	2.8	7.8	0.8	2.6	0.9	19.9	11.6	0.4	4.3	11.2	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	64.9	47.5	27.5	82.6	57.1	54.7	68.1	12.3	7.7	64.4	23.9	20.7
LnGrp LOS	E	D	C	F	E	D	E	B	A	E	C	C
Approach Vol, veh/h		384			74			1590			973	
Approach Delay, s/veh		41.6			60.3			26.3			26.5	
Approach LOS		D			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	33.6	60.6	13.5	12.2	10.8	83.4	5.2	20.5
Change Period (Y+Rc), s	4.0	6.0	4.0	5.4	4.0	6.0	4.0	5.4
Max Green Setting (Gmax), s	34.0	34.0	14.0	18.6	26.0	42.0	12.0	20.6
Max Q Clear Time (g_c+I1), s	29.3	20.3	9.7	5.2	7.3	23.9	2.8	14.0
Green Ext Time (p_c), s	0.4	6.4	0.0	0.1	0.1	10.7	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	29.2
HCM 7th LOS	C

Notes

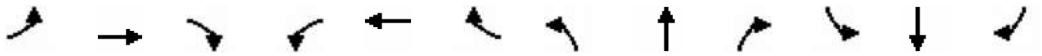
User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	516	3	65	857	89	5	0	50	78	0	52
Future Volume (veh/h)	30	516	3	65	857	89	5	0	50	78	0	52
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1737	1737	1737	1856	1856	1856	1900	1900	1900	1870	1870	1870
Adj Flow Rate, veh/h	33	567	3	71	942	98	5	0	55	86	0	57
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	11	11	11	3	3	3	0	0	0	2	2	2
Cap, veh/h	405	1567	8	623	1612	168	310	0	205	310	0	202
Arrive On Green	0.05	0.47	0.47	0.08	0.50	0.50	0.13	0.00	0.13	0.13	0.00	0.13
Sat Flow, veh/h	1654	3366	18	1767	3215	334	1368	0	1610	1349	0	1585
Grp Volume(v), veh/h	33	278	292	71	517	523	5	0	55	86	0	57
Grp Sat Flow(s),veh/h/ln	1654	1650	1734	1767	1763	1786	1368	0	1610	1349	0	1585
Q Serve(g_s), s	0.4	4.3	4.3	0.8	8.3	8.3	0.1	0.0	1.2	2.5	0.0	1.3
Cycle Q Clear(g_c), s	0.4	4.3	4.3	0.8	8.3	8.3	1.4	0.0	1.2	3.7	0.0	1.3
Prop In Lane	1.00		0.01	1.00		0.19	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	405	768	807	623	884	895	310	0	205	310	0	202
V/C Ratio(X)	0.08	0.36	0.36	0.11	0.58	0.58	0.02	0.00	0.27	0.28	0.00	0.28
Avail Cap(c_a), veh/h	784	1259	1323	964	1345	1363	837	0	826	324	0	218
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.5	6.9	6.9	4.5	7.0	7.0	16.4	0.0	15.8	17.4	0.0	15.8
Incr Delay (d2), s/veh	0.1	0.4	0.4	0.0	0.9	0.9	0.0	0.0	0.5	0.4	0.0	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.1	1.9	2.0	0.3	3.6	3.7	0.1	0.0	0.8	1.3	0.0	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	5.5	7.3	7.3	4.6	8.0	8.0	16.5	0.0	16.3	17.8	0.0	16.3
LnGrp LOS	A	A	A	A	A	A	B		B	B		B
Approach Vol, veh/h		603			1111			60			143	
Approach Delay, s/veh		7.2			7.8			16.3			17.2	
Approach LOS		A			A			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.3	23.1		9.6	5.8	24.5		9.6				
Change Period (Y+Rc), s	4.0	4.5		4.5	4.0	4.5		4.5				
Max Green Setting (Gmax), s	11.0	30.5		5.5	11.0	30.5		20.5				
Max Q Clear Time (g_c+I1), s	2.8	6.3		5.7	2.4	10.3		3.4				
Green Ext Time (p_c), s	0.0	5.2		0.0	0.0	9.8		0.2				

Intersection Summary			
HCM 7th Control Delay, s/veh		8.5	
HCM 7th LOS		A	

Notes
User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	394	370	30	130	467	800	45	1080	125	430	720	694
Future Volume (veh/h)	394	370	30	130	467	800	45	1080	125	430	720	694
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1752	1752	1752	1841	1841	1841	1811	1811	1811	1826	1826	1826
Adj Flow Rate, veh/h	410	385	31	135	486	0	47	1125	0	448	750	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	10	10	10	4	4	4	6	6	6	5	5	5
Cap, veh/h	490	733	59	197	494		59	1107		528	1539	
Arrive On Green	0.15	0.23	0.23	0.06	0.14	0.00	0.03	0.32	0.00	0.16	0.44	0.00
Sat Flow, veh/h	3237	3121	250	3401	3497	1560	1725	3441	1535	3374	3469	1547
Grp Volume(v), veh/h	410	204	212	135	486	0	47	1125	0	448	750	0
Grp Sat Flow(s),veh/h/ln	1618	1664	1707	1700	1749	1560	1725	1721	1535	1687	1735	1547
Q Serve(g_s), s	12.6	11.0	11.1	4.0	14.2	0.0	2.8	33.0	0.0	13.3	15.7	0.0
Cycle Q Clear(g_c), s	12.6	11.0	11.1	4.0	14.2	0.0	2.8	33.0	0.0	13.3	15.7	0.0
Prop In Lane	1.00		0.15	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	490	391	401	197	494		59	1107		528	1539	
V/C Ratio(X)	0.84	0.52	0.53	0.69	0.98		0.79	1.02		0.85	0.49	
Avail Cap(c_a), veh/h	1025	397	408	315	494		160	1107		871	1539	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	42.3	34.2	34.3	47.4	43.9	0.0	49.2	34.8	0.0	42.1	20.3	0.0
Incr Delay (d2), s/veh	2.4	0.8	0.8	2.6	35.9	0.0	13.3	31.2	0.0	2.9	0.4	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.8	7.9	8.1	3.1	13.3	0.0	2.4	24.4	0.0	9.2	9.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	44.7	35.0	35.1	50.0	79.9	0.0	62.4	66.0	0.0	45.0	20.7	0.0
LnGrp LOS	D	D	D	D	E		E	F		D	C	
Approach Vol, veh/h		826			621			1172			1198	
Approach Delay, s/veh		39.8			73.4			65.8			29.8	
Approach LOS		D			E			E			C	

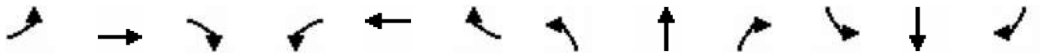
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.6	40.0	11.4	29.6	9.0	52.5	21.0	20.0
Change Period (Y+Rc), s	5.5	7.0	5.5	5.5	5.5	7.0	5.5	5.5
Max Green Setting (Gmax), s	26.5	33.0	9.5	24.5	9.5	33.0	32.5	14.5
Max Q Clear Time (g_c+I1), s	15.3	35.0	6.0	13.1	4.8	17.7	14.6	16.2
Green Ext Time (p_c), s	0.8	0.0	0.1	1.4	0.0	6.3	0.9	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	50.1
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

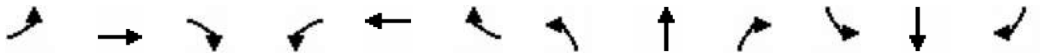
Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	5	19	74	10	30	13	740	23	2	864	10
Future Volume (veh/h)	10	5	19	74	10	30	13	740	23	2	864	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1885	1885	1885	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	11	5	20	78	11	32	14	779	24	2	909	11
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	1	1	1	2	2	2	1	1	1
Cap, veh/h	139	57	115	244	29	51	405	1255	39	477	1293	16
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.70	0.70	0.70	0.70	0.70	0.70
Sat Flow, veh/h	278	447	906	887	229	401	607	1803	56	683	1858	22
Grp Volume(v), veh/h	36	0	0	121	0	0	14	0	803	2	0	920
Grp Sat Flow(s),veh/h/ln	1631	0	0	1517	0	0	607	0	1859	683	0	1880
Q Serve(g_s), s	0.0	0.0	0.0	2.5	0.0	0.0	0.6	0.0	10.4	0.1	0.0	13.1
Cycle Q Clear(g_c), s	0.9	0.0	0.0	3.3	0.0	0.0	13.8	0.0	10.4	10.5	0.0	13.1
Prop In Lane	0.31		0.56	0.64		0.26	1.00		0.03	1.00		0.01
Lane Grp Cap(c), veh/h	311	0	0	323	0	0	405	0	1294	477	0	1309
V/C Ratio(X)	0.12	0.00	0.00	0.37	0.00	0.00	0.03	0.00	0.62	0.00	0.00	0.70
Avail Cap(c_a), veh/h	824	0	0	820	0	0	736	0	2305	848	0	2333
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.6	0.0	0.0	18.6	0.0	0.0	8.2	0.0	3.7	6.5	0.0	4.1
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.5	0.0	0.0	0.1	0.0	0.8	0.0	0.0	1.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.6	0.0	0.0	2.0	0.0	0.0	0.1	0.0	2.9	0.0	0.0	3.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	17.7	0.0	0.0	19.1	0.0	0.0	8.2	0.0	4.5	6.5	0.0	5.3
LnGrp LOS	B			B			A		A	A		A
Approach Vol, veh/h		36			121			817			922	
Approach Delay, s/veh		17.7			19.1			4.6			5.3	
Approach LOS		B			B			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		35.4		9.7		35.4		9.7				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		56.0		21.0		56.0		21.0				
Max Q Clear Time (g_c+I1), s		15.1		5.3		15.8		2.9				
Green Ext Time (p_c), s		16.3		0.4		13.2		0.1				

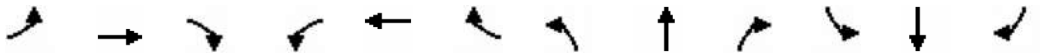
Intersection Summary	
HCM 7th Control Delay, s/veh	6.1
HCM 7th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	20	98	40	10	10	92	661	20	5	812	75
Future Volume (veh/h)	95	20	98	40	10	10	92	661	20	5	812	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1870	1870	1870	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	103	22	107	43	11	11	100	718	22	5	883	82
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	2	2	2	2	2	2	1	1	1
Cap, veh/h	298	247	208	285	114	114	357	1142	35	424	1097	897
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.06	0.63	0.63	0.01	0.58	0.58
Sat Flow, veh/h	1369	1856	1561	1254	854	854	1781	1803	55	1795	1885	1542
Grp Volume(v), veh/h	103	22	107	43	0	22	100	0	740	5	883	82
Grp Sat Flow(s),veh/h/ln	1369	1856	1561	1254	0	1709	1781	0	1858	1795	1885	1542
Q Serve(g_s), s	3.9	0.6	3.5	1.7	0.0	0.6	1.1	0.0	13.3	0.1	20.2	1.3
Cycle Q Clear(g_c), s	4.5	0.6	3.5	2.3	0.0	0.6	1.1	0.0	13.3	0.1	20.2	1.3
Prop In Lane	1.00		1.00	1.00		0.50	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	298	247	208	285	0	227	357	0	1177	424	1097	897
V/C Ratio(X)	0.35	0.09	0.52	0.15	0.00	0.10	0.28	0.00	0.63	0.01	0.81	0.09
Avail Cap(c_a), veh/h	641	711	598	599	0	655	613	0	1374	775	1394	1140
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.8	20.8	22.1	21.8	0.0	20.9	8.3	0.0	6.1	5.7	9.0	5.1
Incr Delay (d2), s/veh	0.5	0.1	1.5	0.2	0.0	0.1	0.3	0.0	1.0	0.0	3.3	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.2	0.4	2.3	0.9	0.0	0.4	0.7	0.0	6.5	0.0	11.1	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	23.4	20.9	23.6	22.0	0.0	21.0	8.6	0.0	7.1	5.7	12.3	5.1
LnGrp LOS	C	C	C	C		C	A		A	A	B	A
Approach Vol, veh/h		232			65			840			970	
Approach Delay, s/veh		23.2			21.7			7.3			11.7	
Approach LOS		C			C			A			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.1	36.4		11.3	4.3	39.2		11.3				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	11.0	40.5		21.0	11.0	40.5		21.0				
Max Q Clear Time (g_c+I1), s	3.1	22.2		4.3	2.1	15.3		6.5				
Green Ext Time (p_c), s	0.1	9.7		0.1	0.0	8.7		0.5				

Intersection Summary												
HCM 7th Control Delay, s/veh			11.5									
HCM 7th LOS			B									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	10	153	20	10	3	162	648	10	15	845	130
Future Volume (veh/h)	160	10	153	20	10	3	162	648	10	15	845	130
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1811	1811	1811	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	168	11	161	21	11	3	171	682	11	16	889	137
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	6	6	6	2	2	2	2	2	2
Cap, veh/h	566	27	397	375	252	69	275	1701	27	395	1461	225
Arrive On Green	0.10	0.27	0.27	0.02	0.18	0.18	0.48	0.48	0.48	0.48	0.48	0.48
Sat Flow, veh/h	1795	102	1490	1725	1370	374	549	3577	58	749	3072	473
Grp Volume(v), veh/h	168	0	172	21	0	14	171	339	354	16	514	512
Grp Sat Flow(s),veh/h/ln	1795	0	1592	1725	0	1743	549	1777	1858	749	1777	1769
Q Serve(g_s), s	3.8	0.0	4.9	0.5	0.0	0.4	14.3	6.8	6.8	0.8	11.7	11.7
Cycle Q Clear(g_c), s	3.8	0.0	4.9	0.5	0.0	0.4	26.0	6.8	6.8	7.5	11.7	11.7
Prop In Lane	1.00		0.94	1.00		0.21	1.00		0.03	1.00		0.27
Lane Grp Cap(c), veh/h	566	0	425	375	0	321	275	845	884	395	845	841
V/C Ratio(X)	0.30	0.00	0.41	0.06	0.00	0.04	0.62	0.40	0.40	0.04	0.61	0.61
Avail Cap(c_a), veh/h	1071	0	1602	1003	0	1753	275	845	884	395	845	841
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.9	0.0	16.5	17.5	0.0	18.4	21.3	9.3	9.3	11.7	10.6	10.6
Incr Delay (d2), s/veh	0.2	0.0	1.0	0.0	0.0	0.1	3.8	0.2	0.2	0.0	1.1	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.5	0.0	3.1	0.4	0.0	0.3	4.2	3.9	4.1	0.2	7.1	7.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.1	0.0	17.4	17.6	0.0	18.4	25.1	9.5	9.5	11.8	11.7	11.7
LnGrp LOS	B		B	B		B	C	A	A	B	B	B
Approach Vol, veh/h		340			35			864			1042	
Approach Delay, s/veh		15.8			17.9			12.6			11.7	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.1	19.6		30.0	9.6	15.1		30.0				
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	21.0	55.0		26.0	21.0	55.0		26.0				
Max Q Clear Time (g_c+I1), s	2.5	6.9		13.7	5.8	2.4		28.0				
Green Ext Time (p_c), s	0.0	1.9		4.7	0.3	0.1		0.0				

Intersection Summary			
HCM 7th Control Delay, s/veh		12.7	
HCM 7th LOS		B	

Notes
User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	0	155	31	0	76	145	704	30	90	848	75
Future Volume (veh/h)	45	0	155	31	0	76	145	704	30	90	848	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.98	0.99		0.98	1.00		0.97	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1870	1870	1870	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	46	0	160	32	0	78	149	726	31	93	874	77
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	2	2	2	1	1	1	2	2	2
Cap, veh/h	287	0	285	213	0	281	191	2095	89	412	1433	126
Arrive On Green	0.18	0.00	0.18	0.18	0.00	0.18	0.11	0.60	0.60	0.43	0.43	0.43
Sat Flow, veh/h	1326	0	1586	1215	0	1561	1795	3495	149	705	3300	291
Grp Volume(v), veh/h	46	0	160	32	0	78	149	372	385	93	471	480
Grp Sat Flow(s),veh/h/ln	1326	0	1586	1215	0	1561	1795	1791	1853	705	1777	1814
Q Serve(g_s), s	2.1	0.0	6.3	1.7	0.0	2.9	5.5	7.1	7.1	5.8	13.9	13.9
Cycle Q Clear(g_c), s	5.0	0.0	6.3	7.9	0.0	2.9	5.5	7.1	7.1	5.8	13.9	13.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.08	1.00		0.16
Lane Grp Cap(c), veh/h	287	0	285	213	0	281	191	1073	1111	412	771	788
V/C Ratio(X)	0.16	0.00	0.56	0.15	0.00	0.28	0.78	0.35	0.35	0.23	0.61	0.61
Avail Cap(c_a), veh/h	497	0	537	405	0	528	555	1370	1417	676	1438	1468
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.2	0.0	25.4	29.0	0.0	24.1	29.6	6.9	6.9	12.5	14.8	14.8
Incr Delay (d2), s/veh	0.2	0.0	1.1	0.2	0.0	0.3	4.2	0.3	0.3	0.4	1.2	1.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.2	0.0	4.3	0.9	0.0	1.9	4.5	4.1	4.3	1.6	9.0	9.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	26.4	0.0	26.5	29.2	0.0	24.4	33.8	7.2	7.2	13.0	16.0	16.0
LnGrp LOS	C		C	C		C	C	A	A	B	B	B
Approach Vol, veh/h		206			110			906			1044	
Approach Delay, s/veh		26.5			25.8			11.6			15.7	
Approach LOS		C			C			B			B	

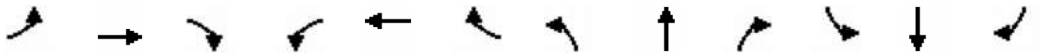
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	11.2	37.5		19.2		48.7		19.2				
Change Period (Y+Rc), s	4.0	* 8		7.0		8.0		7.0				
Max Green Setting (Gmax), s	21.0	* 55		23.0		52.0		23.0				
Max Q Clear Time (g_c+I1), s	7.5	15.9		8.3		9.1		9.9				
Green Ext Time (p_c), s	0.2	13.7		0.7		8.9		0.3				

Intersection Summary	
HCM 7th Control Delay, s/veh	15.5
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



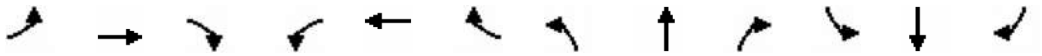
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	500	220	120	370	270	175	459	60	528	516	15
Future Volume (veh/h)	40	500	220	120	370	270	175	459	60	528	516	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1885	1885	1885	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	41	515	227	124	381	278	180	473	62	544	532	15
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	1	1	1	2	2	2	1	1	1
Cap, veh/h	55	643	481	158	853	686	223	870	113	672	627	18
Arrive On Green	0.03	0.18	0.18	0.09	0.24	0.24	0.13	0.28	0.28	0.19	0.34	0.34
Sat Flow, veh/h	1781	3554	1563	1795	3582	1588	1781	3150	411	3483	1823	51
Grp Volume(v), veh/h	41	515	227	124	381	278	180	266	269	544	0	547
Grp Sat Flow(s),veh/h/ln	1781	1777	1563	1795	1791	1588	1781	1777	1784	1742	0	1875
Q Serve(g_s), s	1.7	10.3	8.8	5.0	6.8	9.0	7.3	9.5	9.6	11.1	0.0	20.1
Cycle Q Clear(g_c), s	1.7	10.3	8.8	5.0	6.8	9.0	7.3	9.5	9.6	11.1	0.0	20.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.23	1.00		0.03
Lane Grp Cap(c), veh/h	55	643	481	158	853	686	223	491	493	672	0	645
V/C Ratio(X)	0.75	0.80	0.47	0.79	0.45	0.41	0.81	0.54	0.55	0.81	0.00	0.85
Avail Cap(c_a), veh/h	251	716	513	253	853	686	478	716	719	1403	0	755
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.8	29.2	21.0	33.3	24.2	14.6	31.7	22.9	23.0	28.7	0.0	22.6
Incr Delay (d2), s/veh	11.8	5.6	0.5	5.2	0.3	0.3	4.3	1.4	1.4	1.5	0.0	8.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.6	8.2	5.5	4.2	4.9	5.4	6.0	7.1	7.2	8.1	0.0	14.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	47.6	34.8	21.5	38.5	24.5	14.9	36.0	24.4	24.4	30.2	0.0	31.3
LnGrp LOS	D	C	C	D	C	B	D	C	C	C		C
Approach Vol, veh/h		783			783			715			1091	
Approach Delay, s/veh		31.6			23.3			27.3			30.8	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.3	30.6	6.8	22.7	19.4	25.6	11.0	18.5
Change Period (Y+Rc), s	5.0	5.0	4.5	5.0	5.0	5.0	4.5	5.0
Max Green Setting (Gmax), s	20.0	30.0	10.5	15.0	30.0	30.0	10.5	15.0
Max Q Clear Time (g_c+I1), s	9.3	22.1	3.7	11.0	13.1	11.6	7.0	12.3
Green Ext Time (p_c), s	0.2	3.0	0.0	1.1	1.2	4.5	0.1	1.0

Intersection Summary	
HCM 7th Control Delay, s/veh	28.5
HCM 7th LOS	C

Notes

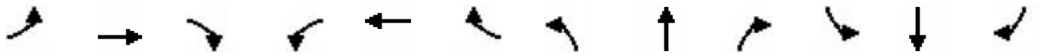
User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	119	45	45	20	45	45	45	500	20	20	593	158
Future Volume (veh/h)	119	45	45	20	45	45	45	500	20	20	593	158
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.96	0.97		0.98	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1900	1900	1900	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	123	46	46	21	46	46	46	515	21	21	611	163
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	0	0	0	3	3	3	3	3	3
Cap, veh/h	344	135	135	300	86	86	244	863	35	410	660	176
Arrive On Green	0.08	0.16	0.16	0.02	0.10	0.10	0.04	0.49	0.49	0.02	0.47	0.47
Sat Flow, veh/h	1795	844	844	1810	863	863	1767	1770	72	1767	1402	374
Grp Volume(v), veh/h	123	0	92	21	0	92	46	0	536	21	0	774
Grp Sat Flow(s),veh/h/ln	1795	0	1688	1810	0	1726	1767	0	1842	1767	0	1776
Q Serve(g_s), s	3.1	0.0	2.6	0.5	0.0	2.7	0.7	0.0	11.1	0.3	0.0	21.6
Cycle Q Clear(g_c), s	3.1	0.0	2.6	0.5	0.0	2.7	0.7	0.0	11.1	0.3	0.0	21.6
Prop In Lane	1.00		0.50	1.00		0.50	1.00		0.04	1.00		0.21
Lane Grp Cap(c), veh/h	344	0	270	300	0	171	244	0	898	410	0	836
V/C Ratio(X)	0.36	0.00	0.34	0.07	0.00	0.54	0.19	0.00	0.60	0.05	0.00	0.93
Avail Cap(c_a), veh/h	573	0	671	469	0	686	714	0	1238	910	0	1194
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.2	0.0	19.7	20.7	0.0	22.6	11.3	0.0	9.8	7.9	0.0	13.1
Incr Delay (d2), s/veh	0.2	0.0	0.3	0.0	0.0	1.0	0.1	0.0	0.2	0.0	0.0	7.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.2	0.0	1.7	0.4	0.0	1.9	0.4	0.0	6.4	0.2	0.0	13.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	18.4	0.0	20.0	20.8	0.0	23.6	11.4	0.0	10.0	8.0	0.0	20.9
LnGrp LOS	B		B	C		C	B		B	A		C
Approach Vol, veh/h		215			113			582			795	
Approach Delay, s/veh		19.1			23.1			10.1			20.5	
Approach LOS		B			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.0	29.4	8.3	9.2	5.1	30.3	5.1	12.4
Change Period (Y+Rc), s	4.0	4.5	4.0	4.0	4.0	4.5	4.0	4.0
Max Green Setting (Gmax), s	16.0	35.5	11.0	21.0	16.0	35.5	6.0	21.0
Max Q Clear Time (g_c+I1), s	2.7	23.6	5.1	4.7	2.3	13.1	2.5	4.6
Green Ext Time (p_c), s	0.0	1.2	0.0	0.1	0.0	0.8	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	17.0
HCM 7th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	155	49	504	10	44	55	301	835	15	40	1210	180
Future Volume (veh/h)	155	49	504	10	44	55	301	835	15	40	1210	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1752	1752	1752	1856	1856	1856	1870	1870	1870
Adj Flow Rate, veh/h	158	50	514	10	45	56	307	852	15	41	1235	184
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	10	10	10	3	3	3	2	2	2
Cap, veh/h	183	325	571	16	141	116	333	2249	1002	53	1703	759
Arrive On Green	0.10	0.17	0.17	0.01	0.08	0.08	0.19	0.64	0.64	0.03	0.48	0.48
Sat Flow, veh/h	1781	1870	1563	1668	1752	1440	1767	3526	1571	1781	3554	1583
Grp Volume(v), veh/h	158	50	514	10	45	56	307	852	15	41	1235	184
Grp Sat Flow(s),veh/h/ln	1781	1870	1563	1668	1752	1440	1767	1763	1571	1781	1777	1583
Q Serve(g_s), s	11.4	2.9	22.6	0.8	3.2	4.8	22.2	15.0	0.5	3.0	36.1	8.9
Cycle Q Clear(g_c), s	11.4	2.9	22.6	0.8	3.2	4.8	22.2	15.0	0.5	3.0	36.1	8.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	183	325	571	16	141	116	333	2249	1002	53	1703	759
V/C Ratio(X)	0.87	0.15	0.90	0.64	0.32	0.48	0.92	0.38	0.01	0.77	0.73	0.24
Avail Cap(c_a), veh/h	219	325	571	205	278	228	421	2249	1002	288	1703	759
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.5	45.6	39.3	64.2	56.4	57.1	51.8	11.2	8.6	62.6	27.0	20.0
Incr Delay (d2), s/veh	22.5	0.1	17.0	23.9	0.8	1.9	21.1	0.5	0.0	13.6	2.7	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	10.3	2.5	24.8	0.8	2.6	3.3	16.9	9.0	0.3	2.7	21.0	6.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	79.9	45.7	56.3	88.1	57.2	59.0	72.9	11.7	8.6	76.2	29.8	20.7
LnGrp LOS	E	D	E	F	E	E	E	B	A	E	C	C
Approach Vol, veh/h		722			111			1174			1460	
Approach Delay, s/veh		60.7			60.9			27.7			29.9	
Approach LOS		E			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	28.5	68.3	17.3	15.9	7.9	88.9	5.2	28.0
Change Period (Y+Rc), s	4.0	6.0	4.0	5.4	4.0	6.0	4.0	5.4
Max Green Setting (Gmax), s	31.0	43.0	16.0	20.6	21.0	53.0	16.0	20.6
Max Q Clear Time (g_c+I1), s	24.2	38.1	13.4	6.8	5.0	17.0	2.8	24.6
Green Ext Time (p_c), s	0.3	4.0	0.0	0.2	0.0	10.3	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	36.6
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	1039	55	140	819	51	30	0	80	48	0	23
Future Volume (veh/h)	26	1039	55	140	819	51	30	0	80	48	0	23
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	0.98		0.98	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1870	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	28	1117	59	151	881	55	32	0	86	52	0	25
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	2	2	2	0	0	0	0	0	0
Cap, veh/h	466	1701	90	463	1903	119	307	0	201	252	0	201
Arrive On Green	0.04	0.49	0.49	0.11	0.56	0.56	0.13	0.00	0.13	0.13	0.00	0.13
Sat Flow, veh/h	1795	3459	183	1781	3390	212	1384	0	1580	1314	0	1580
Grp Volume(v), veh/h	28	578	598	151	462	474	32	0	86	52	0	25
Grp Sat Flow(s),veh/h/ln	1795	1791	1851	1781	1777	1824	1384	0	1580	1314	0	1580
Q Serve(g_s), s	0.4	11.6	11.6	1.6	7.3	7.3	1.0	0.0	2.4	1.8	0.0	0.7
Cycle Q Clear(g_c), s	0.4	11.6	11.6	1.6	7.3	7.3	1.7	0.0	2.4	4.2	0.0	0.7
Prop In Lane	1.00		0.10	1.00		0.12	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	466	881	910	463	998	1024	307	0	201	252	0	201
V/C Ratio(X)	0.06	0.66	0.66	0.33	0.46	0.46	0.10	0.00	0.43	0.21	0.00	0.12
Avail Cap(c_a), veh/h	810	1145	1183	680	1136	1166	726	0	679	252	0	201
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.5	9.1	9.1	6.2	6.2	6.2	19.2	0.0	19.2	21.2	0.0	18.5
Incr Delay (d2), s/veh	0.0	1.3	1.3	0.2	0.5	0.5	0.1	0.0	1.1	0.3	0.0	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.2	6.2	6.3	0.6	3.3	3.4	0.6	0.0	1.6	1.0	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	5.5	10.4	10.4	6.4	6.7	6.7	19.3	0.0	20.3	21.5	0.0	18.7
LnGrp LOS	A	B	B	A	A	A	B		C	C		B
Approach Vol, veh/h		1204			1087			118			77	
Approach Delay, s/veh		10.3			6.7			20.0			20.6	
Approach LOS		B			A			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.2	28.0		10.6	5.9	31.3		10.6				
Change Period (Y+Rc), s	4.0	4.5		4.5	4.0	4.5		4.5				
Max Green Setting (Gmax), s	11.0	30.5		5.5	11.0	30.5		20.5				
Max Q Clear Time (g_c+I1), s	3.6	13.6		6.2	2.4	9.3		4.4				
Green Ext Time (p_c), s	0.1	9.9		0.0	0.0	8.8		0.4				

Intersection Summary	
HCM 7th Control Delay, s/veh	9.5
HCM 7th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	728	819	100	145	522	505	55	805	180	790	1115	683
Future Volume (veh/h)	728	819	100	145	522	505	55	805	180	790	1115	683
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1856	1856	1856	1870	1870	1870
Adj Flow Rate, veh/h	743	836	102	148	533	0	56	821	0	806	1138	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	3	3	3	2	2	2
Cap, veh/h	807	928	113	202	413		72	899		729	1511	
Arrive On Green	0.23	0.29	0.29	0.06	0.12	0.00	0.04	0.26	0.00	0.21	0.43	0.00
Sat Flow, veh/h	3483	3208	391	3483	3582	1598	1767	3526	1572	3456	3554	1585
Grp Volume(v), veh/h	743	467	471	148	533	0	56	821	0	806	1138	0
Grp Sat Flow(s),veh/h/ln	1742	1791	1808	1742	1791	1598	1767	1763	1572	1728	1777	1585
Q Serve(g_s), s	26.2	31.5	31.5	5.3	14.5	0.0	3.9	28.4	0.0	26.5	34.0	0.0
Cycle Q Clear(g_c), s	26.2	31.5	31.5	5.3	14.5	0.0	3.9	28.4	0.0	26.5	34.0	0.0
Prop In Lane	1.00		0.22	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	807	518	523	202	413		72	899		729	1511	
V/C Ratio(X)	0.92	0.90	0.90	0.73	1.29		0.78	0.91		1.11	0.75	
Avail Cap(c_a), veh/h	901	518	523	263	413		134	926		729	1511	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	47.1	42.9	42.9	58.3	55.6	0.0	59.7	45.5	0.0	49.6	30.5	0.0
Incr Delay (d2), s/veh	13.2	18.5	18.4	5.6	147.5	0.0	10.5	13.5	0.0	66.3	2.5	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	18.5	23.0	23.2	4.4	23.5	0.0	3.4	19.5	0.0	25.8	20.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	60.3	61.5	61.3	63.9	203.1	0.0	70.2	59.0	0.0	115.9	33.0	0.0
LnGrp LOS	E	E	E	E	F		E	E		F	C	
Approach Vol, veh/h		1681			681			877			1944	
Approach Delay, s/veh		60.9			172.9			59.7			67.4	
Approach LOS		E			F			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	32.0	39.1	12.8	41.8	10.6	60.4	34.6	20.0
Change Period (Y+Rc), s	5.5	7.0	5.5	5.5	5.5	7.0	5.5	5.5
Max Green Setting (Gmax), s	26.5	33.0	9.5	24.5	9.5	33.0	32.5	14.5
Max Q Clear Time (g_c+I1), s	28.5	30.4	7.3	33.5	5.9	36.0	28.2	16.5
Green Ext Time (p_c), s	0.0	1.6	0.1	0.0	0.0	0.0	0.9	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	77.8
HCM 7th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Appendix C: Detailed Trip Generation

OR City

Proposed Use

Land Use	Setting	Size	Units	Model	Equation	Rate	Inbound %	Gross Trips Inbound	Gross Trips Outbound	Gross Trips Subtotal	Land Use Type	Internal Trips In	Internal Trips Out	Internal Trips Total	Internal Trips %	External Trips In	External Trips Out	External Trips Total	Pass-By Trips %	Pass-By Trips In	Pass-By Trips Out	Pass-By Trips Total	Primary Trips Inbound	Primary Trips Outbound	Primary Trips Total
Multifamily (Mid-Rise) (LU 221)		**210**	du								Residential														
Daily	General Urban/Suburban			Equation (lin)	T = 4.77(X) - 46.46	-	50%	478	478	956		123	123	246	26%	355	355	710		-	-	-	355	355	710
AM Peak Hour	General Urban/Suburban			Equation (lin)	T = 0.44(X) - 11.61	-	23%	19	62	81		1	13	14	17%	18	49	67		-	-	-	18	49	67
PM Peak Hour	General Urban/Suburban			Equation (lin)	T = 0.39(X) + 0.34	-	61%	50	32	82		17	11	28	34%	33	21	54		-	-	-	33	21	54
Retail (LU 822)		**10,950**	sf								Retail														
Daily	General Urban/Suburban			Rate	-	54.45	50%	298	298	596		102	102	204	34%	196	196	392	40%	78	78	156	118	118	236
AM Peak Hour	General Urban/Suburban			Rate	-	2.36	60%	16	10	26		2	1	3	12%	14	9	23	40%	5	5	10	9	4	13
PM Peak Hour	General Urban/Suburban			Rate	-	6.59	50%	36	36	72		22	19	41	57%	14	17	31	40%	6	6	12	8	11	19
Coffee Shop with Drive Through Window (937		**3,650**	sf								Restaurant														
Daily	General Urban/Suburban			Rate	-	533.57	50%	974	974	1,948		83	83	166	8%	891	891	1782	53%	468	468	936	423	423	846
AM Peak Hour	General Urban/Suburban			Rate	-	85.88	51%	160	153	313		8	1	9	3%	152	152	304	50%	76	76	152	76	76	152
PM Peak Hour	General Urban/Suburban			Rate	-	38.99	50%	71	71	142		8	12	20	14%	63	59	122	55%	34	34	68	29	25	54
Fast-Food Restaurant with Drive-Through Windov		**4,900**	sf								Restaurant														
Daily	General Urban/Suburban			Rate	-	467.48	50%	1,145	1,145	2,290		97	97	194	8%	1048	1048	2096	53%	550	550	1100	498	498	996
AM Peak Hour	General Urban/Suburban			Rate	-	44.61	51%	112	107	219		5	1	6	3%	107	106	213	50%	53	53	106	54	53	107
PM Peak Hour	General Urban/Suburban			Rate	-	33.03	52%	84	78	162		9	14	23	14%	75	64	139	55%	38	38	76	37	26	63
Subtotal																									
Daily								2,895	2,895	5,790		405	405	810	14%	2,490	2,490	4,980		1,096	1,096	2,192	1,394	1,394	2,788
AM Peak Hour								307	332	639		16	16	32	5%	291	316	607		134	134	268	157	182	339
PM Peak Hour								241	217	458		56	56	112	24%	185	161	346		78	78	156	107	83	190

Notes:

1. Trip rates based on Institute of Transportation Engineers' (ITE) *Trip Generation Manual (* 11th Edition) equation and average trip rates as shown above.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Oregon City Mixed Use	**Organization:**	
Project Location:		**Performed By:**	
Scenario Description:		**Date:**	
Analysis Year:		**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0	0	0
Retail				26	16	10
Restaurant				532	272	260
Cinema/Entertainment				0	0	0
Residential				81	19	62
Hotel				0	0	0
All Other Land Uses[2]				0	0	0
Total				639	307	332

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		1	0	0	0
Restaurant	0	1		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	12	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	639	307	332
Internal Capture Percentage	5%	5%	5%
External Vehicle-Trips[3]	607	291	316
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	13%	10%
Restaurant	5%	1%
Cinema/Entertainment	N/A	N/A
Residential	5%	21%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	Oregon City Mixed Use
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	16	16	1.00	10	10
Restaurant	1.00	272	272	1.00	260	260
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	19	19	1.00	62	62
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	3		1	0	1	0
Restaurant	81	36		0	10	8
Cinema/Entertainment	0	0	0		0	0
Residential	1	1	12	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		5	63	0	0	0
Retail	0		136	0	0	0
Restaurant	0	1		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	3	54	0		0
Hotel	0	1	16	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	2	14	16	14	0	0
Restaurant	13	259	272	259	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	18	19	18	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	1	9	10	9	0	0
Restaurant	2	258	260	258	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	13	49	62	49	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Oregon City Mixed Use	**Organization:**	
Project Location:		**Performed By:**	
Scenario Description:		**Date:**	
Analysis Year:		**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0	0	0
Retail				72	36	36
Restaurant				304	155	149
Cinema/Entertainment				0	0	0
Residential				82	50	32
Hotel				0	0	0
All Other Land Uses[2]				0	0	0
Total				458	241	217

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		10	0	9	0
Restaurant	0	18		0	8	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	4	7	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	458	241	217
Internal Capture Percentage	24%	23%	26%
External Vehicle-Trips[3]	346	185	161
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	61%	53%
Restaurant	11%	17%
Cinema/Entertainment	N/A	N/A
Residential	34%	34%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	Oregon City Mixed Use
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	36	36	1.00	36	36
Restaurant	1.00	155	155	1.00	149	149
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	50	50	1.00	32	32
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	1		10	1	9	2
Restaurant	4	61		12	27	10
Cinema/Entertainment	0	0	0		0	0
Residential	1	13	7	0		1
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		3	3	0	2	0
Retail	0		45	0	23	0
Restaurant	0	18		0	8	0
Cinema/Entertainment	0	1	5		2	0
Residential	0	4	22	0		0
Hotel	0	1	8	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	22	14	36	14	0	0
Restaurant	17	138	155	138	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	17	33	50	33	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	19	17	36	17	0	0
Restaurant	26	123	149	123	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	11	21	32	21	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

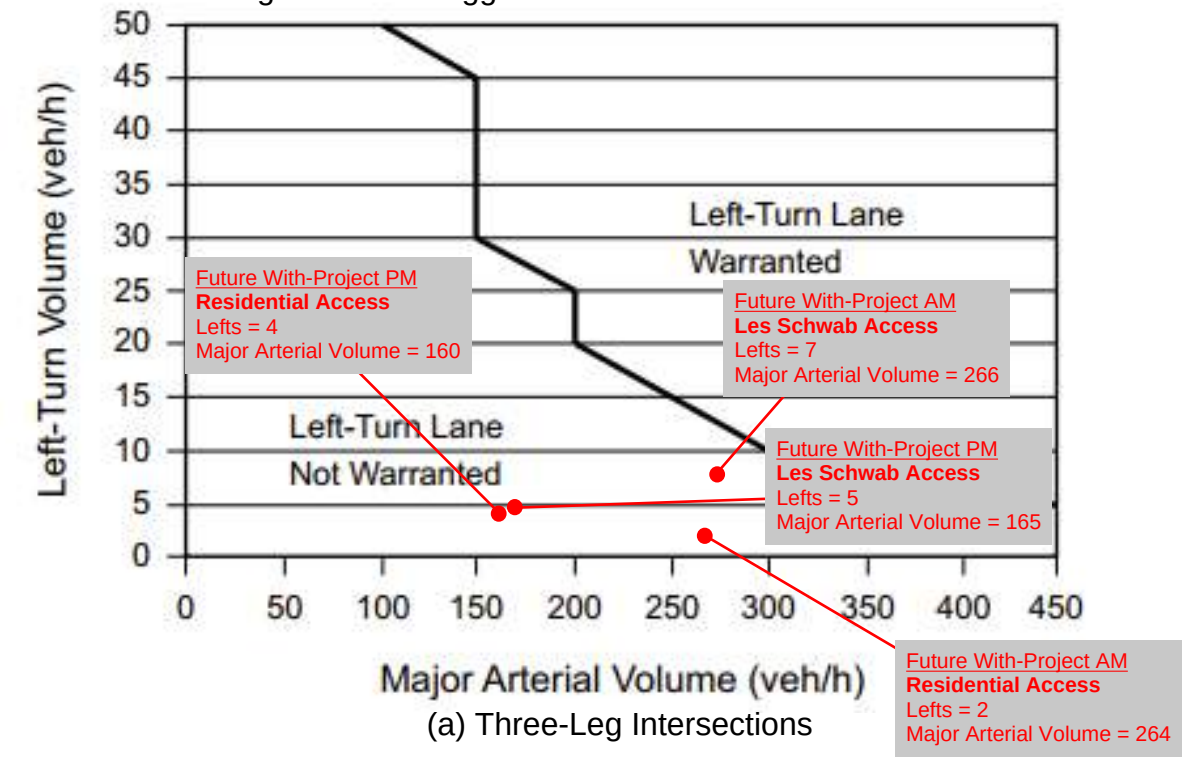
[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

Appendix D: Left Turn Lane Warrant

AASHTO Policy on Geometric Design of Highways and Streets

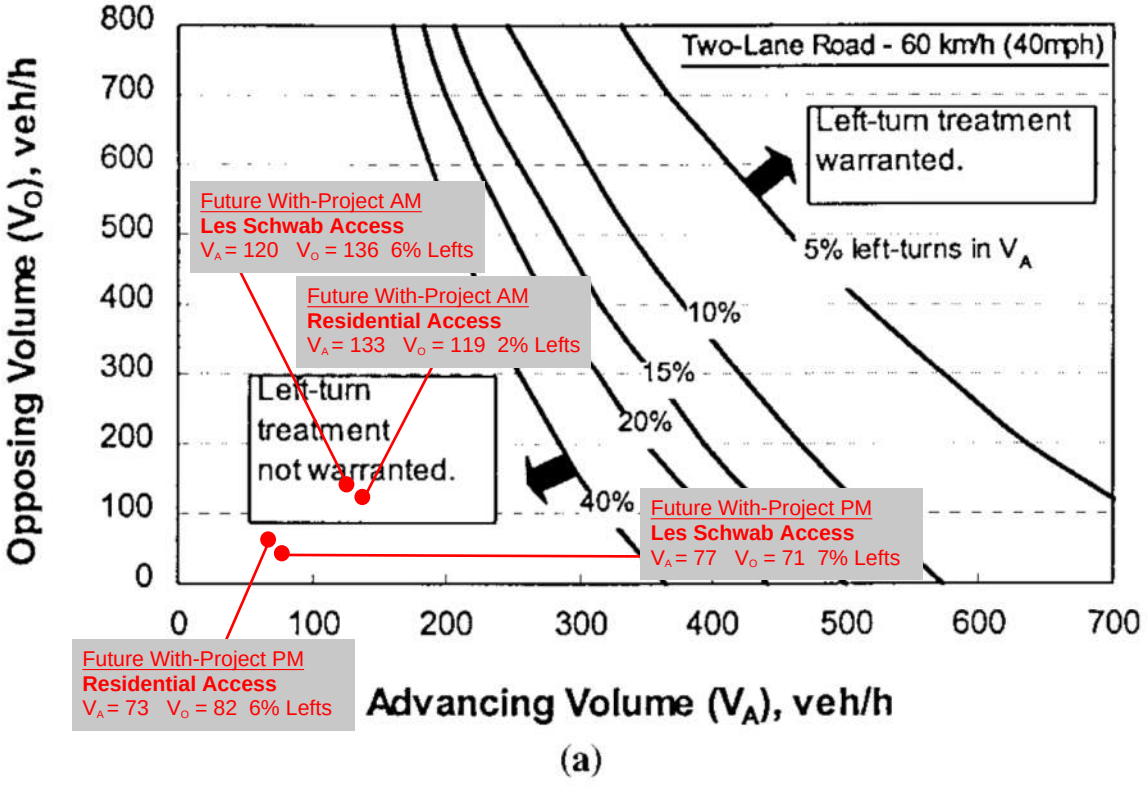
Figure 9-35 - Suggested Left-Turn Lane Warrants



(a) Three-Leg Intersections

NCHRP Report 457 *Evaluating Intersection Improvements*

Figure 2-5



(a)

Appendix E: Queueing Analysis

Queuing Analysis - Parcel A

Weekday AM Peak Hour (Average)

Number of Lanes	1	
Hourly Flow Rate (vph)	152	per Lane
Total Hourly Flow Rate	152	vehicles per hour
Average Stopped Time / Service Time	4:05	(mm:ss)
Average Service Rate (Total)	14.7	vehicles per hour
Average Vehicle Length	25	feet

Total Queues		Queues per Lane	
50th Percentile Queue		**50th Percentile Queue**	
Number of Vehicles	Length (ft)	Number of Vehicles	Length (ft)
11	275	5.5	137.5
85th Percentile Queue		**85th Percentile Queue**	
Number of Vehicles	Length (ft)	Number of Vehicles	Length (ft)
15	375	7.5	187.5
95th Percentile Queue		**95th Percentile Queue**	
Number of Vehicles	Length (ft)	Number of Vehicles	Length (ft)
17	425	8.5	212.5

Queuing Analysis - Parcel A

Weekday PM Peak Hour (Average)

Number of Tunnels	1	
Hourly Flow Rate (vph)	63	per Lane
Total Hourly Flow Rate	63	vehicles per hour
Average Stopped Time / Service Time	4:25	(mm:ss)
Average Service Rate (Total)	13.6	vehicles per hour
Average Vehicle Length	25	feet

Total Queues		Queues per Lane	
50th Percentile Queue		**50th Percentile Queue**	
Number of Vehicles	Length (ft)	Number of Vehicles	Length (ft)
6	150	3	75
85th Percentile Queue		**85th Percentile Queue**	
Number of Vehicles	Length (ft)	Number of Vehicles	Length (ft)
9	225	4.5	112.5
95th Percentile Queue		**95th Percentile Queue**	
Number of Vehicles	Length (ft)	Number of Vehicles	Length (ft)
11	275	5.5	137.5

Queuing Analysis - Parcel D

Weekday AM Peak Hour (Average)

Number of Lanes	2	
Hourly Flow Rate (vph)	53.5	per Lane
Total Hourly Flow Rate	107	vehicles per hour
Average Stopped Time / Service Time	4:05	(mm:ss)
Average Service Rate (Total)	29.4	vehicles per hour
Average Vehicle Length	25	feet

Total Queues		Queues per Lane	
50th Percentile Queue		**50th Percentile Queue**	
Number of Vehicles	Length (ft)	Number of Vehicles	Length (ft)
8	200	4	100
85th Percentile Queue		**85th Percentile Queue**	
Number of Vehicles	Length (ft)	Number of Vehicles	Length (ft)
11	275	5.5	137.5
95th Percentile Queue		**95th Percentile Queue**	
Number of Vehicles	Length (ft)	Number of Vehicles	Length (ft)
13	325	6.5	162.5

Queuing Analysis - Parcel D

Weekday PM Peak Hour (Average)

Number of Tunnels	2	
Hourly Flow Rate (vph)	37.5	per Lane
Total Hourly Flow Rate	75	vehicles per hour
Average Stopped Time / Service Time	4:25	(mm:ss)
Average Service Rate (Total)	27.2	vehicles per hour
Average Vehicle Length	25	feet

Total Queues		Queues per Lane	
50th Percentile Queue		**50th Percentile Queue**	
Number of Vehicles	Length (ft)	Number of Vehicles	Length (ft)
6	150	3	75
85th Percentile Queue		**85th Percentile Queue**	
Number of Vehicles	Length (ft)	Number of Vehicles	Length (ft)
9	225	4.5	112.5
95th Percentile Queue		**95th Percentile Queue**	
Number of Vehicles	Length (ft)	Number of Vehicles	Length (ft)
11	275	5.5	137.5

Date: March 12, 2026

File No: GLUA-25-00025 PA-25-00016

Request: 1367 Molla Avenue Transportation Comments

Reviewer: Reah Flisakowski, PE, and Hallie Turk EI, RSP$_1$, DKS Associates

DKS Associates has reviewed the Oregon City Mixed-Use Traffic Impact Analysis (TIA)[1] and revised version of the TIA.[2] The project will construct a mixed-use development including retail use, multifamily apartments, and a fast-food restaurant at 1367 Molalla Avenue in Oregon City.

The general comments and recommended conditions of approval are based on a review of the submitted materials.

TRAFFIC IMPACT ANALYSIS REVIEW

Key findings of the TIA are summarized below.

PROPOSED DEVELOPMENT AND STUDY AREA

- The project will construct a mixed-use development at 1367 Molalla Avenue comprised of 14,600 square feet of retail space, up to 210 multi-family apartment units, and one 4,900 square-foot fast food restaurant with a drive-through window. The project site is located on four existing tax lots and is currently vacant.
- The project will construct a new public street that connects to Molalla Avenue at the existing Safeway access and Beavercreek Road at the existing Southridge Shopping Center commercial access. According to the site plan (shown in Figure 2 of the TIA), this future street will provide access to the development at six driveway locations.
- The project is expected to be fully constructed and operational by the year 2030.
- The TIS analyzed nine study intersections:
    - Molalla Ave/Pearl St
    - Molalla Ave/Holmes Ln

[1] Oregon City Mixed-Use: Traffic Impact Analysis. Transpo Group. October 2025.
[2] Oregon City Mixed-Use: Traffic Impact Analysis. Transpo Group. Revised March 2026.

- Molalla Ave/Warner Milne Rd
- Molalla Ave/Safeway access/Future site access
- Molalla Ave/Beavercreek Rd
- Molalla Ave/Clairmont Way
- Molalla Ave/OR-213
- Commercial Access/Beavercreek Rd/Future site access
- OR-213/Beavercreek Rd

VOLUME DEVELOPMENT

- Existing condition intersection counts were collected in September 2025.

- An average annual growth rate of 2%, which was provided by City staff, was applied to represent background growth.

- Trips from the following in-process developments were included in background volumes:

  - 770 Pleasant Townhomes
  - Abernethy Place
  - Canemah Road Subdivision
  - Central Point Subdivision
  - Clackamas Heights Redevelopment
  - Downtown North End Development
  - Park Place Crossing Phase I
  - Serres Farm Master Plan
  - Thimble Creek South Phase I
  - White Lane Subdivision

TRIP GENERATION AND ANALYSIS

- Based on the most recent five years of available crash data (2019 to 2023), critical crash rate calculations, and ODOT SPIS lists, the OR-213/Beavercreek Road intersection was flagged for safety concerns. The TIA notes that since 2023, safety improvements such as signal modifications and improved signage have been completed at this location. As such, no safety mitigations are recommended at this time.

- The development is expected to generate 339 (157 in, 182 out) a.m. peak hour trips, 190 (107 in, 83 out) p.m. peak hour trips, and 2,788 weekday trips. This includes a conservative internal trip capture reduction of 5% in the a.m. peak hour and 25% in the p.m. peak hour, a pass-by rate of 40% for both the a.m. and p.m. peak hours for the Strip Retail (822) land use, and a pass-by rate of 55% for both the a.m. and p.m. peak hours for the Restaurant (934) and Coffee Shop with Drive Through Window (937) land uses.

- Different trip distributions were applied for the commercial and residential land uses.

- *Commercial Trips (Retail and Fast Food):* Approximately 35% of site trips are expected to travel to/from destinations to the south along Molalla Avenue and Beavercreek Road, and approximately 65% are expected to travel to/from destinations to the north along Molalla Avenue.
- *Residential Trips:* Approximately 55% of site trips are expected to travel to/from destinations to the south along Molalla Avenue and Beavercreek Road, and approximately 45% are expected to travel to/from destinations to the north along Molalla Avenue.

- Left turn lane warrants were evaluated at future site access intersections. No left turn lane warrants were met.

- All study intersections are expected to meet performance standards under all analysis scenarios.

- A queuing analysis showed queue lengths at the Molalla Avenue/Shared Business Driveway (Safeway) intersection are expected to exceed the available storage for the northbound left turning movement under both background and build conditions in the p.m. peak hour. The 95th percentile queue is expected to exceed the available storage by only one vehicle in the p.m. peak hour only. No mitigation is recommended at this time.

SITE PLAN REVIEW

- The TIA does not address the proposed site plan's compliance with access spacing standards or sight distance standards.

- The TIA does not address the proposed development's pedestrian/bicycle routes to the nearest schools in consideration of safe routes to school.

- The TIA does not discuss the project's internal vehicle, pedestrian, and bicycle circulation.

RECOMMENDED TIA REVISIONS AND CONDITIONS OF APPROVAL

The following conditions of approval are recommended based on a review of the TIA and site plan:

GENERAL DEVELOPMENT PLAN CONDITIONS

- Since the TIA assumes a reduction in vehicle trips due to internal trip capture that would occur as walking and/or biking trips, the TIA shall be revised to discuss the project's internal pedestrian and bicycle circulation needs and how the site plan adequately accommodates active modes.

- Minimum AASHTO sight distance requirements shall be met at all site intersections and driveways. Sight distances on the internal local street system shall be approved by the City Engineer prior to final site plan approval.

- A proportionate share fee contribution of $404 per p.m. peak hour trip shall be collected for planned improvements at OR-213/Beavercreek Road. The fee amount will be determined as part of future detailed development plan applications.
- A transportation system development charge, associated with the Molalla Avenue Corridor SDC Special Location Discount Area, of $6,474 per dwelling unit shall be collected based on the number of multi-family dwelling units constructed. The fee amount will be determined as part of future detailed development plan applications.
- Both the October 2025 and March 2026 versions of the study finds that the existing transportation system will adequately accommodate the proposed master plan uses. The October 2025 analysis included the proposed Trader Joe's grocery store that represents reasonable worst-case development for that parcel.
- Upon development opening, short-term traffic operations will likely exceed the study's reported operations, which may result in traffic congestion and concerns regarding vehicle queuing. This will be addressed in future detailed development plan applications.

STREET IMPROVEMENT CONDITIONS

- The new public street connection shall be constructed as a city collector street with a modified cross-section standard including dedicated bike lanes, sidewalks, center turn lane and street trees. The design of the facility shall be approved by the City Engineer.
    - The proposed three-lane section along the project frontage shall extend from Molalla Avenue beyond the commercial accesses and transition to a two lane section east of the commercial accesses toward Beavercreek Road.

FUTURE DETAILED DEVELOPMENT PLAN CONDITIONS

- Transportation impact studies will be required for future detailed development plan applications for each parcel and used to write additional conditions of approval. They will include items such as:
    - The TIA shall be revised to include a discussion of the proposed site plan's compliance with access spacing standards, sight distance standards, and safe pedestrian/bicycle routes to school. These elements are required in the Oregon City TIA Guidelines.[3] The site plan shall meet the city's transportation standards and requirements.
    - The City may require a traffic management plan to help mitigate short-term traffic operational concerns related to the drive-through restaurant's opening.

[3] https://www.orcity.org/1164/Guidelines-for-Transportation-Impact-Ana

Christina Robertson-Gardiner

From: Rocky Younger <dalesauto@hotmail.com>
Sent: Friday, March 13, 2026 3:40 PM
To: Christina Robertson-Gardiner
Subject: Re: Easement

Categories: Red Category

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

I would like to have my easement agreements entered as a staff report that I would have the right for public record discussion one on the road agreement and two on the easement agreement that extends down hilltop Avenue along the property line between (wallmart) and myself Rocky Younger

---

From: Rocky Younger <dalesauto@hotmail.com>
Sent: Thursday, March 12, 2026 7:32 PM
To: Christina Robertson-Gardiner <crobertson@orcity.org>
Subject: Re: Easement

This is a recorded easement agreement between wall mart and Rocky younger I would like you to call me and talk about this I fined that drowings do not show this being done , I reserve the right to object , we need to further discuss this issue before public herring 503 656 2010 thanks rocky

---

From: Rocky Younger <dalesauto@hotmail.com>
Sent: Thursday, February 5, 2026 1:25 PM
To: Christina Robertson-Gardiner <crobertson@orcity.org>
Subject: Re: Easement

Thank you

From: Christina Robertson-Gardiner <crobertson@orcity.org>
Sent: Thursday, February 5, 2026 12:04 PM
To: dalesauto@hotmail.com <dalesauto@hotmail.com>
Subject: Easement

Hi Rocky,

I have a call with our attorney this afternoon. Hold off on having your attorney contact her until I talk to her- I will let you know if I need additional information from you. I will send a follow-up email.

It was good seeing you today 😊

Missy Ryan
Bateman◊Seidel
Bateman Seidel Miner Blomgren Chellis & Gram, P.C.
1000 SW Broadway, Suite 1910
Portland, OR 97205

(971) 480-7080 (cell)
mryan@batemanseidel.com

Christina Robertson-Gardiner (she/her)
Senior Planner
crobertson@orcity.org
Oregon City Planning Department
695 Warner Parrot Road
Oregon City, Oregon 97045
503-496-1564 Direct
503-722-3789 Main
https://www.orcity.org/Planning

PUBLIC RECORDS LAW DISCLOSURE: This e-mail is subject to the State Retention Schedule and may be made available to the public.

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Christopher M. McNichol
Gust Rosenfeld P.L.C.
201 East Washington, Suite 800
Phoenix, Arizona 85004-2327

Oregon City, OR #5053-00

EASEMENT

This Easement ("Easement") is made this 30th day of SEPT, 2004, by and between **ROCKY C. YOUNGER and JANICE C. YOUNGER** (collectively, "Grantor"), and **WAL-MART STORES, INC.**, a Delaware corporation ("Wal-Mart").

RECITALS

Grantor is the owner of certain real property legally described on ***Exhibit "A"*** attached hereto (the "Grantor Property"), a portion of which is depicted as the construction easement on ***Exhibit "C"*** attached hereto and incorporated herein by this reference (the "Easement Property");

Wal-Mart owns the certain real property contiguous to the Easement Property as legally described on ***Exhibit "B"*** attached hereto (the "Wal-Mart Property");

Wal-Mart has requested that Grantor grant Wal-Mart an easement over the Easement Property.

NOW, THEREFORE, in consideration of the premises and promises contained herein, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties agree as follows:

AGREEMENTS

1. Accuracy of the Recitals. The parties hereby acknowledge the accuracy of the Recitals.

2. Grant of Easement. Grantor hereby grants and conveys to Wal-Mart a non-exclusive easement (the "Easement") in the area depicted on Exhibit "B" over, on and under the Easement Property for the purpose of constructing and thereafter maintaining a retention wall on the Wal-Mart Property and a new screening fence along the Grantor Property to replace the existing fence, all in connection with Wal-Mart's development of a retail facility on the Wal-Mart Property.

3. Clean-Up. Wal-Mart agrees that it will clean-up, restore and return the Easement Property, and any area of the Grantor Property that may be changed, altered or

FIDELITY NATIONAL TITLE CO.
This instrument filed for record by Fidelity National Title as an accommodation only. It has not been examined as to its execution or as to its effect upon the title.
01-11167-C

affected by Wal-Mart's use of the Easement Property, to the condition that existed prior to Wal-Mart's use thereof under this Easement, including without limitation removing any piles of dirt and debris.

4. Indemnification. Wal-Mart hereby defends, indemnifies and holds Grantor harmless from and against all claims, proceedings, lawsuits, injuries, deaths, demands, losses, liabilities, fines, penalties, judgments, liens, awards, damages, costs, and expenses (including without limitation reasonable attorney's fees) arising out of Wal-Mart's exercise of the rights under this Easement and Wal-Mart's use, operation, maintenance and repair of the Easement Property, exclusive of any claims arising out of or in any way related to the negligent acts, omissions or willful misconduct of Grantor.

5. Running With the Land/Binding Effect. The Easement granted herein shall be appurtenant to and run with the land. This Easement shall be binding upon and inure to the benefit of the parties hereto and their respective successors and assigns.

6. Counterparts. This Easement may be executed in one or more counterparts, each of which in the aggregate shall constitute one and the same instrument.

IN WITNESS WHEREOF, the parties have executed this Easement as of the date and year first written above.

WAL-MART STORES, INC., a Delaware corporation

By _____

Its Assistant Vice President

By Rocky Younger
ROCKY C. YOUNGER

By Janice C. Younger
JANICE C. YOUNGER

CMM:sjr 548938.01

February 18, 2026

Owner: Rocky Younger
Address: PO Box 1227

Housing Authority of Clackamas County

Tenant ID: *0000125

affected by Wal-Mart's use of the Easement Property, to the condition that existed prior to Wal-Mart's use thereof under this Easement, including without limitation removing any piles of dirt and debris.

4. Indemnification. Wal-Mart hereby defends, indemnifies and holds Grantor harmless from and against all claims, proceedings, lawsuits, injuries, deaths, demands, losses, liabilities, fines, penalties, judgments, liens, awards, damages, costs, and expenses (including without limitation reasonable attorney's fees) arising out of Wal-Mart's exercise of the rights under this Easement and Wal-Mart's use, operation, maintenance and repair of the Easement Property, exclusive of any claims arising out of or in any way related to the negligent acts, omissions or willful misconduct of Grantor.

5. Running With the Land/Binding Effect. The Easement granted herein shall be appurtenant to and run with the land. This Easement shall be binding upon and inure to the benefit of the parties hereto and their respective successors and assigns.

6. Counterparts. This Easement may be executed in one or more counterparts, each of which in the aggregate shall constitute one and the same instrument.

IN WITNESS WHEREOF, the parties have executed this Easement as of the date and year first written above.

WAL-MART STORES, INC., a Delaware corporation

By _____

Its Assistant Vice President

MBA

By _____
ROCKY C. YOUNGER

By _____
JANICE C. YOUNGER

Approved as to legal terms only
by George Bacso
WAL-MART LEGAL DEPT.
Date: 9-29-04

PO Box 1337
Oregon City, OR 97045

RE: Inspection of property located at: 472 ...

Tenant I

State of Arkansas

County of Benton

The foregoing instrument was acknowledged before me this 29th day of September, 2004, by Michael E. Gardner, an Assistant Vice President of Wal-Mart Stores, Inc., a Delaware corporation, on behalf of the corporation.

[1](Seal and Expiration Date)

Jane Bennett
County of Benton
Notary Public - Arkansas
My Commission Exp. 03/13/2012

Jane Bennett
Notary Public

State of OREGON

County of MULTNOMAH

SEPT, 2004, by Rocky C. Younger. The foregoing instrument was acknowledged before me this 30TH day of

(Seal and Expiration Date)

OFFICIAL SEAL
ANGELA E. MICHELSEN
NOTARY PUBLIC-OREGON
COMMISSION NO. 367464
MY COMMISSION EXPIRES APRIL 8, 2007

Angela E. Michelsen
Notary Public

State of OREGON

County of MULTNOMAH

SEPT, 2004, by Janice C. Younger. The foregoing instrument was acknowledged before me this 30TH day of

(Seal and Expiration Date)

OFFICIAL SEAL
ANGELA E. MICHELSEN
NOTARY PUBLIC-OREGON
COMMISSION NO. 367464
MY COMMISSION EXPIRES APRIL 8, 2007

Angela E. Michelsen
Notary Public

Address:
PO Box 1337

Tenant ID: t0000

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EXHIBIT "A"

Legal Description of Grantor Property

LOTS 2, 3, 4, 5, 6, 7, 8, and 9 BLOCK 1, HILLTOP ACRES, IN THE CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON.

M:sjr 548938.01

EXHIBIT "B"

Legal Description of Wal-Mart Property

A TRACT OF LAND SITUATED IN THE SOUTHWEST 1/4 AND THE SOUTHEAST 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, WILLAMETTE MERIDIAN, CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON. SAID TRACT IS MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT A THREE INCH BRASS DISK SET BY THE OREGON STATE HIGHWAY DEPARTMENT IN THE CENTERLINE OF MOLALLA AVENUE (FORMERLY STATE HIGHWAY NO. 213) AT ENGINEER'S STATION 31+00; THENCE SOUTH 73°27'47" EAST A DISTANCE OF 289.83 FEET TO THE NORTHWEST CORNER OF THAT TRACT DESCRIBED IN FEE NO. 96-010378, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SAID POINT ALSO BEING ON THE SOUTHERLY RIGHT-OF-WAY LINE OF HILLTOP AVENUE; THENCE ALONG THE WESTERLY LINE OF SAID TRACT, SOUTH 27°39'59" EAST A DISTANCE OF 104.03 FEET TO THE SOUTHWEST CORNER OF SAID TRACT, AND BEING THE TRUE POINT OF BEGINNING; THENCE ALONG THE NORTHERLY LINE OF THOSE TRACTS DESCRIBED IN FEE NO. 72-08888 AND FEE NO. 69-09411, NORTH 78°20'26" EAST A DISTANCE OF 846.78 FEET TO THE COMMON CORNER OF THOSE LANDS DESCRIBED IN FEE NO. 69-09411, FEE NO. 95-073144 AND FEE NO. 96-010376, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE SOUTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-010376, DEED RECORDS, CLACKAMAS COUNTY, NORTH 67°47'51" EAST A DISTANCE OF 59.75 FEET TO THE COMMON CORNER OF THOSE LANDS DESCRIBED IN FEE NO. 96-010376 AND FEE NO. 96-007471, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE CONTINUING ALONG THE WESTERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-007471, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 14°26'42" EAST A DISTANCE OF 407.81 FEET TO THE COMMON CORNER OF THOSE LANDS DESCRIBED IN FEE NO. 69-09411, FEE NO. 96-007471, AND FEE NO. 96-046001, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE CONTINUING ALONG THE COMMON LINE OF THOSE LANDS DESCRIBED IN FEE NO. 96-046001 AND FEE NO. 96-007471, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 88°29'47" EAST A DISTANCE OF 62.63 FEET; THENCE SOUTH 23°58'58" EAST A DISTANCE OF 133.44 FEET TO THE SOUTHEASTERLY CORNER OF THAT TRACT DESCRIBED IN FEE NO. 96-046001, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE CONTINUING ALONG THE SOUTHERLY LINE OF SAID TRACT, AND ALONG THE NORTHERLY LINE OF THOSE LANDS DESCRIBED IN FEE NO. 98-044696 AND FEE NO. 99-004122, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 76°38'35" WEST A DISTANCE OF 125.26 FEET; THENCE ALONG SAID SOUTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-046001, AND THE NORTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 95-045260, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 76°19'45" WEST A DISTANCE OF 45.33 FEET; THENCE ALONG SAID SOUTHERLY LINE, AND THE NORTHERLY LINE OF THOSE LANDS DESCRIBED IN FEE NO. 92-21067, FEE NO. 97-004501, AND FEE NO. 98-041108, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 76°29'26" WEST A DISTANCE OF 750.61 FEET TO A POINT IN THE NORTHEASTERLY RIGHT-OF-WAY OF BEAVERCREEK ROAD (MARKET

EXHIBIT C

Depiction of Easement Property

FEE NO. 97-021414

ACRES

LOT 2
BLOCK 2

TRUE POINT OF BEGINNING

50' FOX LANE

FEE NO. 96-004255

LOT 1

FEE NO. 98-019838

BLOCK 3

LOT 9

50' OTTER LANE

LOT 1

LOT 7

LAVER LANE

LOT 1

64.66'

(64.52')(20)

S 21°45' E

463.7'

61.10'

(60.69')(20)

(101.15')(20)

76.97'

(77.04')(20)

N 78°20'55" E

174.64'

60'

333.81'

N 78°23'01" E

192.31' (192.40')(20)

BLOCK 1

FEE NO. 95-073154

LOT 9

FEE NO. 98-082260

LOT 8

218.20' (218.31')(20)

60' HILLTOP AVENUE

333.49' (333.40')(20)

FEE NO. 98-119128

LOT 7

LOT 4

LOT 5

FEE NO. 96-015307

FEE NO. 97-073257

LOT 6

66.76'

(66.7')(20)

FEE NO. 98-053719

FEE NO. 97-086738

267.73' (287.73')(20)

LOT 2

FEE NO. 98-010378

(150.74)(20)

(100.00')(20)

846.78'

WOOD & WIRE FENCE

607.74'

(607.74')(20)

17' CONSTRUCTION EASEMENT

S 62°42'28" E
65' (24.02')(21)

104.03'

(117.70')(21)

LOT 1
LOCK 1

CHAINLINK FENCE

N 27°39'59" W

73.67'

N 78°20'25" E

SHEET METAL FENCE

DEED LINE IS FOR INFORMATION ONLY. UPON REVIEW OF THE SURVEY RECORDS AND INTENT OF FEE 69-09411, WE BELIEVE THE WESTERLY LINE OF FEE 96-007471 TO BE THE CORRECT EAST BOUNDARY OF THE LETHA A. YOUNGER PROPERTY.

DEED LINE N 21°45' E

FEE NO. 97-022793

176.19'

N 78°20'26" E

(178.19')(21)

50'

CONSTRUCTION RESTRICTION PER FEE NO. 81-19230

S 88°29'47" E
120.00'

S 12°38'23" E
110.72'

S 12°38'23" E
120.00'

FEE NO. 72-08888

FEE NO. 69-09411

N 62°36'28" E
5.00'

67.85'

10.28'

EASEMENT FOR ROAD PURPOSES RECORDED IN FEE NO. 82-14415

88°29'47" E 653.92'

FEE NO. 81-19662

N 62°36'28" E
15.00'

85.38'

N 88°29'47" E

39.98

EASEMENT FOR RIGHT-OF-WAY RECORDED AS SUIT NO. CCV96-09-321 DEC. 20, 1996

SEE DETAIL 'C' SHEET 2 OF 2

N 88°29'47" W 771.22'

S 88°29'47" E 1156.21'

322.38'

35'

N 27°23'32" W
(N 27°39'59" W)

307.30'

129.17'

70.00'

S 62°36'28" W
15.00'

Δ = 00°40'05"

560,272 SQUARE FEET
12.862 ACRES

YOUNGER PROPERTIES
CONSTRUCTION EASEMENT EXHIBIT

1" = 100'

09-27-2004

Oregon
Tina Kotek, Governor

Department of Transportation
Transportation Region 1
123 NW Flanders St.
Portland, OR 97209-4012
(503) 731-8200
Fax: (503) 731-8259

March 17, 2026 ODOT # 13637

ODOT Formal Response

Project: Oregon City Mixed Use General Development Plan	**Site Address:** 1367 Molalla Avenue
Jurisdiction: City of Oregon City	**Applicant:** Cypress Acquisitions, LLC
Jurisdiction Case #: GLUA-25-00025: CU-25-00001, MAS-25-00001, PARK-25-00001 (Master Plan) MAS-25-002_GEO-25-007_NROD-25-012 (Detailed Development Plan)	

The site of this proposed land use action is in the vicinity of OR 213 interchange. ODOT has permitting authority for this facility and an interest in ensuring that this proposed land use is compatible with its safe and efficient operation.

These comments, standards, and requirements are current as of the date of this letter. If the project scope and/or timeline is modified, the applicant should contact the ODOT Region 1 Development Review program (ODOT_R1_DevRev@odot.oregon.gov). Updated comments may be necessary.

LAND USE PROPOSAL

ODOT was notified of a land use application submitted to City of Oregon City for a proposed masterplan impacting tax lots 3200, 3201, 3300, 3400, 500, 501, and 602. The formal city notice includes the following project description:

> *"Proposed Master Plan to create development parcels for future development, along with a Conditional Use Review for two future drive-throughs and a Parking Adjustment to allow above the maximum parking requirements on two of the commercial parcels, along with a Detailed Development Plan for the construction of a new public street and associated infrastructure."*

COMMENTS/FINDINGS

ODOT understands the master plan proposes retail development on Parcel A, multi-family residential development on Parcel B, a new public street on Parcel C, and a quick-serve restaurant on Parcel D. Today, ODOT attended a pre-application conference (PA-26-00002) held March 11, 2026 for the proposed construction of a drive through restaurant on proposed Parcel D.

Traffic Impacts

As part of the materials provided to ODOT, ODOT received a copy of a Traffic Impact Study (TIS) prepared by Transpo Group, dated October 2025. ODOT has reviewed the TIS and supports its recommendation for the project to contribute its pro-rata share at the OR-213/Beavercreek Road intersection toward the City's Transportation System Plan (TSP) projects (construction of a westbound right-turn, merge lane at the OR-213/Beavercreek Road intersection).

ODOT RECOMMENDED CONDITIONS OF APPROVAL FOR LOCAL JURISDICTION

Traffic Impacts

☒ The applicant shall contribute proportional share contributions for the intersection improvements at OR 213/Beavercreek Road.

ADVISORY INFORMATION

Permits and Agreements to Work in State Highway Right of Way

☒ An ODOT Miscellaneous Permit must be obtained for all work in the State highway right of way. If applicable, contact the District Contact indicated below to determine permit requirements and to obtain application information.

Note: All ODOT permits and approvals must reach 100% plans before the District Contact signs off on a local jurisdiction building permit or other necessary requirements before construction.

Contact the ODOT Development Review Planner identified below for further coordination or questions regarding ODOT comments and requirements during the land use process.

Please send a copy of the Notice of Decision/Staff Report with conditions of approval to:
ODOT_R1_DevRev@odot.oregon.gov

Development Review Planner: Melissa Gonzalez	Melissa.GONZALEZ-GABRIEL2@odot.oregon.gov
Traffic Contact: Avi Tayar, P.E.	Abraham.TAYAR@odot.oregon.gov
District Contact: District 2B	d2bup@odot.oregon.gov

Metro

600 NE Grand Ave.
Portland, OR 97232-2736
oregonmetro.gov

503-797-1600
Fax: 503-797-1792
gary.shepherd@oregonmetro.gov

Gary Shepherd, Senior Attorney

March 20, 2026

Oregon City Community Development
Oregon City Planning Commission
695 Warner Parrott Road
Oregon City, OR 97045
planning@orcity.org

RE: **GLUA-25-00025**: **MAS-25-002_GEO-25-007_NROD-25-012**
(Detailed Development Plan to build a new public street and associated infrastructure) &
GLUA-25-00025: **CU-25-00001, MAS-25-00001, PARK-25-00001**
(Master Plan to create development parcels for future development)

Dear Oregon City Community Development and Oregon City Planning Commission:

Respectfully, Metro submits the following comments responding to the above-referenced Development and Master Plan applications before the City. Please include this letter and attachments in the record of these proceedings.

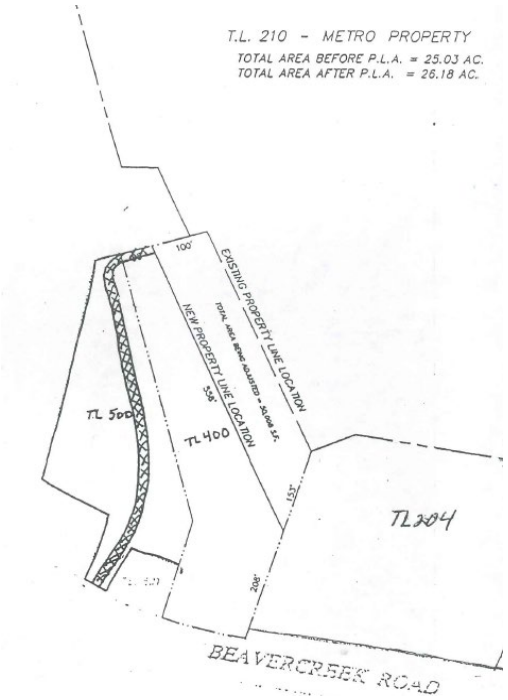
Metro is generally supportive of the Development Proposal and Master Plan. However, there are three matters of concern that warrant further discussion and require resolution: 1) The adverse impact to Metro's access rights, 2) Geological hazards, and 3) Storm water discharge.

Metro's Easement

The new public street plan and associated infrastructure proposed on TL 500 (the new southern access road – colored lavender in the Site Plan) adversely impacts Metro's recorded access easement rights. Metro is a dominant interest holder. TL 500, owned by Mr. Younger, is the servient estate. The project contemplates the City taking ownership and maintenance responsibility of the street from the servient estate.

In 1998, Metro acquired an easement to secure perpetual access to the southern portion of its Newell Creek Canyon Nature Park and Natural Area. The easement, attached, is recorded in Clackamas County records as Document No. 98-044697. The easement area is a 15 ft. wide strip of land taking access from Beavercreek Road, running north through the Younger property, turning east at TL 500's northern property line (the southern property line of the Walmart property) and crossing Younger's TL 401 to Metro's TL 210. Below is a depiction of the easement area.

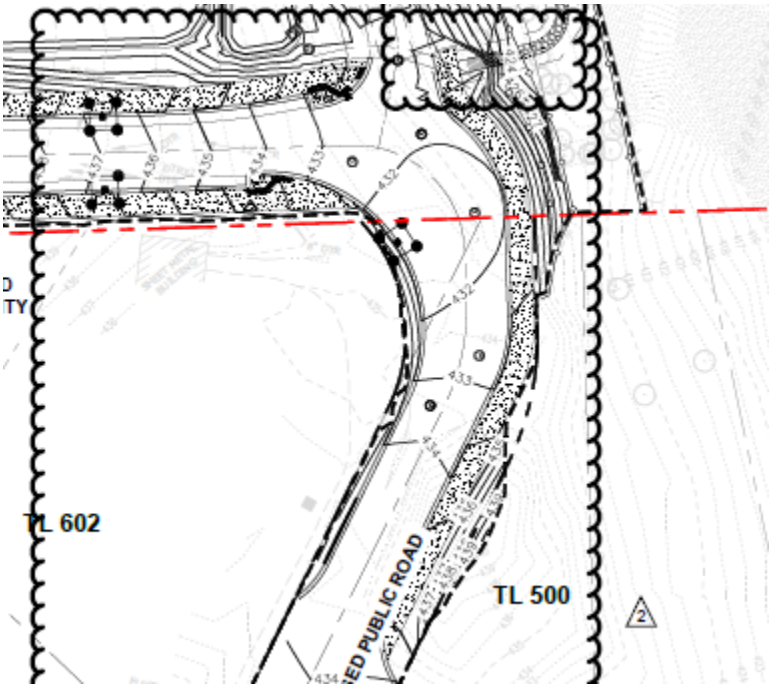
The easement is associated with a 1998 City approved property line adjustment, providing needed access to Metro property.



A Metro gate is located at the end of the easement area, adjacent to the northeast corner of TL 400, as depicted above. The access easement is generally utilized by Metro for land management and maintenance purposes, supporting Metro and contractor vehicles and equipment. The access easement is also utilized by Metro to support construction and other improvement projects in the park and natural area. Below is an aerial image of the Younger property and Metro property, with the gate location depicted.



The image below is a caption of the proposed public street on TL 500 as it turns onto the Walmart property. Metro's property is to the east (right), with its western line represented by the grey north-south line, to the right of the squiggly line on the right side. As depicted in the image below, the public street development plan does not recognize, protect, or provide suitable alternative access for Metro.



Metro acknowledges the easement allows the servient estate holder to relocate the easement area, however, that right can only be invoked if the remainder of Younger's property is being redeveloped. The subject proposal does not represent redevelopment of the remainder of the Younger property. It only represents a public road over a portion of the property. Additionally, if the first condition is triggered, Metro must be consulted, suitable alternative access proposed, and its permission obtained. In this matter, Metro has not been consulted, and its permission has not been requested or given. To demonstrate compliance with applicable criteria, the application routinely refers to an agreement between the developer and the owner of TL 500. However, Metro, the dominant interest holder, is not a party to that agreement. As proposed, the street improvements would obstruct Metro's access by installing a curb, multi-use path, street trees, and inaccessible graded slopes. As such, Metro objects to its dominant real property interests being adversely impacted by the proposed public street proposal.

As this relates to Oregon City Code, street design and driveway spacing and approaches are governed by OCC § 12.04.170 and OCC Chapter 16.12, including § 16.12.035. Metro has not been presented with any plans that would accommodate Metro's access easement interests. To accommodate Metro's access rights, the street plan must be redesigned to include a code compliant driveway approach, with grades and

surfaces that support access. Since the plans must change, it would be premature for the City to find the application in compliance with street design standards. Additionally, § 12.04.170 provides:

> "All streets and driveway connections to another jurisdiction's facility or right-of-way must be reviewed by the appropriate jurisdiction as a condition of the preliminary plat or site planning and when required by law or intergovernmental agreement shall be approved by the appropriate jurisdiction."

Metro is a municipal corporation – another jurisdiction. Metro's facilities are adversely impacted by the proposal. Metro has not been consulted. The procedures and requirements in § 12.04.170 have not been followed. The application identifies § 12.04.170 as applicable but does not include any findings of compliance supported by substantial evidence.

Geological Hazards

The second issue of general concern is the proposal to locate the public easement and improved pathway within the geological hazard area. OCC § 17.44.060 requires developments to "be designed to avoid unnecessary disturbance of natural topography." The review standard is "to the maximum extent practicable." The proposal does not meet this and related standards.

Applicants do not avoid unnecessary disturbances. Applicant proposes to locate the public path within a regulated Geological Hazard area – an area its Geological engineer mapped as highly susceptible to deep landslides, when alternatives exist. *See* Stormwater report, Appendix A, Terracon Geotechnical Report – Figure 6. Additionally, Applicant proposes a disturbance in a high-risk area in part to accommodate its adjustment request to include additional on-site parking – above the maximum allowed by City Code. While there is ample room on site to locate this public easement and improvement outside the geological hazard and high-risk area, Applicant proposes to prioritize additional on-site parking. Above maximum allowed parking should not displace land protection requirements and direct that public facilities are sited in high-risk environments.

As we have seen, area slopes are subject to large scale landslides and slumps. These movements often impact property above the top of slope, thus the need to site infrastructure, both public and private, away from the risk. Several dozen area landslides have been documented. We can look just to the south and Forest Edge Apartments (Newell Creek) for example. While Applicant proposes to protect its investment above a Soldier Pile Wall drilled deep down to bedrock, it would leave the City and the public with an improvement that is not so protected. Moving land disturbances and improvements away from these sensitive slopes should be a primary objective of both the City and Applicant.

The Master Plan also proposes to construct the public path below a long, significant retaining wall, away from site development. As the City is aware, the Walmart property, as

well as the Younger and Metro properties, have had to manage and recover from transient encampments for many years now. Significant damage to real property and natural resources has occurred. The Applicant acknowledges this burden by proposing no on-street parking for the two public roads. This appears to be done with City transportation department support. *See* pages 27 and 28 of the DDP application submission. However, the Master Plan proposes to enhance transient encampment conditions with a public pathway, located out of sight. The very impacts that Applicant is trying to avoid would instead be passed to the City and Metro to manage. The City, Metro, and the public would be better served by a public path that is located further away from the steep slopes and natural area, and more integrated into site development. The proposed pathway location also represents a *significant health and safety concern* to users as it is hidden away below a significant retaining wall. Again, this is another risk created by the proposal's path location that can and should be avoided. The City has the discretion and review authority to require as much.

Storm water discharge

Applicant proposes to collect all the storm water from the vast majority of the site, treat it, direct the water to the southeast portion of the site, and connect to an existing City facility that discharges water onto Metro property. Applicant also proposes that the stormwater from the public street would not be treated, but rather discharged directly into the system. The proposal would increase the quantity of water that would naturally discharge onto Metro property. Metro also has quality concerns. The proposed discharge point is near the headwaters of Newell Creek and Metro property. The creek flows for miles through Metro natural area to its confluence with Abernathy Creek. Both creeks support critical habitat for ESA listed species. Pervading the proposal is the assumption that the discharge and eventual storage and disposal of the development's water is permitted on Metro property. Since Applicant cannot or is otherwise choosing not to handle and infiltrate its own storm water on-site, Applicant must demonstrate that public services, including storm-water disposal, are available to serve the development. OCC § 17.65.050.

Metro understands that the City has a NPDES municipal storm system permit to discharge to waters of the state. If the development's storm water is collected through City pipes and permitted outfall facilities discharging directly into Newell Creek, then Metro has no concern. However, that does not seem to be the case. The application says storm water will be collected and directed to an outfall on TL 500. TL 500 is not adjacent to Newell Creek. Metro property is located between TL 500 and Newell Creek. Collected and directed storm water cannot be discharged overland across Metro property to get to the state water way without permission. Metro is not aware of anything in the record that demonstrates permission or the right to discharge the site's development storm water on or through Metro property to get to Newell Creek.

Thank you for your time and consideration of our concerns.

Sincerely,



Gary Shepherd
Senior Attorney
Office of Metro Attorney

CC: Christina Robinson-Gardiner, Senior Planner: crobertson@orcity.org

Cypress Acquisitions LLC
8144 Walnut Hill Land, Suite 1200
Dallas, TX 75231

Walmart Inc.
2608 SE J St.
Bentonville, AR 72716-5510

Rocky Younger
P.O. Box 1337
Oregon City, OR 97045

Les Schwab
20900 Cooley Road
Bend, OR 97701

FORM No. 926 – EASEMENT. COPYRIGHT 1996 STEVENS-NESS LAW PUBLISHING CO., PORTLAND, OR 97204

NS

OREGON TITLE INS. CO. SCOKLIC

EASEMENT

Between

Rocky E. Younger
1367 Molalla Avenue
Oregon City OR 97045

And

Metro
600 NE Grand Avenue
Portland OR 97232

After recording, return to (Name, Address, Zip):

Metro - Attn: April Olbrich
600 NE Grand Avenue
Portland OR 97232

SPACE RESERVED FOR RECORDER'S USE

STATE OF OREGON,
County of _____ } ss.

I certify that the within instrument was received for record on the _____ day of _____, 19____, at _____ o'clock _____M., and recorded in book/reel/volume No. _____ on page _____ and/or as fee/file/instrument/microfilm/reception No. _____, Records of said County.

Witness my hand and seal of County affixed.

_____ NAME _____ TITLE

By _____, Deputy.

THIS AGREEMENT made and entered into this _____ day of May, 1998, by and between Rocky E. Younger, hereinafter called the first party, and Metro, a municipal corporation, hereinafter called the second party, WITNESSETH:

WHEREAS: The first party is the record owner of the following described real property in Clackamas County County, State of Oregon, to-wit:

See Exhibit A, attached.

and has the unrestricted right to grant the easement hereinafter described relative to the real estate.

NOW, THEREFORE, in view of the premises and in consideration of $ other value given by the second party to the first party paid, the receipt of which is acknowledged by the first party, it is agreed:

The first party hereby grants, assigns and sets over to the second party an easement, to-wit:

owner of the property described in Exhibit B, attached hereto.

See Exhibit C, attached, a 15 foot wide access easement, providing legal access to Metro's property described in Exhibit B.

Metro intends to maintain the property described in Exhibit B in its natural state pursuant to the Greenspaces Master Plan, which maintenance may include suppressing growth of exotic and nuisance plant species. Younger intends to landscape a portion of the property adjacent to Metro's property and would like Metro to maintain Younger's border so that exotic and nuisance plant species at the border are kept at a minimum.

98-044697

(Insert a full description of the nature and type of easement granted by the first party to the second party.)

(OVER)

The second party shall have all rights of ingress and egress to and from the real estate (including the right from time to time, except as hereinafter provided, to cut, trim and remove trees, brush, overhanging branches and other obstructions) necessary for the second party's use, enjoyment, operation and maintenance of the easement hereby granted and all rights and privileges incident thereto.

Except as to the rights herein granted, the first party shall have the full use and control of the above described real estate.

The second party agrees to save and hold the first party harmless from any and all claims of third parties arising from the second party's use of the rights herein granted.

The period of this easement shall be perpetual, always subject, however, to the following specific conditions, restrictions and considerations:

Younger may relocate the easement upon development of the remainder of Younger's property, described in Exhibit A, so long as the relocated easement is 15 feet wide, insurable and provides similar ease of access to Metro's property, described in Exhibit B. Metro shall have the right to approve the relocation of the easement, which approval shall not be unreasonably withheld.

If this easement is for a right of way over or across the real estate, the center line of the easement is described as follows:

and the second party's right of way shall be parallel with the center line and not more than _____ feet distant from either side thereof.

During the existence of this easement, maintenance of the easement and costs of repair of the easement, if damaged by natural disasters or other events for which all holders of an interest in the easement are blameless, shall be the responsibility of (check one): ☒ the first party; ☐ ~~the second party;~~ ☐ ~~both parties, share and share alike;~~ ☐ ~~both parties, with the first party responsible~~ for _____% and the second party responsible for _____%. ~~(If the last alternative is selected, the percentages allocated to each party should total 100.)~~

During the existence of this easement, holders of an interest in the easement who are responsible for damage to the easement because of negligence or abnormal use shall repair the damage at their sole expense.

This agreement shall bind and inure to the benefit of, as the circumstances may require, not only the parties hereto but also their respective heirs, executors, administrators, assigns, and successors in interest.

In construing this agreement, where the context so requires, the singular includes the plural and all grammatical changes shall be made so that this agreement shall apply equally to individuals and to corporations. If the undersigned is a corporation, it has caused its name to be signed and its seal, if any, affixed by an officer or other person duly authorized to do so by its board of directors.

IN WITNESS WHEREOF, the parties have hereunto set their hands in duplicate on the day and year first written above.

Rocky Younger

FIRST PARTY

STATE OF OREGON, County of MULTNOMAH) ss.

This instrument was acknowledged before me on MAY 20, 1998,

by ROCKY YOUNGER.

This instrument was acknowledged before me on _____, 19 ____,

by _____

as _____

of _____.

OFFICIAL SEAL
GARY L. DE SALVO
NOTARY PUBLIC-OREGON
COMMISSION NO. 045678
MY COMMISSION EXPIRES AUG. 9, 1999

Notary Public for Oregon

My commission expires 8-9-99

SECOND PARTY

STATE OF OREGON, County of _____) ss.

This instrument was acknowledged before me on _____, 19 ____,

by _____.

This instrument was acknowledged before me on _____, 19 ____,

by _____

as _____

of _____.

Notary Public for Oregon

My commission expires _____

The second party shall have all rights of ingress and egress to and from the real estate (including the right from time to time, except as hereinafter provided, to cut, trim and remove trees, brush, overhanging branches and other obstructions) necessary for the second party's use, enjoyment, operation and maintenance of the easement hereby granted and all rights and privileges incident thereto.

Except as to the rights herein granted, the first party shall have the full use and control of the above described real estate.

The second party agrees to save and hold the first party harmless from any and all claims of third parties arising from the second party's use of the rights herein granted.

The period of this easement shall be perpetual, always subject, however, to the following specific conditions, restrictions and considerations:

Younger may relocate the easement upon development of the remainder of Younger's property, described in Exhibit A, so long as the relocated easement is 15 feet wide, insurable and provides similar ease of access to Metro's property, described in Exhibit B. Metro shall have the right to approve the relocation of the easement, which approval shall not be unreasonably withheld.

If this easement is for a right of way over or across the real estate, the center line of the easement is described as follows:

and the second party's right of way shall be parallel with the center line and not more than _____ feet distant from either side thereof.

During the existence of this easement, maintenance of the easement and costs of repair of the easement, if damaged by natural disasters or other events for which all holders of an interest in the easement are blameless, shall be the responsibility of (check one): ☒ the first party; ~~☐ the second party; ☐ both parties, share and share alike; ☐ both parties, with the first party responsible for _____% and the second party responsible for _____%. (If the last alternative is selected, the percentages allocated to each party should total 100.)~~

During the existence of this easement, holders of an interest in the easement who are responsible for damage to the easement because of negligence or abnormal use shall repair the damage at their sole expense.

This agreement shall bind and inure to the benefit of, as the circumstances may require, not only the parties hereto but also their respective heirs, executors, administrators, assigns, and successors in interest.

In construing this agreement, where the context so requires, the singular includes the plural and all grammatical changes shall be made so that this agreement shall apply equally to individuals and to corporations. If the undersigned is a corporation, it has caused its name to be signed and its seal, if any, affixed by an officer or other person duly authorized to do so by its board of directors.

IN WITNESS WHEREOF, the parties have hereunto set their hands in duplicate on the day and year first written above.

_____

_____
FIRST PARTY

STATE OF OREGON, County of _____) ss.

This instrument was acknowledged before me on _____, 19 ____,

by _____

This instrument was acknowledged before me on _____, 19 ____,

by _____

as _____

of _____

_____
Notary Public for Oregon

My commission expires _____

METRO, a muncipal corporation

_____
SECOND PARTY

STATE OF OREGON, County of Multnomah) ss.

~~This instrument was acknowledged before me on _____, 19 ____,~~

~~by _____~~

This instrument was acknowledged before me on May 19, 1998,

by Mike Burton

as Executive Officer

of Metro, a muncipal corporation

OFFICIAL SEAL
V L APRIL OLBRICH
NOTARY PUBLIC-OREGON
COMMISSION NO. 305800
MY COMMISSION EXPIRES OCT 13, 2001

_____
Notary Public for Oregon

My commission expires 10-13-2001

EXHIBIT A

A tract of land in the Samuel Vance DLC No. 51 and being located in the southeast one quarter of Section 5, Township 3 South, Range 2 East, Willamette Meridian, being more particularly described as follows:

Beginning at a brass screw, set in concrete, on the northerly right of way line of Market Road No. 11, South Beavercreek Road, which is located North 39° 62' 50" East 46.20 feet from a 5/8 inch iron rod in a monument box at the point of intersection of the first curve on Market Road No. 11, Survey Record No. LP-060 supplemental map, and which is at the southerly end of the line established by Record Survey P.S. No. 21296, the official survey of judgment Order No. 79-6-427, Circuit Court of Clackamas County; thence North 18° 10' 05" East along the easterly side of the retaining wall, being the line of said judgment survey, 38.48 feet to an angle point; thence North 18° 57' 05" East 28.11 feet to a 5/8 inch iron rod set at the northerly end of said retaining wall; thence North 15° 44' 45" East 120.15 feet to a 2 inch iron pipe with a brass disc on top, marked David Evans and Associates, said point being point "A" mentioned in said judgment document and the north end of said judgment line; thence North 14° 42' 32" West along the easterly line of the Epperson property, 492.02 feet to a 5/8 inch iron rod with a yellow plastic cap on top, marked David Evans and Associates; thence South 74° 52' 24" West 45.35 feet to a 5/8 inch iron rod with a yellow plastic cap on top marked George Cathy L. S. 979; thence South 13° 05' 06" West along the agreement line document between Epperson and Les Schwab, et al, recorded as Fee No. 86-40212, Clackamas County Deed Records, 402.34 feet to a 5/8 inch iron rod with a yellow plastic cap on top, marked Kampe Associates, Inc. at the northwest corner of the Graham Stationary store tract recorded as Fee No. 86-31986, Clackamas County Deed Records; thence South 60° 51' 50" East along the northeasterly line of Fee 86-31986, 131.98 feet to a 5/8 inch iron rod with a yellow plastic cap on top marked Kampe Associates, Inc.; thence South 20° 58' 20" West along the easterly line of Fee 86-31986, 125.95 feet to a 5/8 inch iron rod with a yellow plastic cap on top, marked Kampe Associates, Inc., on the north line of a 10.00 foot wide strip of land conveyed to the City of Oregon City for road purposes, and recorded as Fee No. 86-34381, deed records of Clackamas County; thence Southeasterly around the arc of a 914.93 foot radius curve to the left, through a central angle of 2° 40' 14", an arc distance of 42.64 feet (the long chord of which is South 03° 25' 28" East 42.61 feet) to the westerly line of Fee 68-23282, Clackamas County Deed Records; thence South 19° 27' 28" West along the west line of Fee No. 68-23282, 10.05 feet to the northerly right of way line of Market Road No. 11; thence southeasterly around the arc of a 924.23 foot radius curve to the left, through a central angle of 6° 44' 57", an arc distance of 108.95 feet (the long chord of which is South 68° 11' 60" East 108.89 feet) to the brass screw at the point of beginning.

A tract of land located in the Samuel N. Vance Donation Land Claim No. 51 in Section 5, Township 3 South, Range 2 East of the Willamette Meridian, in the County of Clackamas and State of Oregon, described as follows:

Beginning at the Southeast corner of a tract of land conveyed to George C. Ely, by deed recorded June 4, 1877 in Book N, Page 401, Deed Records; thence North 25°30' West along the East line of said Ely tract, a distance of 255 feet to an iron pipe, said point being the true point of beginning of the tract herein to be described; thence continuing North 25°30' West along the Easterly corner of said Ely tract, a distance of 405 feet to a stone marking the most Northerly corner of a tract of land conveyed to Minnie S. McFee, by deed recorded October 30, 1951 in Book 450, Page 202, Deed Records; thence South 75° West following the Northerly line of said McFee tract, a distance of 160 feet to an iron pipe; thence South 15°10" East, a distance of 470 feet to an iron pipe, said point being Point A as established in conformance to judgment order entered November 4, 1982 and order confirming boundary Commission Report entered February 25, 1983 in Suit, Ruth C. Barber and Minnie S. McFee, plaintiffs vs. Robert Max Epperson and Margaret Joan Epperson, defendants, No. 79-6-427, Clackamas County Circuit Court; thence running along the said established line South 15°47'40" West, a distance of 120.08 feet to a 5/8 inch iron rod at a building corner; thence South 19° West along the most Easterly edge of the building and retaining wall, a distance of 28.16 feet to an angle point in the retaining wall; thence South 18°13' West along said Easterly edge of the building and retaining wall, a distance of 38.48 feet to the Northerly right of way line of the Beavercreek County Road; thence Southeasterly following the Northerly line of said road, a distance of 141.85 feet to the most Southerly corner of said McFee tract; thence North 19° East following the Easterly line of said McFee tract, a distance of 355.8 feet to the true point of beginning.

Together with:

PARCEL 1: A tract of land situated in the Southeast one-quarter of Section 5, Township 3 South, Range 2 East of the Willamette Meridian, in the County of Clackamas and State of Oregon, being more particularly described as follows, to-wit:

Beginning at a 5/8 iron rod at an angle point in the Westerly line of that certain tract of land conveyed to Breck Construction, Inc., Fee No. 79-32547, Deed Records, Clackamas County, Oregon, which iron rod is further identified as being North 25°30' West 255.00 feet from the Southeast corner of a tract of land described in Deed Book "N", Page 401, Clackamas County, Oregon. From said place of beginning; thence South 19°21'14" West 362.30 feet to a 5/8 inch iron rod in the Northerly right of way line of Market Road No. 11; (Beaver Creek Road); thence Easterly along said Northerly right of way line on a curve to the left having a radius of 924.93 feet through a central angle of 0°27'27" a distance of 7.38 feet to a 1/2 inch iron pipe at a point of tangent; thence South 81°21'30" East along said Northerly right of way line of Market Road No. 11 (Beaver Creek Road) 0.65 feet to a 5/8 inch iron rod; thence leaving said Northerly right of way line, North 18°06' East 360.82 feet (Description Exhibit "A" North 19°00' East 355.8 feet, more or less) to the place of beginning.

PARCEL 2: A parcel of land located in the Samuel N. Vance and wife Donation Land Claim No. 51 in Section 5, Township 3 South, Range 2 East, of the Willamette Meridian, in the County of Clackamas and State of Oregon, more particularly described as follows:

Beginning at a 5/8 inch iron rod set by Andy Paris in Private Survey (P.S.) No. 16481 for the Northeast corner of a tract of land conveyed by Eva H. Bennett, husband and wife to Minnie S. McFee as described in Book 450, Page 202 on the 20th of October 1951; thence South 83°26'40" West 159.53 feet to a 5/8 inch iron rod set by Norman N. Oleson in P.S. 15707 for the Northeast corner of the Epperson Parcel,

described in Book 546, Page 56 (Colton to Rippey September 26, 1958); thence South 9°37'30" East 23.53 feet to a 5/8 inch iron rod set by Andy Paris in Said P.S. 16481 for the same Northeast corner of the Epperson Parcel and the Northwest corner of said Book 450, Page 202; thence North 75°00'00" East 160.00 feet to the point of beginning of this description.

Excluding therefrom:

A TRACT OF LAND SITUATED IN THE SOUTHEAST 1/4 OF SECTION 5, T.3S., R.2E., W.M., CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A 5/8 INCH IRON ROD AT THE MOST EASTERLY CORNER OF THAT PARCEL OF LAND CONVEYED TO ROCKY YOUNGER BY WARRANTY DEED RECORDED UNDER FEE NUMBER 97-066827, CLACKAMAS COUNTY DEED RECORDS (SAID POINT BEING ALSO AN ANGLE POINT IN THE WESTERLY LINE OF PARCEL 3, PARTITION PLAT 1996-14, CLACKAMAS COUNTY PARTITION PLAT RECORDS); THENCE ALONG THE EAST LINE OF SAID YOUNGER PARCEL S.20°05'23"W., 147.64 FEET TO A 5/8 INCH IRON ROD WITH YELLOW PLASTIC CAP STAMPED "COMPASS CORP."; THENCE LEAVING SAID EAST LINE N.23°30'51"W., 553.56 FEET TO A 5/8 INCH IRON ROD WITH YELLOW PLASTIC CAP STAMPED "COMPASS CORP." ON THE NORTH LINE OF THE AFOREMENTIONED YOUNGER PARCEL; THENCE ALONG SAID NORTH LINE N.76°33'52"E., 103.42 FEET TO A 5/8 INCH IRON ROD WITH YELLOW PLASTIC CAP STAMPED "DEA" AT THE MOST NORTHERLY CORNER OF THE AFOREMENTIONED YOUNGER PARCEL (SAID POINT BEING ALSO AN ANGLE POINT IN THE WESTERLY LINE OF PARCEL 3, PARTITION PLAT 1996-14, CLACKAMAS COUNTY PARTITION PLAT RECORDS); THENCE ALONG THE EASTERLY LINE OF SAID YOUNGER PARCEL (BEING ALSO THE WESTERLY LINE OF PARCEL 3, PARTITION PLAT 1996-14) S.23°30'51"E., 428.55 FEET TO THE POINT OF BEGINNING CONTAINING 50,000 SQUARE FEET, MORE OR LESS.

EXHIBIT B

A TRACT OF LAND SITUATED IN THE SOUTHEAST 1/4 OF SECTION 5, T.3S., R.2E., W.M., CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

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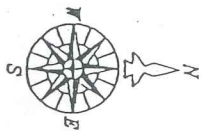
EXHIBIT C





TATE OF OREGON 98-044697
LACKAMAS COUNTY
ecelved and placed in the public
ecords of Clackamas County
ECEIPT# AND FEE: 72965 $50.00
ATE AND TIME: 05/21/98 10:54 AM
OHN KAUFFMAN, COUNTY CLERK

8

Christina Robertson-Gardiner

From: Josh Wheeler
Sent: Monday, March 23, 2026 4:26 PM
To: Christina Robertson-Gardiner; Erik Nichols
Cc: Reah Flisakowski
Subject: RE: Request for Link to Testify at Planning Commission Hearing Tonight

Hello,

I tried calling Reah, but she was unavailable. See my response below in red.

Josh Wheeler, PE
Assistant City Engineer
jwheeler@orcity.org
City of Oregon City
PO Box 3040
13895 Fir Street
Oregon City, Oregon 97045
971-204-4634 Direct or phone & text
971-322-9745 Mobile
971-204-4601 Public Works General
www.orcity.org

PUBLIC RECORDS LAW DISCLOSURE: This e-mail is subject to the State Retention Schedule and may be made available to the public.

From: Christina Robertson-Gardiner <crobertson@orcity.org>
Sent: Monday, March 23, 2026 3:21 PM
To: Erik Nichols <enichols@orcity.org>; Josh Wheeler <jwheeler@orcity.org>
Cc: Reah Flisakowski <rlf@dksassociates.com>
Subject: FW: Request for Link to Testify at Planning Commission Hearing Tonight

This just came in today-

Does the city have a response to the comment I can add to my ppt.?

CRG

From: mike ard <mike.ard@gmail.com>
Sent: Monday, March 23, 2026 2:59 PM
To: Christina Robertson-Gardiner <crobertson@orcity.org>
Subject: Re: Request for Link to Testify at Planning Commission Hearing Tonight

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Christina,

I had a few concerns regarding the traffic study that I wanted to provide for the record. I am a registered professional transportation engineer, I have been preparing and reviewing traffic studies professionally for over 20 years, and I own a transportation engineering consulting business (Ard Engineering).

I want to bring a few things to the attention of the Planning Commission.

1) The trip distribution used by the applicant in their transportation analysis looks generally reasonable, but with some problems. Specifically, they appear to show 5% of residential trips that head south on 99E, but they travel through downtown Oregon City to connect to Highway 99E. In reality, these trips would be far more likely to travel on Warner Milne to South End Road to reach Highway 99W. Similarly, the commercial trips are shown with 10% on Warner Milne, 10% on Holmes Lane, and 5% each on Pearl and Jefferson. I would expect some (perhaps 25%) of the trips shown for Pearl and Jefferson to actually take Warner Milne to Linn Avenue to travel to and from those areas, and most of the trips assigned to Holmes would likely take Warner Milne instead. I prepared the map below to show the area of the city that online mapping software suggests routing via Warner Milne to and from the site. It's a substantial area. Note also that for trips to and from the top of the bluff traveling via Telford and S Center Street, the travel time and distance are the same via either Warner Milne or Holmes Lane, so about half would go each way. The point is that the trip assignment under-estimates the number of trips on Warner Milne that will pass through the Linn Avenue/Leland Road intersection. I would have expected to see analysis there, since it will accommodate more than 20 peak hour trips in reality.
   The City transportation consultant has reviewed the application and found:
   Finding: Complies with Condition. The City's transportation consultant has reviewed the applicant's TIA for this development. They have provided to following findings based on the site's master plan TIA:

- Based on the most recent five years of available crash data (2019 to 2023), critical crash rate calculations, and ODOT SPIS lists, the OR-213/Beavercreek Road intersection was flagged for safety concerns. The TIA notes that since 2023, safety improvements such as signal modifications and improved signage have been completed at this location. As such, no safety mitigations are recommended at this time.
- The development is expected to generate 339 (157 in, 182 out) a.m. peak hour trips, 190 (107 in, 83 out) p.m. peak hour trips, and 2,788 weekday trips. This includes a conservative internal trip capture reduction of 5% in the a.m. peak hour and 25% in the p.m. peak hour, a pass-by rate of 40% for both the a.m. and p.m. peak hours for the Strip Retail (822) land use, and a pass-by rate of 55% for both the a.m. and p.m. peak hours for the Restaurant (934) and Coffee Shop with Drive Through Window (937) land uses.
- Different trip distributions were applied for the commercial and residential land uses.
    - *Commercial Trips (Retail and Fast Food):* Approximately 35% of site trips are expected to travel to/from destinations to the south along Molalla Avenue and Beavercreek Road, and approximately 65% are expected to travel to/from destinations to the north along Molalla Avenue.
    - *Residential Trips:* Approximately 55% of site trips are expected to travel to/from destinations to the south along Molalla Avenue and Beavercreek Road, and approximately 45% are expected to travel to/from destinations to the north along Molalla Avenue.
- Left turn lane warrants were evaluated at future site access intersections. No left turn lane warrants were met.

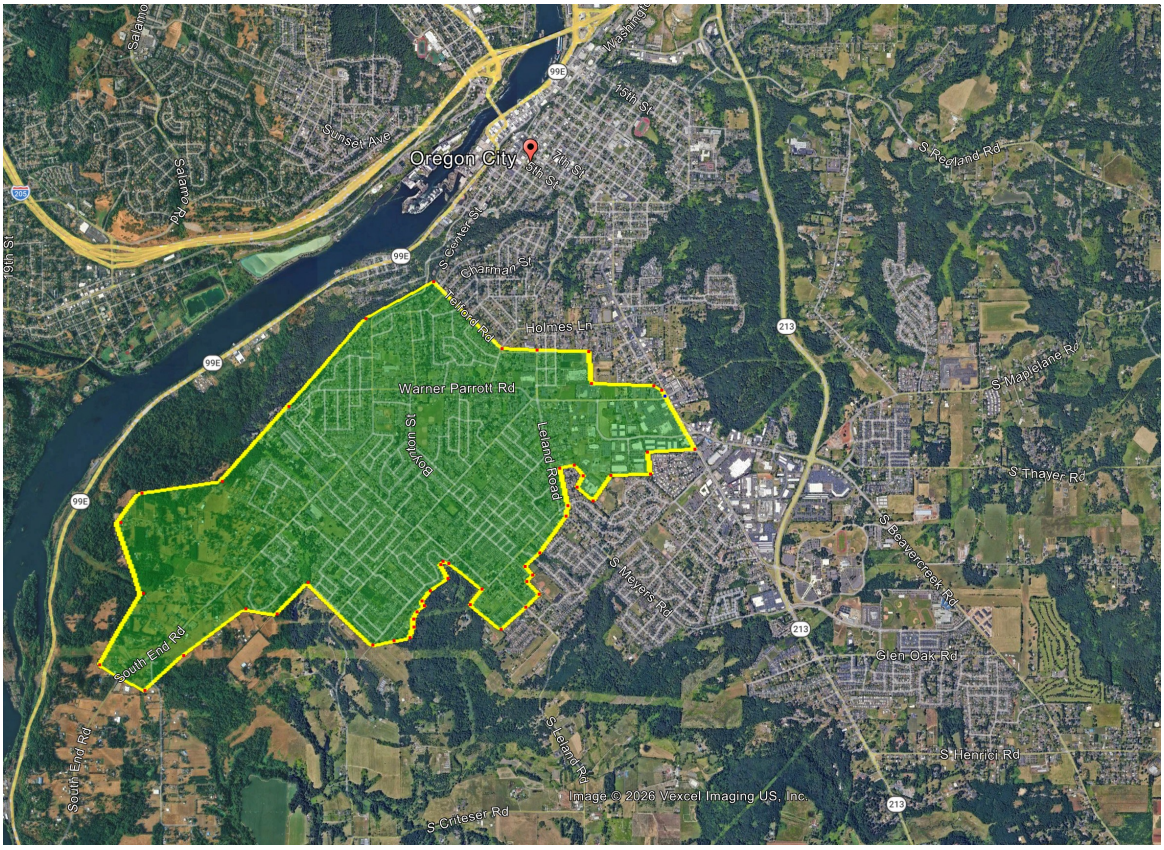
- All study intersections are expected to meet performance standards under all analysis scenarios.
- A queuing analysis showed queue lengths at the Molalla Avenue/Shared Business Driveway (Safeway) intersection are expected to exceed the available storage for the northbound left turning movement under both background and build conditions in the p.m. peak hour. The 95th percentile queue is expected to exceed the available storage by only one vehicle in the p.m. peak hour only. No mitigation is recommended at this time.

The City's transportation consultant also notes the following:

- The TIA does not address the proposed site plan's compliance with access spacing standards or sight distance standards.
- The TIA does not address the proposed development's pedestrian/bicycle routes to the nearest schools in consideration of safe routes to school.
- The TIA does not discuss the project's internal vehicle, pedestrian, and bicycle circulation.

The items noted above typically take into account the whole property, but they do relate to this DDP as final locations of driveways and accessways may be impacted. The applicant shall provide an updated TIA addressing compliance with access spacing standards or sight distance standards, pedestrian/bicycle routes to the nearest schools, and the project's internal vehicle, pedestrian and bicycle circulation.

Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.



2) The crash data shows a very high crash rate (top 5% SPIS list) for the intersection of Highway 213 at Beavercreek and notes that the city has attempted some safety improvements. Since the report was prepared, ODOT has released final data for 2024 that was not included in the traffic analysis. It shows 30

crashes in 2024, which is an increasing crash rate. It may be appropriate to do a detailed analysis of crash types and look for new solutions.
ODOT determined a number of years ago to allow the intersection of 213/Beavercreek to be in a failing condition. The City is currently contracting with a consultant to add a right turn slip lane from Beavercreek west to 213 north which is intended to reduce crashes and improve capacity. Other solutions such as clover leafs and triple lefts have been taken off the table by ODOT. The City did install a traffic warning sign a couple years ago on 213 South with ODOT approval to assist with rear end crashed of those stopped at the traffic light. This application is conditioned to monetarily proportionately contribute to the improvements at 213/Beavercreek.

3) I have heard some talk that a fast-food restaurant on the site may be a "High-Volume Fast-Food Restaurant" as defined by the current 12th Edition of the ITE Trip Generation Manual. This land use category applies to facilities that draw more traffic from a larger area and has about 85% higher trip generation than a standard fast-food restaurant with drive-through.
When this land use applies for approval, they will be required to make any required improvements from their TIA and may contribute proportionately monetarily to the improvements at 213/Beavercreek.

For these reasons, I have some concerns remaining regarding the transportation analysis that was provided for the project.

Thank you,

Michael Ard, PE
(503)537-8511

On Mon, Mar 23, 2026 at 2:42 PM mike ard <mike.ard@gmail.com> wrote:

> Hi Christina,
>
> I would like to have the opportunity to provide some public comments regarding the Molalla Avenue Master Plan (GLUA-25-00025: CU-25-00001, MAS-25-00001, PARK-25-00001-1367) this evening. Can you provide me a Zoom link?
>
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From: mike ard <mike.ard@gmail.com>
Sent: Monday, March 23, 2026 2:59 PM
To: Christina Robertson-Gardiner
Subject: Re: Request for Link to Testify at Planning Commission Hearing Tonight

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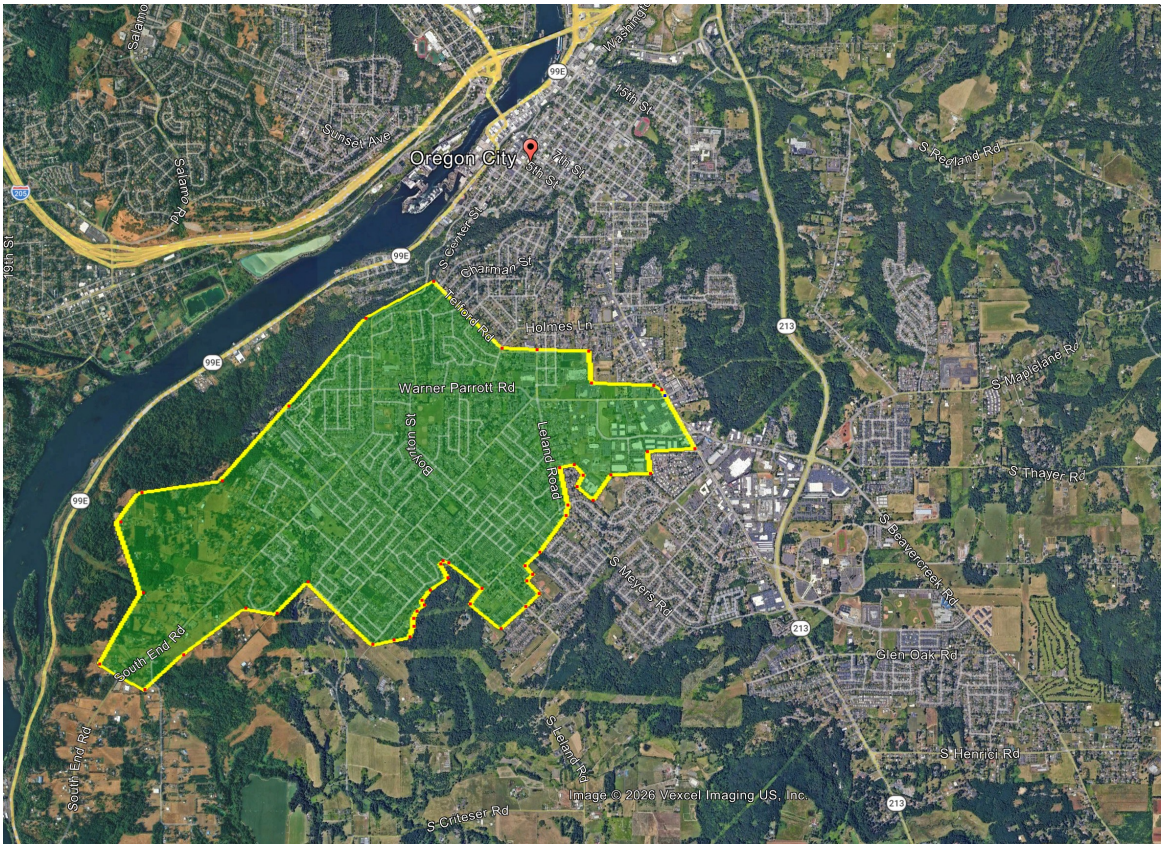

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3) I have heard some talk that a fast-food restaurant on the site may be a "High-Volume Fast-Food Restaurant" as defined by the current 12th Edition of the ITE Trip Generation Manual. This land use category applies to facilities that draw more traffic from a larger area and has about 85% higher trip generation than a standard fast-food restaurant with drive-through.

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Michael Ard, PE
(503)537-8511



Christina Robertson-Gardiner

From: Reah Flisakowski <rlf@dksassociates.com>
Sent: Monday, March 23, 2026 4:24 PM
To: Christina Robertson-Gardiner
Cc: Erik Nichols; Josh Wheeler
Subject: Re: FW: Request for Link to Testify at Planning Commission Hearing Tonight

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I haven't had time to dive into the comments from Mr. Ard but here are my initial thoughts/questions. Overall, an application is required to use the data and resources that are current when the study is conducted and we don't require updates if new data and resources become available prior to the hearing.

1. Trip distribution - It's not clear what data source is being used to determine the alternative trip distribution routes for the project trips. The comment referred to "online mapping software" which is not an established sole source for trip distribution and can be influenced significantly by time of day. I'm assuming the online mapping software is Google maps using the routing feature but I'm not sure. A review of existing intersection turn movement counts, aggregated Big Data and the regional models are other tools to be considered. It's unclear if changes to trip distribution would result in any intersection capacity issues or new conditions of approval.

2. Crash Data - The 2024 data set was not available when the transportation study was conducted. An increase in crash rate does not suggest a new mitigation is needed. ODOT and the city have planned improvements at the intersection to address safety and congestion. It's unlikely that an analysis of 2024 safety data would change the planned improvements or add conditions of approval to the application (who is paying a proportionate share fee to improvements at the intersection).

3. ITE 12th Edition trip rates were not available when the transportation study was conducted. The comment doesn't provide clear information on what 12th edition land use category would be appropriate for the application or how it would change the trip generation estimate and intersection analysis.

Let me know how the hearing goes, I can look into this more if needed.

Reah Flisakowski, PE | Senior Project Manager, Portland Planning Business Development Manager
Direct: 503-972-1203 | Mobile: 503-473-3362 | Email: rlf@dksassociates.com

1050 SW 6th Ave, Suite 600 | Portland, OR 97204 | 503.243.3500
dksassociates.com

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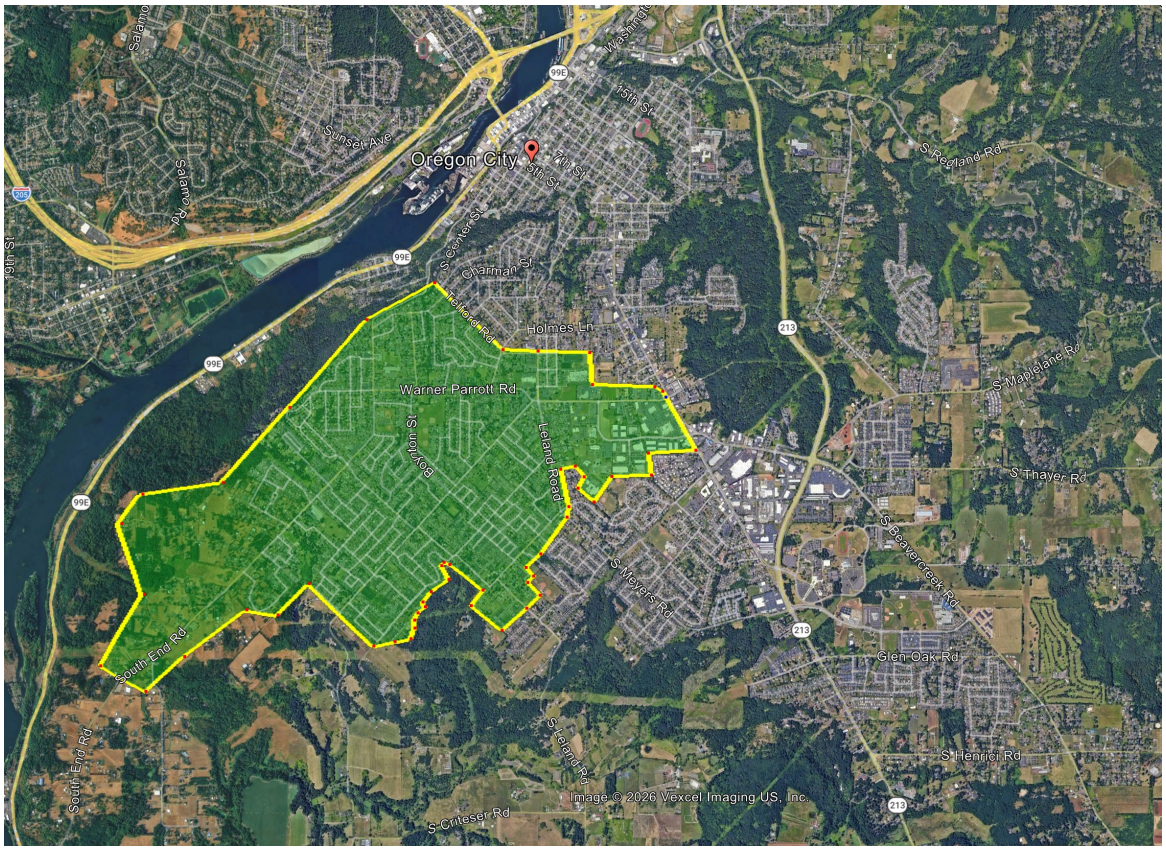

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Thank you,

Michael Ard, PE

(503)537-8511



On Mon, Mar 23, 2026 at 2:42 PM mike ard <mike.ard@gmail.com> wrote:

> Hi Christina,
>
> I would like to have the opportunity to provide some public comments regarding the Molalla Avenue Master Plan (GLUA-25-00025: CU-25-00001, MAS-25-00001, PARK-25-00001-1367) this evening. Can you provide me a Zoom link?
>
> Thank you,
>
> Michael Ard, PE
>
> (503)537-8511
>
> 

SUPPLEMENTAL FINDINGS

Masterplan GDP and DDP approval for Mixed Use development at 1367 Molalla Avenue

File Nos: GLUA-25-00025: CU-25-00001, MAS-25-00001, PARK-25-00001-1367
GLUA-25-00025: MAS-25-00002, GEO-25-00007, NROD-25-0012

The purpose for these supplemental findings is to provide some additional response to testimony received and explanation for revisions to conditions of approval that relate to both decisions.

On March 20, the City received testimony from Metro expressing concerns about how this development would impact Metro's Newell Creek Canyon Nature Park and Natural Area located on Tax Lot 210, east of the subject development.

1) Metro's Easement

Metro has expressed concerns that the proposed development adversely impacts Metro's access to its TL 210 which it claims is guaranteed by a private easement. The City's role here is not to interpret or protect easement rights between private property owners. Rather, its sole role is to review applications for compliance with the applicable approval criteria. No law or other criterion demands that the City guarantee this privately negotiated access.

That said, nothing in this approval shall preclude Metro from obtaining access to its TL 210, Metro Newell Creek Canyon Nature Park. This access may occur upon the public road proposed on TL 500 or include the provision of any stubbed improvements at the northeast corning of TL 500 as necessary to accommodate gated access. The owner of TL 500 is encouraged to seek and obtain a driveway access permit allowing for gated access to TL 210 as may be required to fulfill any easement obligations it may have.

2) The Location of the Shared Use Path

[This finding is added to the GDP approval and will also replace the DDP findings discussing the shared use path on pp 38-39.]

Approval of a general development plan requires a finding that the application is in compliance with the Oregon City Comprehensive Plan. OCMC 17.65.050.C.6. The City's Transportation System Plan is an ancillary component part of the Comprehensive Plan. The City's TSP project S28 identifies a shared use path running north and south along the east side of this property. The purpose of this path is to connect development on this property and throughout the Hilltop Area to the Newell Creek Nature Park, whose access is

located one block north of the subject property. This multimodal path will provide direct access to the 208-unit multi-family residential component on Parcel B as well as serve as a resource for employees and customers of the adjacent businesses.

Goal 1 of Chapter 3 of the Comprehensive Plan provides:

> "Provide a safe, comfortable, and accessible transportation network that serves all modes of travel, including non-motorized modes."

The proposed location of the shared use path as proposed is below the development Parcel B below the top of the hillside and will not be visible to the general public. This is a problem because its lack of visibility will compromise its accessibility but more importantly, could create nuisance concerns. For this reason, the City finds that the proposed path location will not result in a pedestrian connection that is safe and comfortable for public use. In order to satisfy the TSP as well as the Comprehensive Plan, revised conditions of approval are proposed which require that a revised design for the multiuse path be submitted as part of the DDP for Parcel B. The revised design shall include a minimum paved 7-foot width that is ADA accessible and lighted to satisfy OCMC 16.12.032.D standards and most importantly, it is at a similar grade such that it is visible from the development at Parcel B. Added benefits of this approach move the path further away from mapped geologic hazards, avoid providing ADA access for complicated grade changes, can take advantage of parking lot lighting from the Parcel B development and will reduce maintenance concerns. With these conditions, the development will provide a safe and comfortable pedestrian / bicycle connection in compliance with the TSP that is will strengthen the wellbeing of future residents and users of this development.

Revisions to and proposed new conditions include:

Master Plan- MAS-25-00001,CU-25-00001, PARK-25-00001
Share Use Path (S28)-NEW
17. The proposed location of the shared use path (S28), (sheet x) is located below the development on Parcel B in a narrow bench of the hillside that is not visible to the general public which will, as designed and built, create an attractive nuisance and public safety concerns and conflicts with the community's comprehensive plan policies to support design that is to strengthen wellbeing, quality of life, and livability across all Oregon City neighborhoods by creating places that are safe and comfortable with convenient access to community services. The applicant shall remove the path from MAS-25-00002, GEO-25-00007, and NROD-25-00012 (DDP) and resubmit a revised design at the time of DDP development for Parcel B. The revised design of S28 requires a minimum paved 7-foot-wide path that is ADA accessible, lit to the standards of 16.12.032.D, at a similar grade and visible from the development on Parcel B, and designed to connect to the northern property line, which will be extended at a future time to Hilltop Avenue.

Detailed Development Plan - GLUA-25-00025: MAS-25-00002, GEO-25-00007, NROD-25-0012

Share Use Path (S28) – REVISED

~~20.The new shared use path shall transition from the curbed path along the new road to the existing bicycle lane along Beavercreek Road either through modification of the existing ADA ramp or by other means evaluated during technical design review. (DS)~~
21. The applicant shall construct their portion of TSP Project S28 within Parcel C (shared use path) as a public 7-10-foot paved off-street ADA compliant pedestrian/bicycle accessway with lighting and landscaping as regulated by code for the portion on TL 3200 and 3400 per OCMC 16.12.032 standards.
~~22. The applicant shall continue the paved shared-use path (S28) from TL 500/501 to the northern property line of TL 3200. (DS)~~
~~23. The Shared-use Path S28 (accessway) shall be a paved 7-foot-wide path within TL 3400 and 3200 where it deviates from the proposed street. (DS)~~
~~24. The applicantlayout of the proposed development shall provide a lighting plan showing that the shared-use path accessway are lit to the standards of 16.12.032.D. (DS)~~
~~25. The portion of S28 that deviates from the expanded sidewalk on TL 500/501 is an off-street pedestrian and bicycle accessway and shall comply with Americans with Disabilities Act (ADA) standards. (DS)~~
~~26. The portion of S28 on TL 3400 and 3200 shall be landscaped per OCMC 16.12.032.F standards. (DS)~~
~~27. The shared-use path S28 shall be paved with all-weather materials (e.g. asphalt, concrete, etc.) approved by the City Engineer. (DS)~~
~~28. The construction of S28 within TL 3400 and TL 3200 shall be completed prior to occupancy of Parcel B.~~

3) Stormwater Drainage

With respect to Metro's comment on Storm water discharge, the applicant must follow the Oregon City Stormwater and Grading Design Standards. These standards requirement volume control and water quality. Condition #2 requires the applicant to follow the Stormwater and Grading Design Standards prior to receiving a permit. Furthermore, the applicant is connecting to a 48" outfall pipe which conveys water onto Metro's property. Oregon Drainage Law states that stormwater discharges should be conveyed in the direction of the existing topography in the undisturbed state of the land. The existing land drains towards Metro's property. The Stormwater and Grading Design Standards and Oregon Drainage Law ensure stormwater is not conveyed at any higher volume or velocity that in the existing condition. This will be addressed during detailed design permit review as Conditioned.

Public Works
13895 Fir Street | Oregon City OR 97045
Ph (971) 204-4601

March 24, 2026

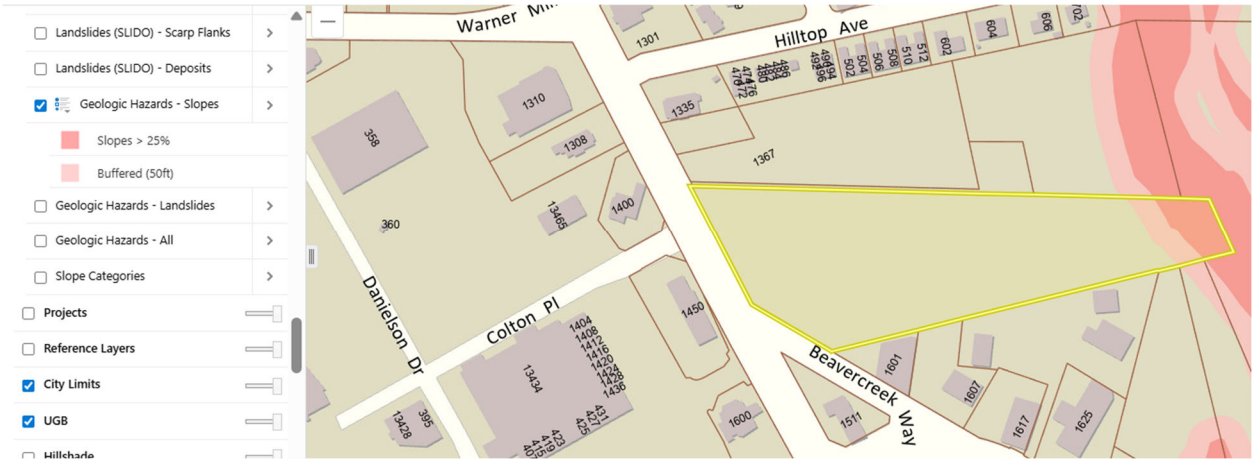
Cypress Acquisitions, LLC
8144 Walnut Hill Lane, Suite 1200
Dallas, TX 75231

RE: 1367 Molalla Mixed Use Development
GLUA 25-00025, MAS-25-00002, GEO-25-00007, NROD-25-00012

To Whom it May Concern,

In reviewing your application for the subject site, our geotechnical engineer has recently brought to our attention that the GDP / DDP development applications assume a geologic hazards protection area, based on the top of the slope, that is not consistent with the Geologic Hazards Overlay Zone that is mapped and regulated pursuant to OCMC 17.44. Staff now believes that accurate application of the City's geologic hazard development standards will have a significant impact on your development.

In July 2021, the City Commission adopted revisions to OCMC 17.44 Geologic Hazards. Pursuant to these amendments, the protections were enhanced to include mapped areas based on historic landslides as well as a buffer zone around the landslide. More specifically, OCMC 17.44.025 minimizes any development within the mapped Geologic Hazards Overlay Zone. All limitations on development are keyed from these mapped areas. The areas designated in the map are specifically defined in OCMC 17.04.515 but they are also depicted in the City's GIS mapping as shown:





What these maps show is that the steep slopes and associated buffer of the Geologic Hazard Overlay Zone impact the eastern portion of the subject property and the landslide deposits and associated buffer of the Geologic Hazards Overlay Zone further impacts the eastern portion of the subject property to a much greater degree than what is reflected in your application materials.

For development within the mapped landslide buffer, the following limitations apply:

OCMC 17.44.060.H.2.a.
For those areas with historic landslides where the structure or ground disturbance will be located within any portion of the mapped landslide or buffer zone, the density shall not exceed two dwelling units per acre except as otherwise provided in subsection I of this section;

OCMC 17.44.060.I.
For properties with slopes of twenty-five to thirty-five percent between grade breaks or are located within any portion of a mapped landslide and buffer zone:

1. *For those portions of the property with slopes of twenty-five to thirty-five percent or located within any portion of a mapped landslide and buffer zone, the maximum residential density shall be limited to two dwelling units per acre; provided, however, that where the entire site is less than one-half acre in size, a single dwelling shall be allowed on a lot or parcel existing as of January 1, 1994 and meeting the minimum lot size requirements of the underlying zone;*
2. *An individual lot or parcel with slopes between twenty-five and thirty-five percent or located within any portion of a mapped landslide and buffer zone, shall have no more than fifty percent or four thousand square feet of the surface area, whichever is smaller, graded or stripped of vegetation or covered with structures or impermeable surfaces.*

Based on the code and the maps and the proposed site plan, it appears the proposed apartment buildings may exceed the standard of a maximum of 2 dwelling units per acre. If

the apartment buildings are fully outside of the landscape buffer layer, then there are no density constraints.

Based on the code and the maps and the proposed site plan, it appears the proposed development will exceed 4,000 sf of disturbed area (or area that is graded). It appears the parking lot, roadway, and stormwater management area exist within the landslide deposit buffer. The site would need to be redesigned so that a maximum of 4,000 sf of the surface area is graded or stripped of vegetation or covered with structures or impermeable surfaces. There is no adjustment or variance available to alter these strict development limitations.

City staff is working to determine the appropriate modifications of the conditions of approval for the current GDP and DDP applications to largely defer how development on Parcel B can occur through its DDP review while recommending approval of the current GDP and DDP applications. It seems unlikely that this project could be redesigned within the current limited decision timeline but City staff would support such extension, if pursued. Again, staff understands that this is a significant revision raised late in the process. However, City staff's primary obligation is the accurate application of the OCMC. City staff is prepared to meet to discuss this information and any concerns early next week.

GLUA-25-00025:
Master Plan-CU-25-00001, MAS-25-00001, PARK-25-00001
DDP-Street -MAS-25-00002, GEO-25-00007, NROD-25-00012

1367 Molalla Ave

Planning Commission March 23, 2026

Christina Robertson-Gardiner, Senior Planner



GLUA 25-0025 Approval Process

Master Plan- Framework Approach- Parking Adjustment, Drive Through Conditional Use –Type III
MAS-25-00001,CU-25-00001, PARK-25-00001

Detailed Development Plan for Parcel C- Street Type II- Concurrent Review
MAS-25-00002, GEO-25-00007, NROD-25-00012

One presentation- two staff reports

Public Comment

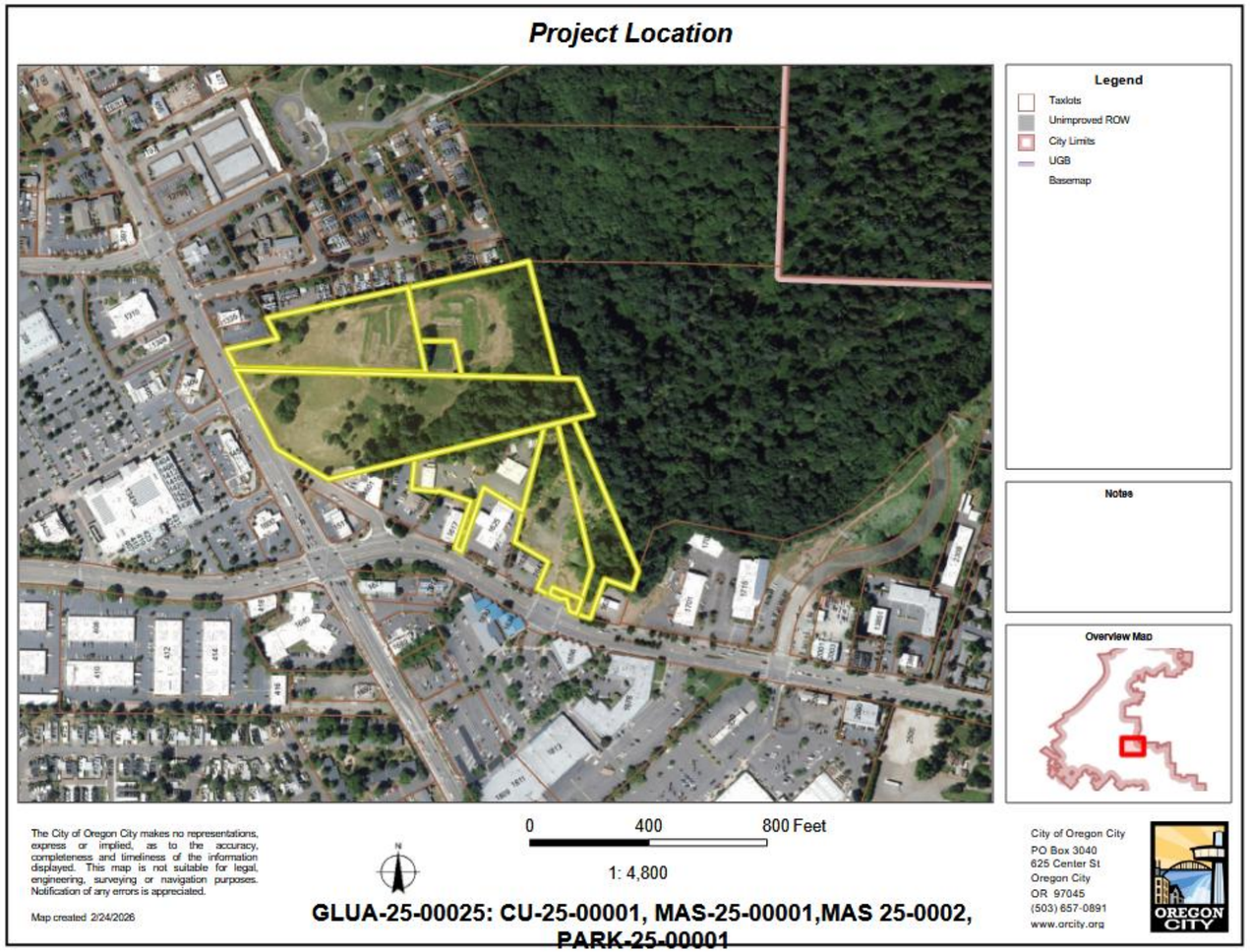
ODOT- supports transportation recommendations and proportional share contributions for the intersection improvements at OR 213/Beavercreek Road.

Metro- submitted concerns about three topics

- Location of the shared use path
- Ensuring access to their gate on Tax Lot 500 (Younger)
- Stormwater outfall.

Mike Ard- Transportation Analysis

Analysis and response to comments are included later in the presentation.





1367 Molalla Ave

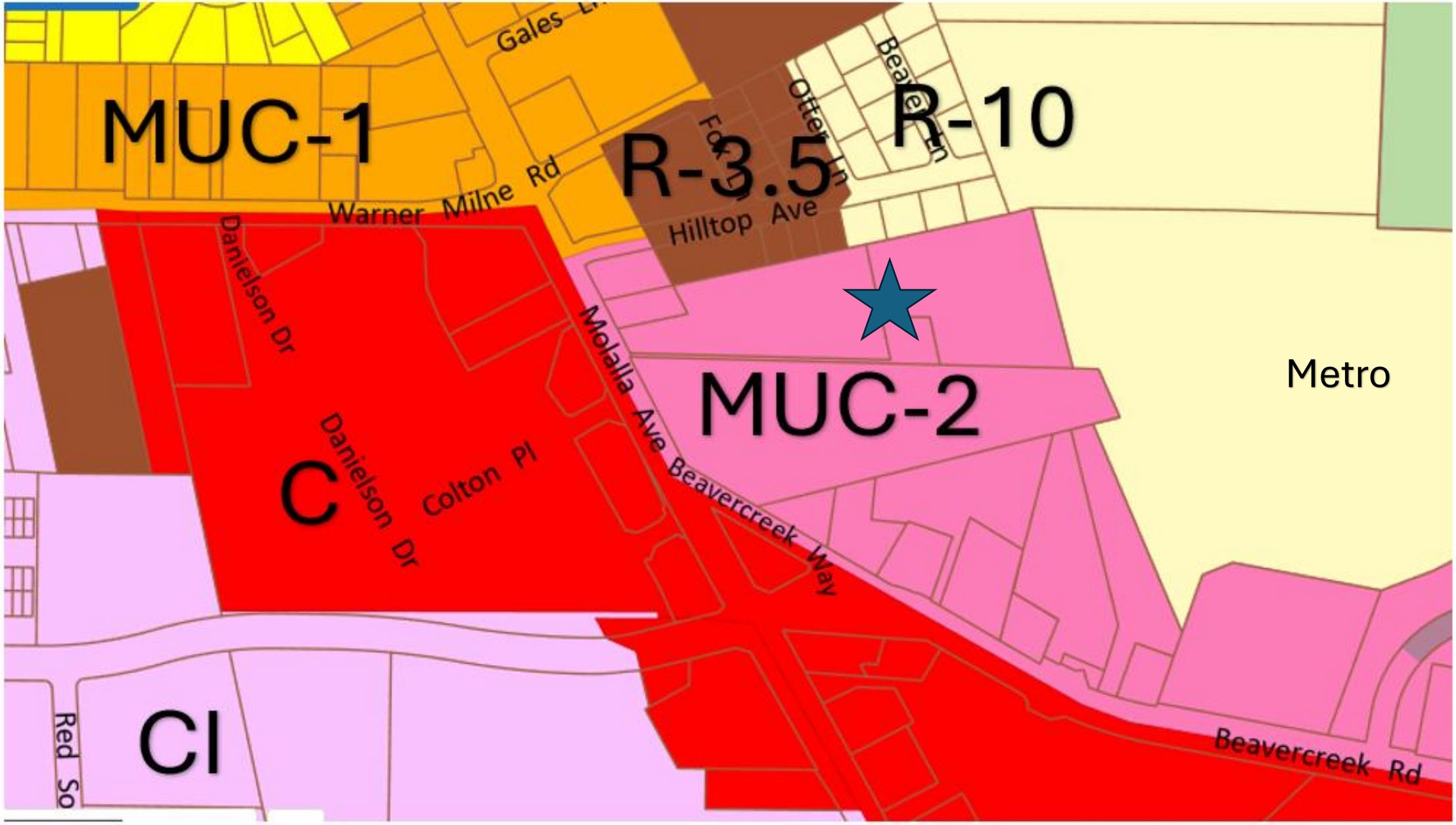


Figure 3. Adjacent Zoning. Mixed Use Corridor (MUC-1) and (MUC-2), Low Density Residential R-10, Medium Density Residential R3.5, Campus Industrial CI, General Commercial-C.

Summary of Master Plan Elements (GDP

- Creation of 4 development parcels
  - Parcel A: Retail,
  - Parcel B: Multi-Family,
  - Parcel C: New Public Road,
  - Parcel D: Quick Serve Restaurant
- Review of Transportation Impact Analysis for the full site
- Review of public road and utility location, site grading.
- Conditional Use Review for two drive-thru facilities (Parcels A and D)
- Parking Maximum Adjustment (Parcels A and D)

Clarifying the future DDP process for parcel building out

- 20-year Master Plan (TLs 3330,3400,3200,3201)
- Can use the code effective at the time of Master Plan submittal, or the current code at the time of DD submittal, for each parcel
- Specific uses are not tied to the Master Plan Approval, but any revision must be reviewed to see if it affects any Master Plan conditions of approval.
- No Master Plan adjustments are being requested. Each DDP must meet the Type II development process or return to the Planning Commission for a Master Plan adjustment request.

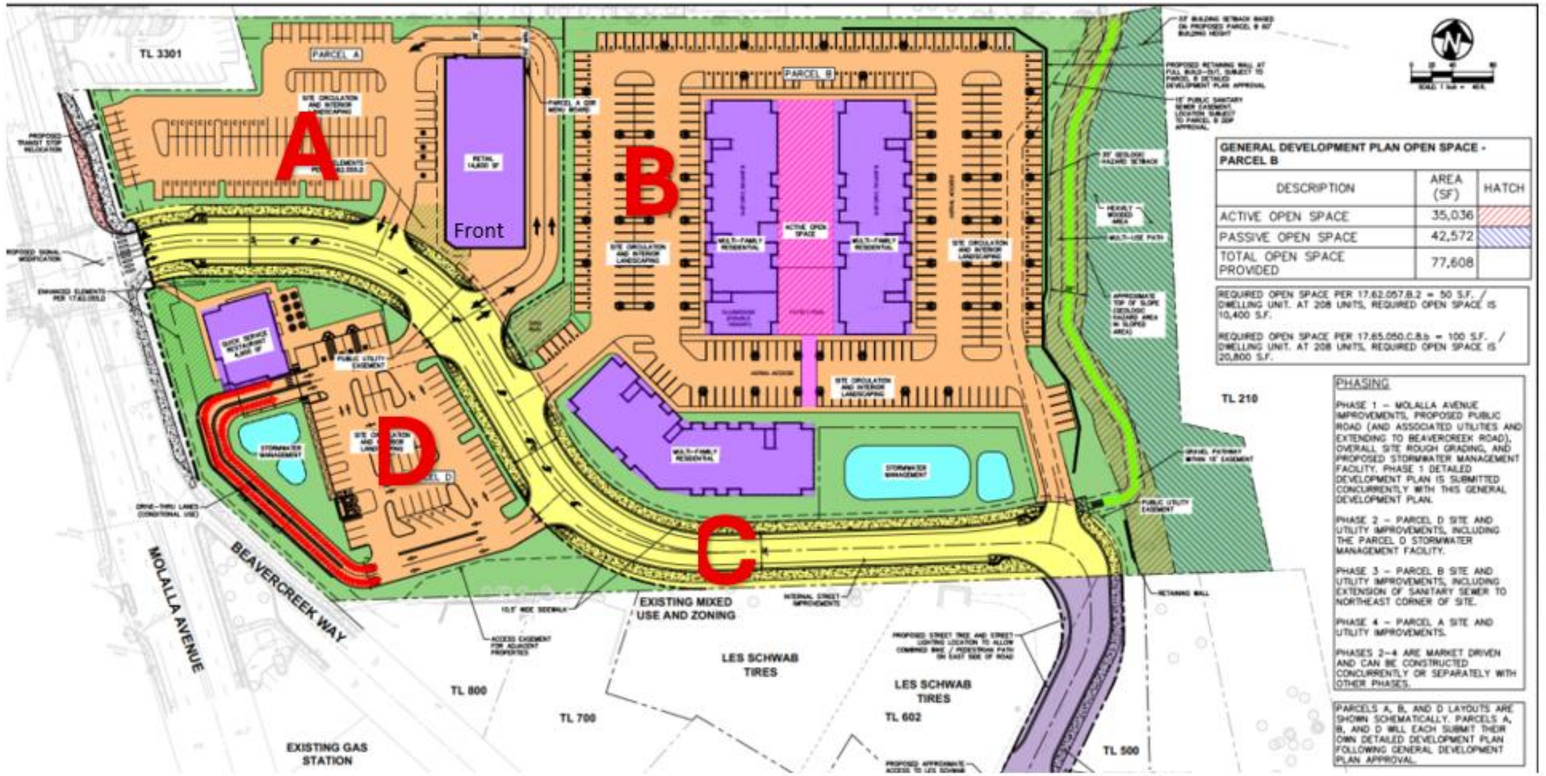


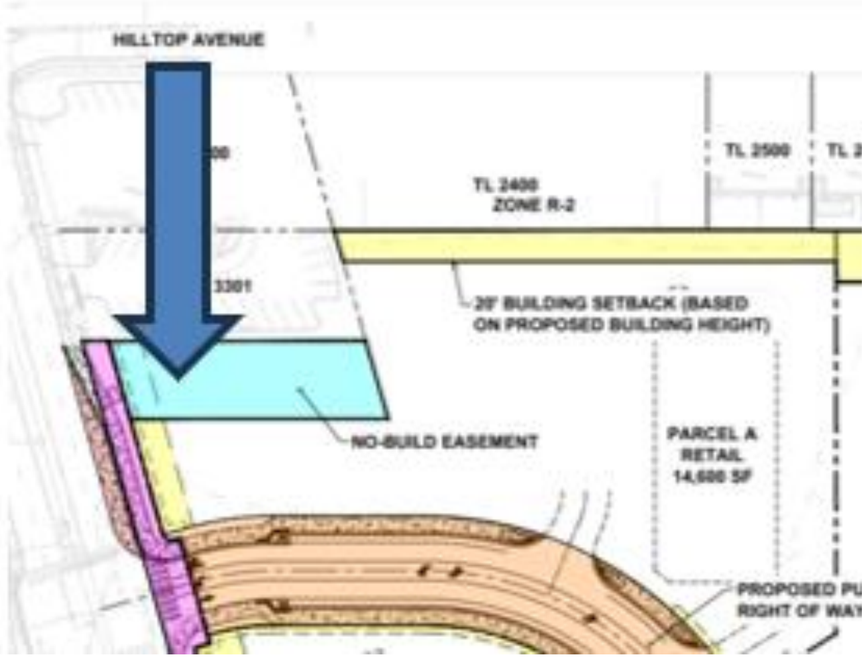
Figure 4: Proposed Master Plan **Parcel A**: Retail**, Parcel B**: Multi-Family, **Parcel C**: New Public Road, **Parcel D:** Quick Serve Restaurant

Two requests in the proposal specifically require Planning Commission review: drive-through facilities and adjustments to the parking maximums for parcels A and D. Staff has found that both requests are reasonable, well-designed, and can meet the criteria for approval with the enclosed conditions.

The Planning Commission should focus its deliberation on these two questions:

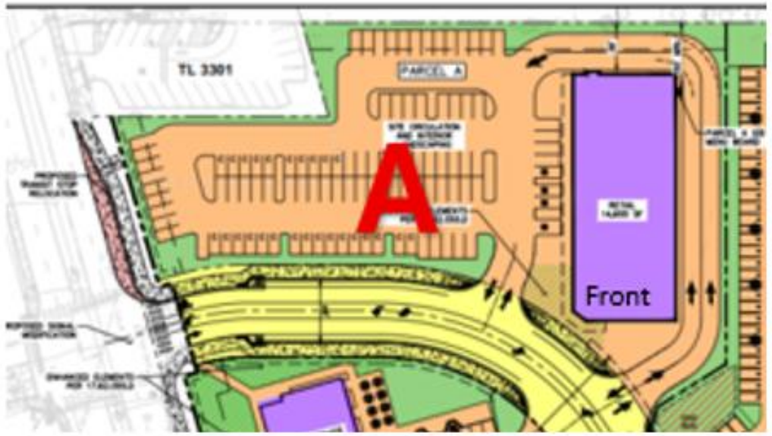
1. Has the applicant adequately demonstrated a need for an adjustment to the maximum parking standard on parcels A and D, and have any adverse effects been mitigated?
2. Has the applicant designed drive-through facilities on Parcels A and D that are safe, contain adequate queue storage, and have any adverse effects been mitigated?

Parking Adjustment- Parcel A





Previous Design- Specialty Grocer



Revised Design- Multi-Tenant Commercial

Parking Adjustment- Parcel A

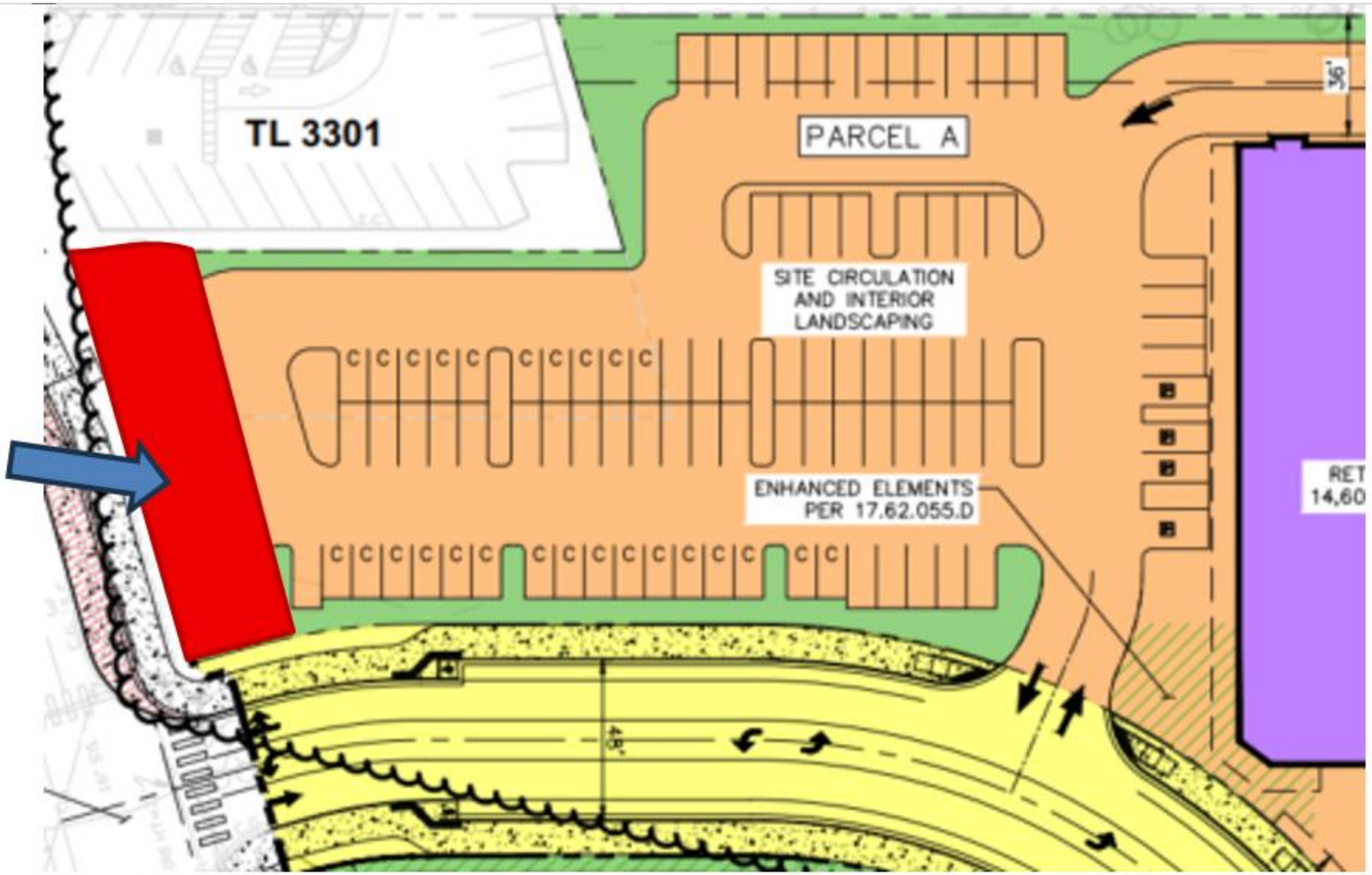


Figure 7 illustrates in red the location of additional enhanced landscaping and the removal of parking to comply with the mitigation requirements for the parking adjustment of Parcel A. This change will eliminate 7-9 parking spaces from the proposed total of 102 spaces.

Staff believes the design is a reasonable approach for the lot, and since no tenants have been identified for this parcel, a parking maximum is not warranted. Instead, staff views the approach as allowing additional parking in the no-build/constrained area of the parcel, subject to enhanced landscaping to create a gateway to the site (Condition of Approval; #14) along Molalla Avenue, which will require removing 7-8 parking spaces

Parking Adjustment- Parcel D- Quick Service Restaurant



Figure 8 illustrates the locations of the proposed and conditioned (in red) enhanced landscaping to comply with the mitigation requirements for the parking adjustment and the drive-through facility on Parcel D.

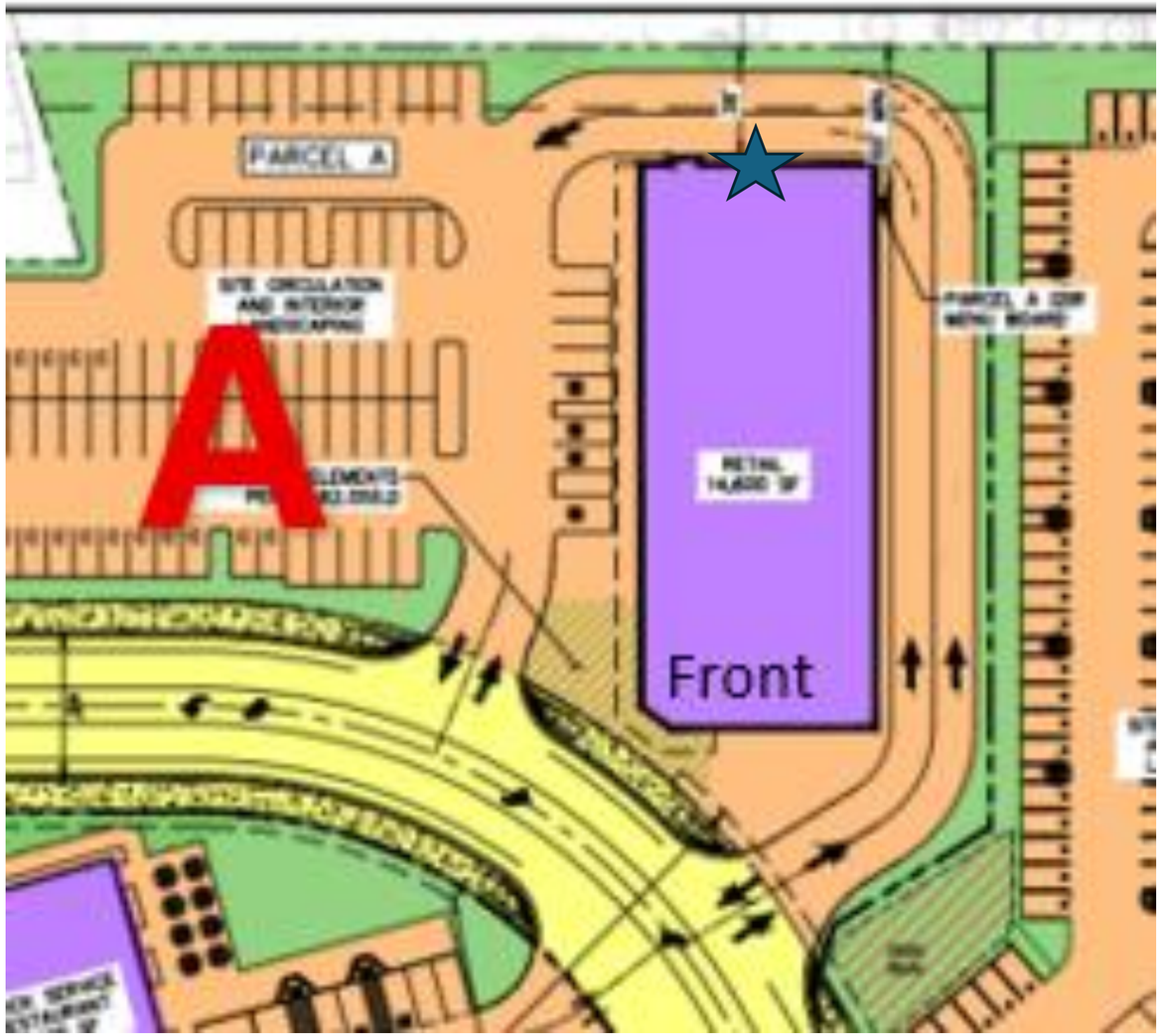
Because the new public road separates Parcels A and D, a shared parking approach is unlikely and impractical.

Allowing an increase in the maximum parking for Parcel D ensures sufficient customer parking for higher-traffic restaurants that lack a larger street connection to the neighborhood, which has limited on-street parking and does not have access rights for customers to use nearby commercial development for parking.

Subject to enhanced landscaping to create a gateway to the site (Condition of Approval; #14)

Conditional Use Driveway Facility Parcel A

The Planning Commission can consider each development separately, conduct a context-sensitive review, and place reasonable conditions on the proposal



Staff notes that the drive-through facility locations have been thoughtfully designed to ensure safety and prevent queues from blocking public roads.

- The associated uses are permitted in the zone;
- The drive-throughs are located on the side and rear
- The buildings are not exclusively dedicated to drive-through traffic.

The drive-thru facility on Parcel A may be used by one or more tenants if, through the Detailed Development Review Process, it can be demonstrated that there is adequate queue storage for an additional tenant.

Conditional Use Driveway Facility- Parcel D

The Planning Commission can consider each development separately, conduct a context-sensitive review, and place reasonable conditions on the proposal

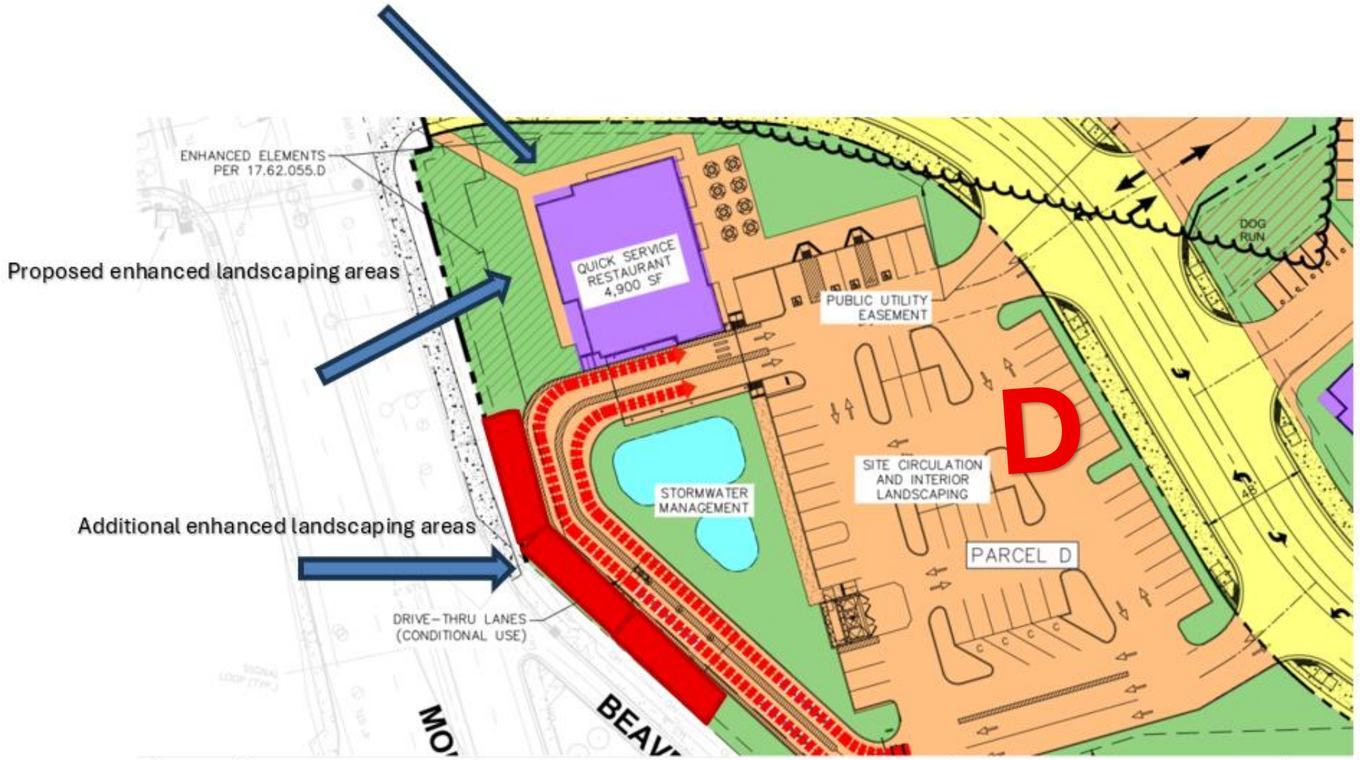


Figure 8 illustrates the locations of the proposed and conditioned (in red) enhanced landscaping to comply with the mitigation requirements for the parking adjustment and the drive-through facility on Parcel D.

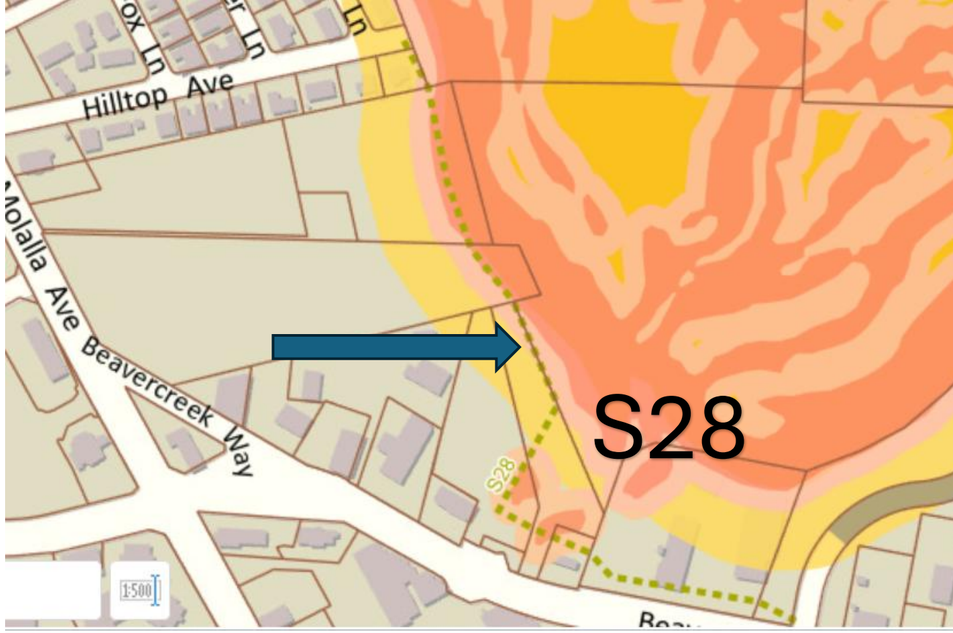
- The associated uses are permitted in the zone;
- The drive-throughs are located on the side and rear
- The buildings are not exclusively dedicated to drive-through traffic.

Subject to enhanced landscaping to create a gateway to the site (Condition of Approval; #14)

At the time of the DDP review, the applicant will be required to implement an on-site and off-site opening-day pedestrian and vehicular circulation and safety plan to address additional traffic congestion and concerns regarding vehicle queuing on opening day.

Master Plan Utility Analysis

See additional emails from Josh Wheeler, DKS



Transportation

Shared-use path location

Transportation impact analysis

Stormwater

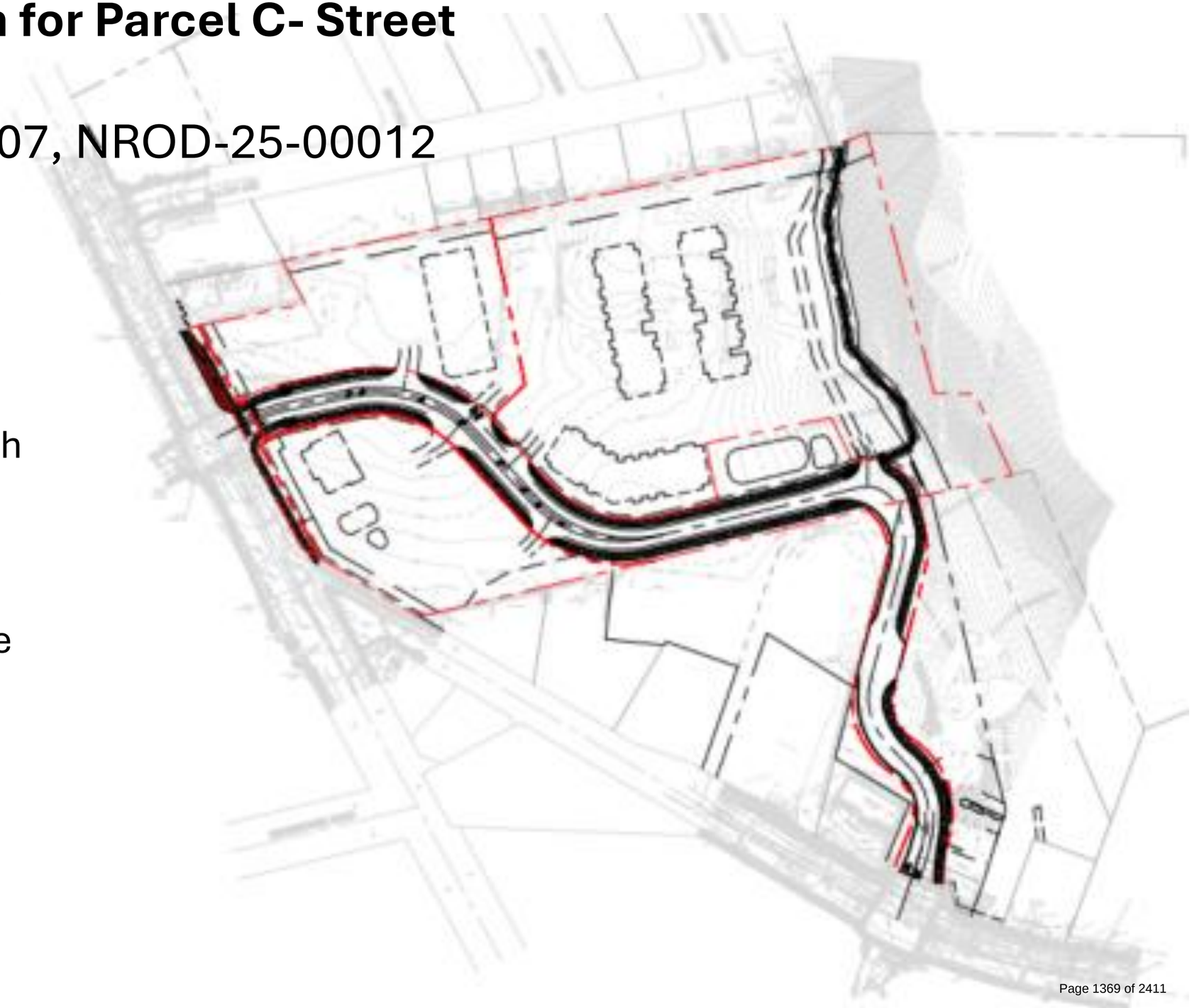
Discharge design and location

See additional emails from Josh Wheeler, DKS

Detailed Development Plan for Parcel C- Street
Type II- Concurrent Review

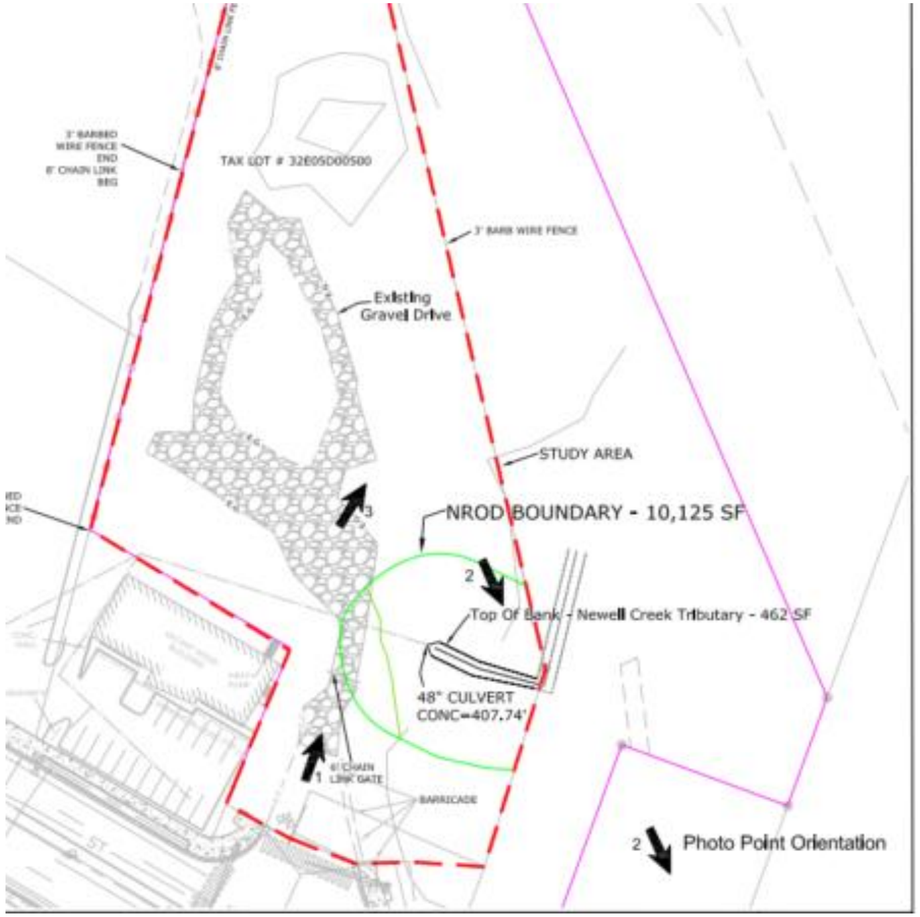
MAS-25-00002, GEO-25-00007, NROD-25-00012

A Detailed Development Plan for the construction of a new public road (parcel C) and utilities has been submitted concurrently with the Master Plan. The staff report will be part of the Planning Commission hearing and can be approved at the same time as the Master Plan.



Detailed Development Plan for Parcel C- Street
Type II- Concurrent Review
MAS-25-00002, GEO-25-00007, NROD-25-00012

Natural Resource Overlay District



Geologic Hazards Overly District



Response to Metro Comments

Location of the shared-use path
The shared-use path has been reviewed as part of the DDP and can meet the requirements of the geohazard zone, as conditioned. However, additional design work is still needed on the applicant's end to ensure compliance. Based on recent public comment, the city has reviewed the path location against the master plan policies for consistency with the Comprehensive Plan and finds that there is an adequate nexus to require a redesign on Parcel B.

Ensuring access to their gate on Tax Lot 500 (Younger)
The Metro easement is a private easement that the city cannot compel access to. The applicant can apply for a driveway access permit on Tax Lot 500 at any time during or after the construction process.

Stormwater outfall.
The stormwater code regulates stormwater flow to remain within the basin, ensuring it is released at pre-development rates. Staff conducted this analysis and established conditions reflecting these requirements.

Master Plan- MAS-25-00001,CU-25-00001, PARK-25-00001

Share Use Path (S28)-NEW

17. The proposed location of the shared use path (S28), (sheet x) is located below the development on Parcel B in a narrow bench of the hillside that is not visible to the general public which will, as designed and built, creates an attractive nuisance and public safety concerns, and conflicts with the community's comprehensive plan policies to support design that is to strengthen wellbeing, quality of life, and livability across all Oregon City neighborhoods by creating places that are safe and comfortable with convenient access to community services. The applicant shall remove the path from MAS-25-00002, GEO-25-00007, and NROD-25-00012 (DDP) and resubmit a revised design during DDP development for Parcel B. The revised design of S28 requires a minimum paved 7-foot-wide path that is ADA accessible, lit to the standards of 16.12.032.D, at a similar grade and visible from the development on Parcel B, and is designed to connect to the northern property line, which will be extended at a future time to Hilltop Avenue.

Detailed Development Plan for Parcel C- Street

MAS-25-00002, GEO-25-00007, NROD-25-00012

Share Use Path (S28)

~~20.The new shared use path shall transition from the curbed path along the new road to the existing bicycle lane along Beavercreek Road either through modification of the existing ADA ramp or by other means evaluated during technical design review. (DS)~~

21. The applicant shall construct their portion of TSP Project S28 within Parcel C (shared use path) as a public 7-10-foot paved off-street ADA-compliant pedestrian/bicycle accessway with lighting and landscaping as regulated by code. ~~for the portion on TL 3200 and 3400 per OCMC 16.12.032 standards~~.

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~~26. The portion of S28 on TL 3400 and 3200 shall be landscaped per OCMC 16.12.032.F standards. (DS)~~

~~27. The shared-use path S28 shall be paved with all-weather materials (e.g. asphalt, concrete, etc.) approved by the City Engineer. (DS)~~

~~28. The construction of S28 within TL 3400 and TL 3200 shall be completed prior to occupancy of Parcel B.~~

Master Plan- MAS-25-00001,CU-25-00001, PARK-25-00001

Enhanced Landscaping in Parcel A- technical revision to condition.

14. Two enhanced landscaping locations are required. Required trees shall be placed as determined feasible, and species with a smaller final height may be used through a sight distance and vision clearance study for all required turning movements at the local road intersection with Molalla Ave and a powerline utility encroachment analysis to ensure safety to be installed before receiving a Certificate of Occupancy for their respective parcels. The enhanced landscaping on Parcels A and D is shown in Figures 8 and 9 of the staff report. The following enhanced landscaping areas (both proposed and conditioned) shall meet the landscaping standards of OCMCM 17.62.050, can be included in the minimum landscaping requirements of the parcel, and include the following elements:

Staff Recommendations

Approve both applications with the revised staff conditions as outlined in the presentation.

Planning Commission Options.

1. Approve the proposal with revised conditions (staff recommendation)

2. Approve the proposal with modified conditions and provide revised findings

3. Deny the proposal and provide revised findings.

4. Continue the hearing and request more information.

GLUA-25-00025:
Master Plan-CU-25-00001, MAS-25-00001, PARK-25-00001
DDP-Street -MAS-25-00002, GEO-25-00007, NROD-25-00012

1367 Molalla Ave

Planning Commission April 13, 2026

Christina Robertson-Gardiner, Senior Planner

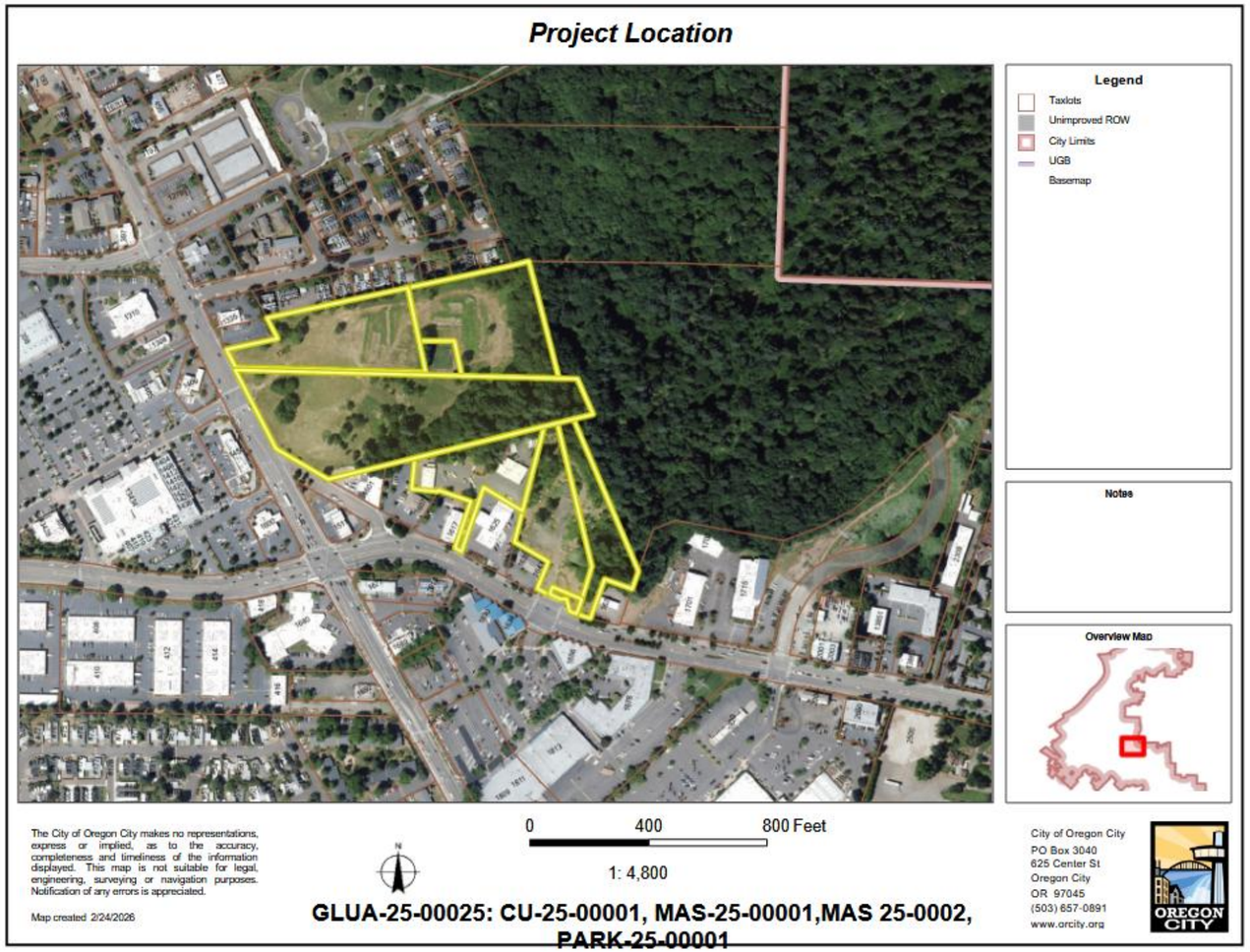


GLUA 25-0025 Approval Process

Master Plan- Framework Approach- Parking Adjustment, Drive Through Conditional Use –Type III
MAS-25-00001,CU-25-00001, PARK-25-00001

Detailed Development Plan for Parcel C- Street Type II- Concurrent Review
MAS-25-00002, GEO-25-00007, NROD-25-00012

One presentation- two staff reports





1367 Molalla Ave

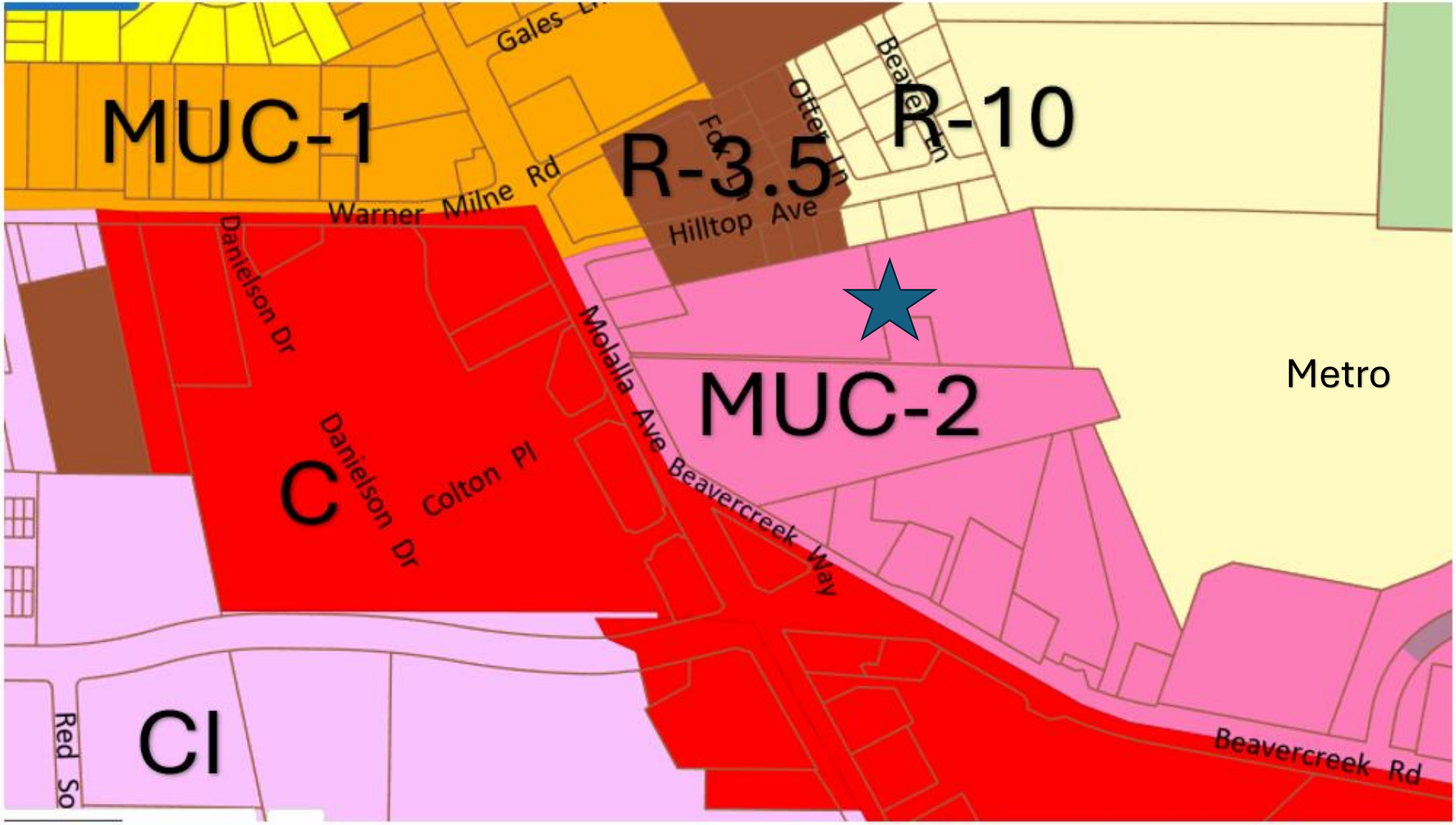
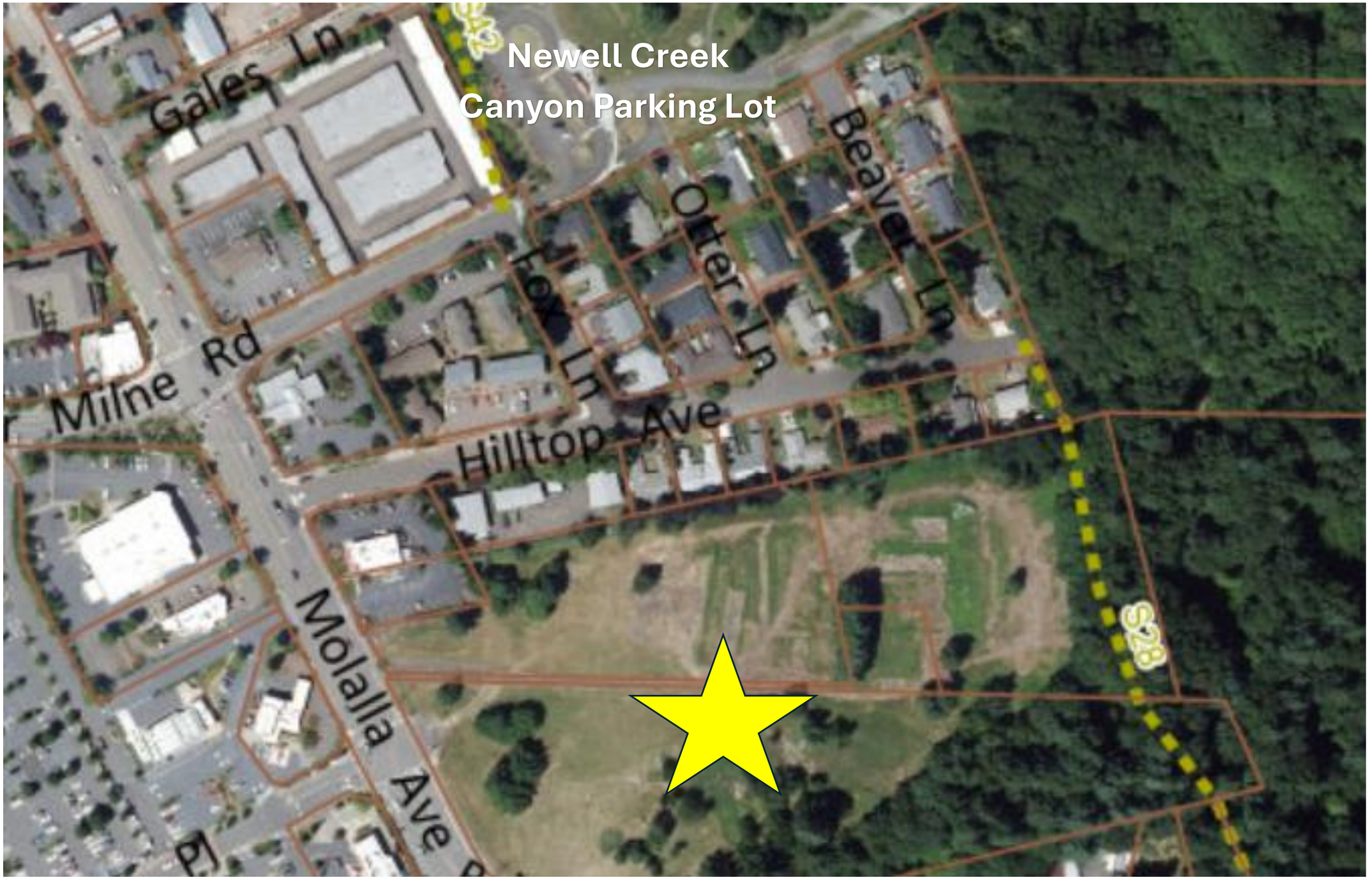


Figure 3. Adjacent Zoning. Mixed Use Corridor (MUC-1) and (MUC-2), Low Density Residential R-10, Medium Density Residential R3.5, Campus Industrial CI, General Commercial-C.


Newell Creek
Canyon Parking Lot
Gales Ln
Milne Rd
Fox Ln
Otter Ln
Beaver Ln
Hilltop Ave
Molalla Ave
S78

Master Plan Deliberations – April 20

The Planning Commission should focus its deliberation on these two questions:

1. Has the applicant adequately demonstrated a need for an adjustment to the maximum parking standard on parcels A and D, and have any adverse effects been mitigated?
2. Has the applicant designed drive-through facilities on Parcels A and D that are safe, contain adequate queue storage, and have any adverse effects been mitigated?

Summary of Master Plan Elements (GDP

- Creation of 4 development parcels
  - Parcel A: Retail,
  - Parcel B: Multi-Family,
  - Parcel C: New Public Road,
  - Parcel D: Quick Serve Restaurant
- Review of Transportation Impact Analysis for the full site
- Review of public road and utility location, site grading.
- Conditional Use Review for two drive-thru facilities (Parcels A and D)
- Parking Maximum Adjustment (Parcels A and D)

Clarifying the future DDP process for parcel building out

- 20-year Master Plan (TLs 3330,3400,3200,3201)
- Can use the code effective at the time of Master Plan submittal, or the current code at the time of DD submittal, for each parcel
- Specific uses are not tied to the Master Plan Approval, but any revision must be reviewed to see if it affects any Master Plan conditions of approval.
- No Master Plan adjustments are being requested. Each DDP must meet the Type II development process or return to the Planning Commission for a Master Plan adjustment request.

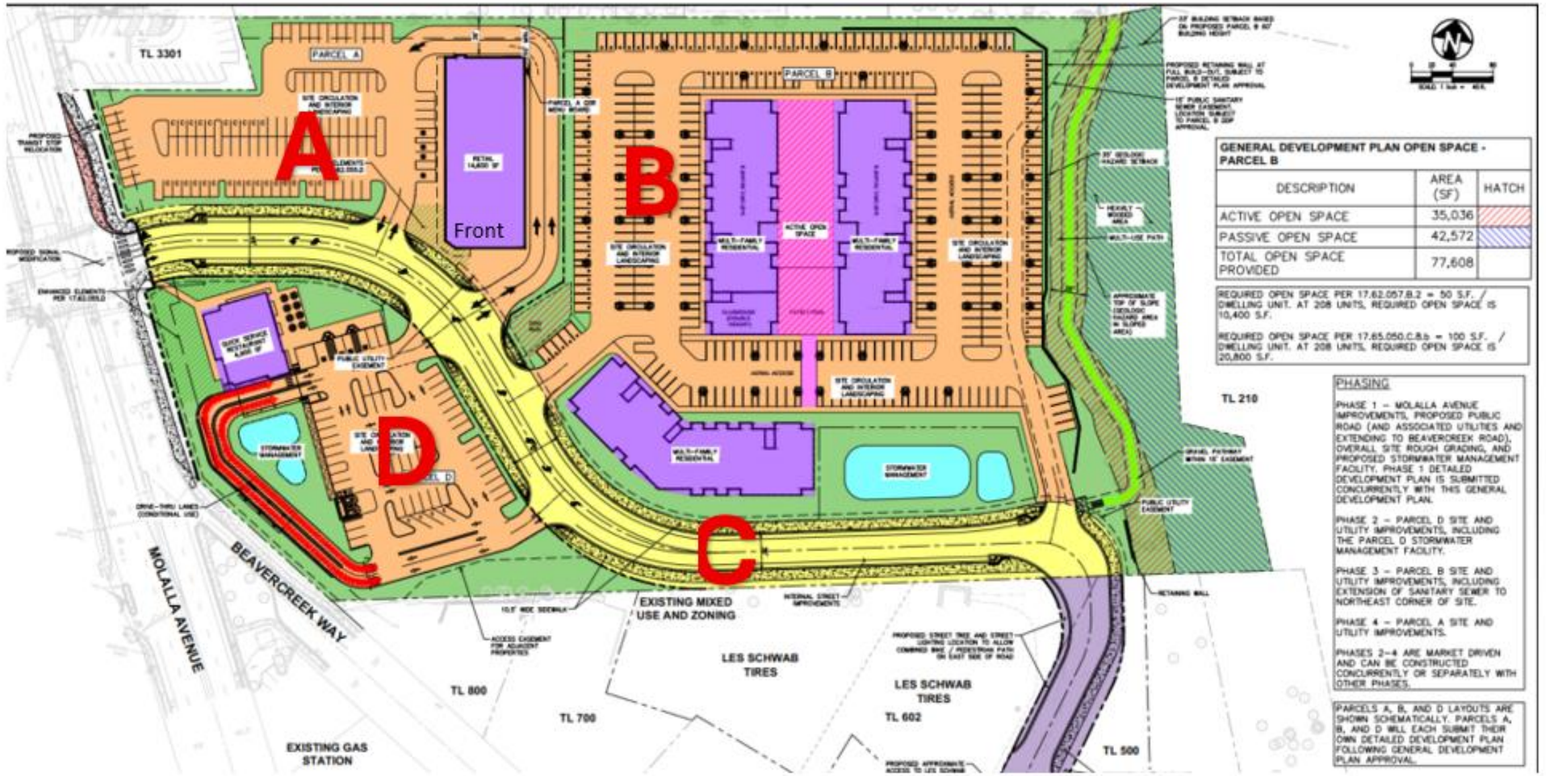


Figure 4: Proposed Master Plan **Parcel A**: Retail**, Parcel B**: Multi-Family, **Parcel C**: New Public Road, **Parcel D:** Quick Serve Restaurant

Master Plan- MAS-25-00001,CU-25-00001, PARK-25-00001

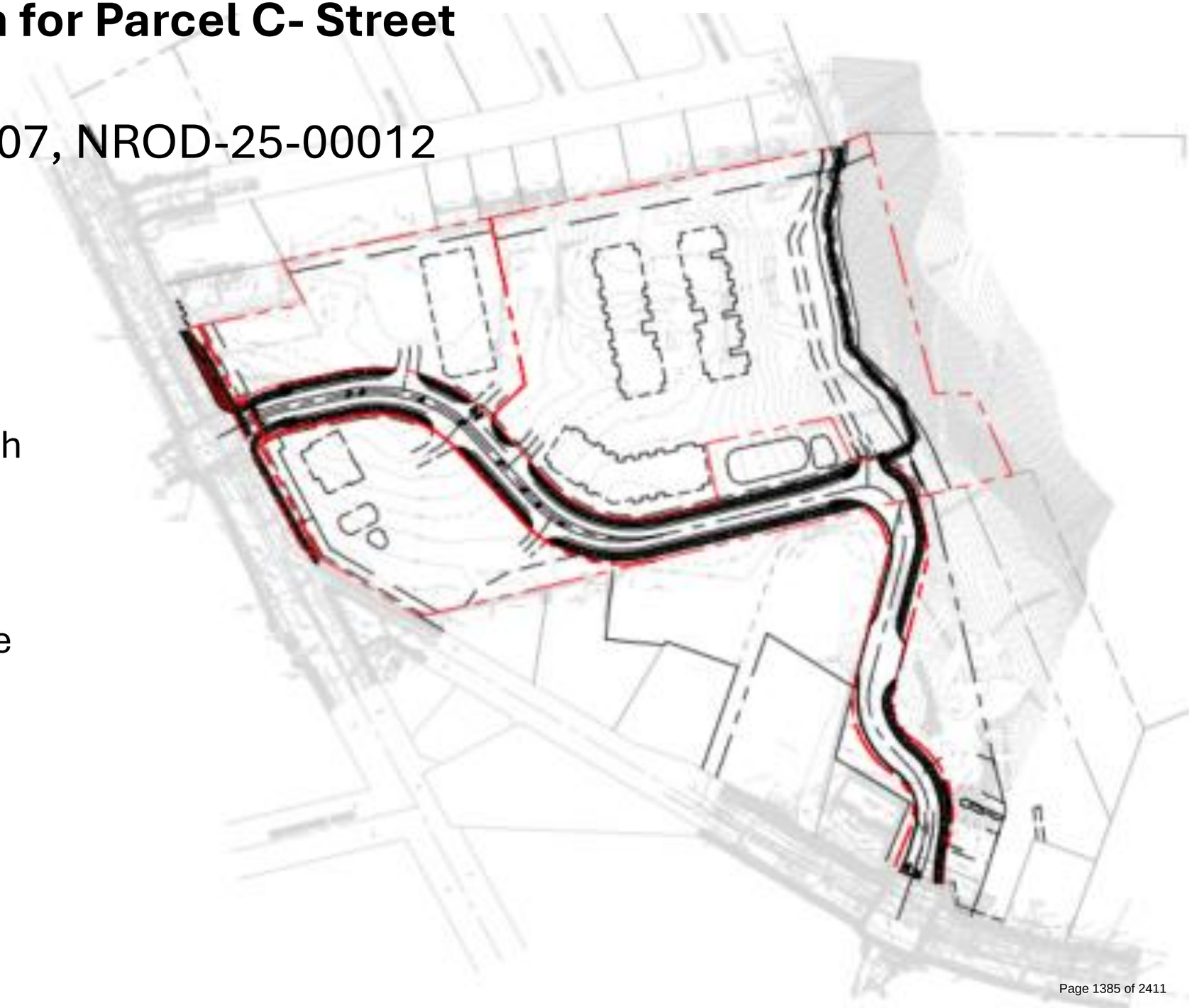
Enhanced Landscaping in Parcel A- technical revision to condition.

14. Two enhanced landscaping locations are required. Required trees shall be placed as determined feasible, and species with a smaller final height may be used through a sight distance and vision clearance study for all required turning movements at the local road intersection with Molalla Ave and a powerline utility encroachment analysis to ensure safety to be installed before receiving a Certificate of Occupancy for their respective parcels. The enhanced landscaping on Parcels A and D is shown in Figures 8 and 9 of the staff report. The following enhanced landscaping areas (both proposed and conditioned) shall meet the landscaping standards of OCMCM 17.62.050, can be included in the minimum landscaping requirements of the parcel, and include the following elements:

Detailed Development Plan for Parcel C- Street
Type II- Concurrent Review

MAS-25-00002, GEO-25-00007, NROD-25-00012

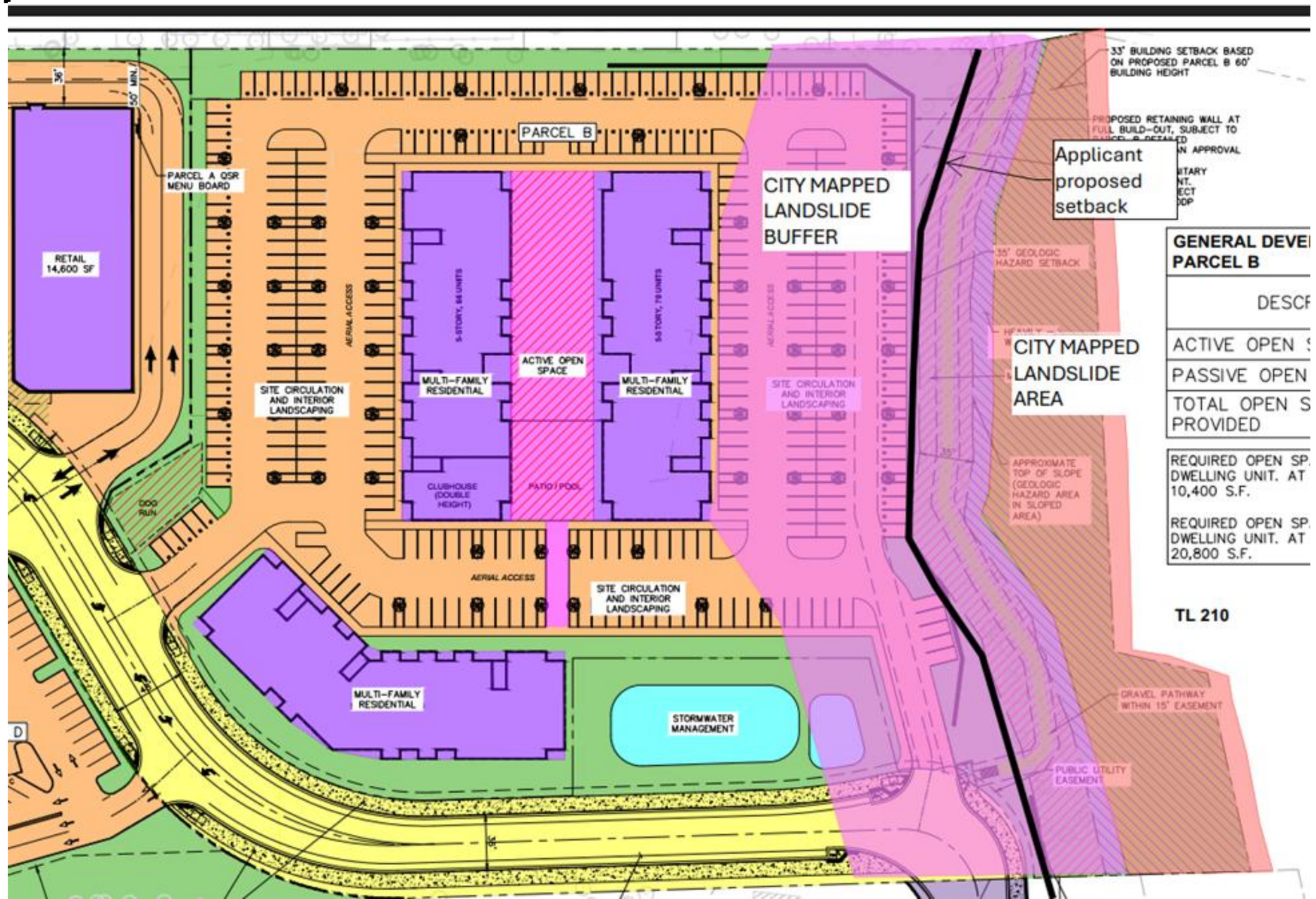
A Detailed Development Plan for the construction of a new public road (parcel C) and utilities has been submitted concurrently with the Master Plan. The staff report will be part of the Planning Commission hearing and can be approved at the same time as the Master Plan.



Changes since March 23- Shared Use Path and Geologic Hazards

- Two changes are part of the staff report since the March 23 presentation and materials
  - Staff is requiring relocation and construction of the shared use path
    - May be completed with new public road in total OR
    - May be completed in part with new public road and future Parcel B DDP
    - Must be constructed of paved materials
    - Must be located to be used by this development and be visible for safety
    - Proportional to development
  - Staff is requiring redesign of Parcel B due to existence of Geologic Hazard Overlay Zone
    - Setback provided in application does not meet code
    - A maximum of 4,000 sf of land within the overlay zone can be disturbed per existing parcel

Geologic Hazard Overlay Zone and Shared Use Path Required Revisions



Staff Recommendations

Approve both applications with the revised staff conditions

Planning Commission Options.

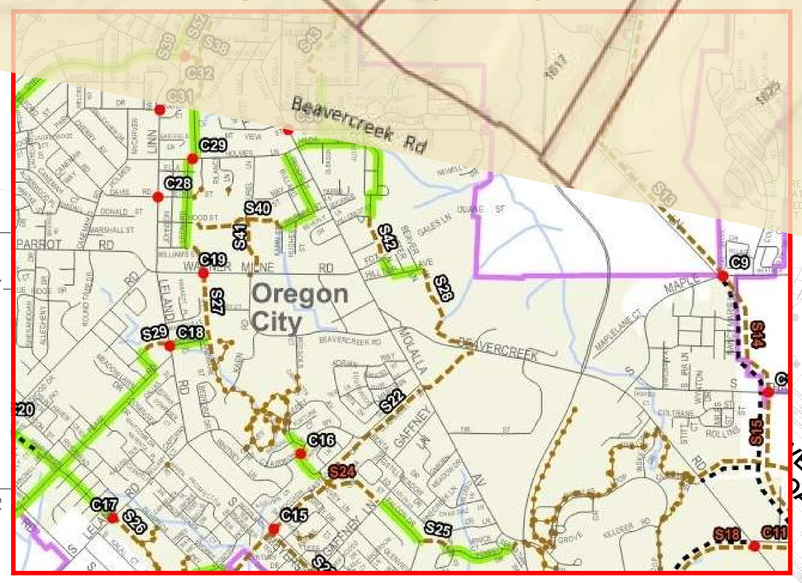
- Applicant has requested 7 days to submit final response- Continue application to April 20, 2026, Planning Commission Meeting
- Ask Staff and Applicant questions this evening
- Deliberations will occur at the April 20 Meeting.

May need retaining wall along north property line to maintain ADA compliance for pathway (adjacent property is higher than the site grading in this area).

Proposed alternate trail location based upon City Staff's change of position regarding the location of the shared pathway.

City references GIS mapping for geo hazard area and associated buffer. The buffer is referenced from the landslide boundary, which is not the top of slope. The Terracon recommendation conservatively used the top of slope for their buffer recommendation.

TSP Fig 21 - Shared Walking and Biking Solutions



SITE DATA

TOTAL SITE AREA: 12.70 AC +/-

PARCEL A AREA: 1.96 AC +/-

PARCEL B AREA: 6.63 AC +/-

PARCEL C AREA: 2.10 AC +/-

PARCEL D AREA: 2.01 AC +/-

NOTE: AREAS SHOWN ARE AFTER PROPOSED ROW DEDICATION.

GENERAL DEVELOPMENT PLAN OPEN SPACE - PARCEL B

DESCRIPTION	AREA (SF)	HATCH
ACTIVE OPEN SPACE	35,036	
PASSIVE OPEN SPACE	42,572	
TOTAL OPEN SPACE PROVIDED	77,608	

REQUIRED OPEN SPACE PER 17.62.057.B.2 = 50 S.F. / DWELLING UNIT. AT 208 UNITS, REQUIRED OPEN SPACE IS 10,400 S.F.

REQUIRED OPEN SPACE PER 17.65.050.C.8.b = 100 S.F. / DWELLING UNIT. AT 208 UNITS, REQUIRED OPEN SPACE IS 20,800 S.F.

PHASING

PHASE 1 – PARCEL A SITE IMPROVEMENTS, INCLUDING ROAD (…) EXTENDING … OVERALL … PROPOS… FACILITY … DEVELOP… CONCUR… DEVELOP…

PHASE … UTILITY … THE PA… MANAGEMENT FACILITY.

PHASE 3 – PARCEL B SITE AND UTILITY IMPROVEMENTS, INCLUDING EXTENSION OF SANITARY SEWER TO NORTHEAST CORNER OF SITE.

PHASE 4 – PARCEL A SITE AND UTILITY IMPROVEMENTS.

PHASES 2–4 ARE MARKET DRIVEN AND CAN BE CONSTRUCTED CONCURRENTLY OR SEPARATELY WITH OTHER PHASES.

PARCELS A, B, AND D LAYOUTS ARE SHOWN SCHEMATICALLY. PARCELS A, B, AND D WILL EACH SUBMIT THEIR OWN DETAILED DEVELOPMENT PLAN FOLLOWING GENERAL DEVELOPMENT PLAN APPROVAL.

GENERAL DEVELOPMENT PLAN DECISIONS:

1. OVERALL GENERAL … DEVELOPMENT PLAN APPROVAL
2. CONDITIONAL USE APPROVAL FOR DRIVE-THROUGH FACILITIES ON BOTH PARCELS A AND D
3. MAXIMUM PARKING ADJUSTMENT

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CLIENT/OWNER
CYPRESS EQUITIES

PROJECT NAME
OREGON CITY MIXED USE GENERAL DEVELOPMENT PLAN

PROJECT NUMBER: 794-002-701
PROJECT ADDRESS
MOLALLA AVENUE OREGON CITY, OR 97045

STAMP

REVISIONS

REV.	ISSUED FOR:	DATE
0	GDP SUBMITTAL	10/4/2025
1	GDP SUBMITTAL	12/09/2025
2	GDP SUBMITTAL	02/2026

SECTION, TOWNSHIP, RANGE:
SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME
GENERAL DEVELOPMENT PLAN

SHEET NUMBER
GDP-C1.0

TL 3301

PARCEL A

May need retaining wall along north property line to maintain ADA compliance for pathway (adjacent property is higher than the site grading in this area).

PARCEL B

Proposed alternate trail location based upon City Staff's change of position regarding the location of the shared pathway.

169'-1 9/16"

200'-4 5/8"

201'-3 1/4"

200'-1 5/8"

33' BUILDING SETBACK BASED ON PROPOSED PARCEL B 60' BUILDING HEIGHT

PROPOSED RETAINING WALL AT FULL BUILD-OUT, SUBJECT TO PARCEL B DETAILED DEVELOPMENT PLAN APPROVAL

15' PUBLIC SANITARY SEWER EASEMENT. LOCATION SUBJECT TO PARCEL B DDP APPROVAL.

0 20 40 80
SCALE: 1 inch = 40 ft.

PROPOSED TRANSIT STOP RELOCATION

ENHANCED ELEMENTS PER 17.62.055.D

RETAIL 14,600 SF

PARCEL A QSR MENU BOARD

PROPOSED SIGNAL MODIFICATION

ENHANCED ELEMENTS PER 17.62.055.D

QUICK SERVICE RESTAURANT 4,900 SF

PUBLIC UTILITY EASEMENT

STORMWATER MANAGEMENT

SITE CIRCULATION AND INTERIOR LANDSCAPING

PARCEL D

DRIVE-THRU LANES (CONDITIONAL USE)

DOG RUN

MULTI-FAMILY RESIDENTIAL

ACTIVE OPEN SPACE

PATIO / POOL

AERIAL ACCESS

SITE CIRCULATION AND INTERIOR LANDSCAPING

MULTI-FAMILY RESIDENTIAL

SITE CIRCULATION AND INTERIOR LANDSCAPING

MULTI-FAMILY RESIDENTIAL

STORMWATER MANAGEMENT

AERIAL ACCESS

SITE CIRCULATION AND INTERIOR LANDSCAPING

50' GEOLOGIC HAZARD SETBACK

HEAVILY WOODED AREA

MULTI-USE PATH

APPROXIMATE TOP OF SLOPE GEOLOGIC HAZARD AREA IN SLOPED AREA)

35'

GRAVEL PATHWAY WITHIN 15' EASEMENT

PUBLIC UTILITY EASEMENT

RETAINING WALL

TL 210

MOLALLA AVENUE

BEAVERCREEK WAY

10.5' WIDE SIDEWALK

ACCESS EASEMENT FOR ADJACENT PROPERTIES

EXISTING MIXED USE AND ZONING

INTERNAL STREET IMPROVEMENTS

PROPOSED STREET TREE AND STREET LIGHTING LOCATION TO ALLOW COMBINED BIKE / PEDESTRIAN PATH ON EAST SIDE OF ROAD

LES SCHWAB TIRES

LES SCHWAB TIRES

TL 800

TL 700

TL 602

EXISTING GAS STATION

TL 500

PROPOSED APPROXIMATE ACCESS TO LES SCHWAB

PROPOSED 10.5' MULTI-USE PATH WITH STREET TREES BEHIND PATH

PROPOSED PUBLIC ROAD CONNECTION

TL 503

50' BUFFER

NROD SETBACK TOP OF BANK

TL 501

TL 402

PROPOSED SIGNAL MODIFICATION

GENERAL DEVELOPMENT PLAN OPEN SPACE - PARCEL B

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TOTAL OPEN SPACE PROVIDED	77,608	

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REQUIRED OPEN SPACE PER 17.65.050.C.8.b = 100 S.F. / DWELLING UNIT. AT 208 UNITS, REQUIRED OPEN SPACE IS 20,800 S.F.

PHASING

PHASE 1 – PARCEL D SITE AND UTILITY IMPROVEMENTS, INCLUDING EXTENSION OF MOLALLA AVENUE ROAD (A[illegible] EXTENDING OVERALL PROPOS[illegible] FACILITY DEVELOP[illegible] CONCUR[illegible] DEVELOP[illegible]

PHASE [illegible] UTILITY [illegible] THE PA[illegible] MANAGEMENT FACILITY.

PHASE 3 – PARCEL B SITE AND UTILITY IMPROVEMENTS, INCLUDING EXTENSION OF SANITARY SEWER TO NORTHEAST CORNER OF SITE.

PHASE 4 – PARCEL A SITE AND UTILITY IMPROVEMENTS.

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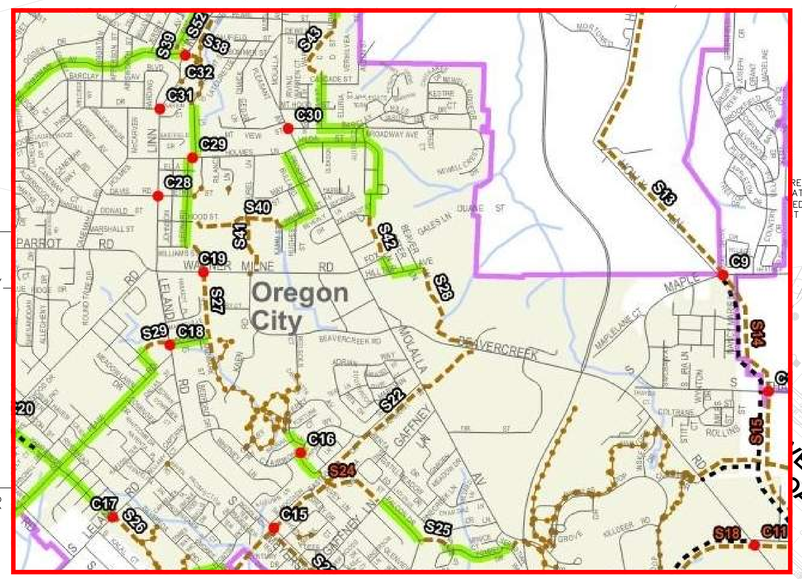
1. OVERALL GENERAL DEVELOPMENT PLAN APPROVAL
2. CONDITIONAL USE APPROVAL FOR DRIVE-THROUGH FACILITIES ON BOTH PARCELS A AND D
3. MAXIMUM PARKING ADJUSTMENT

City references GIS mapping for geo hazard area and associated buffer. The buffer is referenced from the landslide boundary, which is not the top of slope. The Terracon recommendation conservatively used the top of slope for their buffer recommendation.

TSP Fig 21 - Shared Walking and Biking Solutions



SITE DATA

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CLIENT/OWNER

CYPRESS EQUITIES

PROJECT NAME

OREGON CITY MIXED USE GENERAL [illegible]ELOPMENT PLAN

PROJECT NUMBER: 794-002-701

PROJECT ADDRESS

[illegible]OLALLA AVENUE
[illegible]ON CITY, OR 97045

STAMP

REVISIONS

REV	ISSUED FOR:	DATE
0	GDP SUBMITTAL	11/14/2025
1	GDP SUBMITTAL	12/09/2025
2	GDP SUBMITTAL	03/02/2026

SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

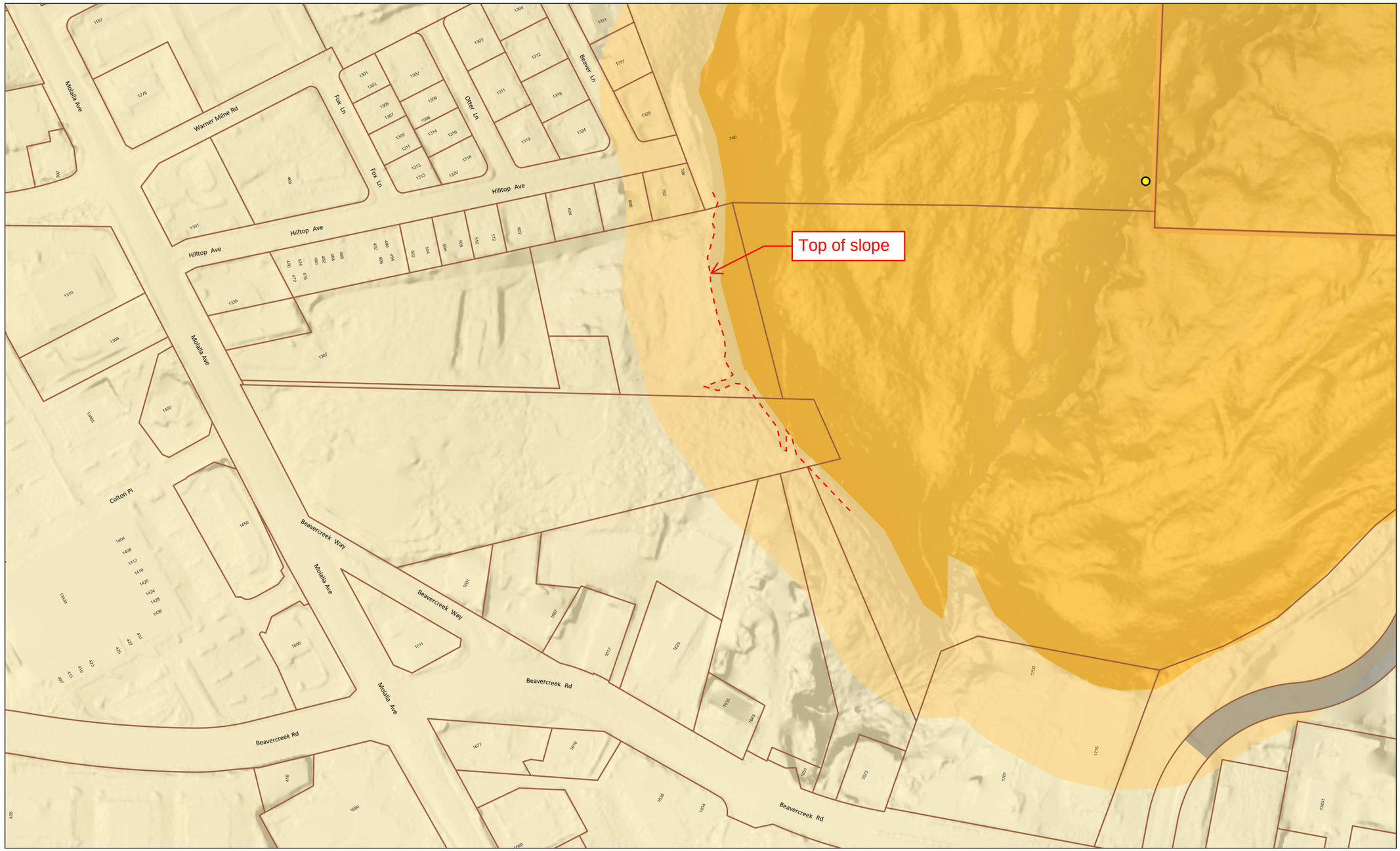
SHEET NAME

GENERAL DEVELOPMENT PLAN

SHEET NUMBER

GDP-C1.0

Oregon City Geo Hazard Map

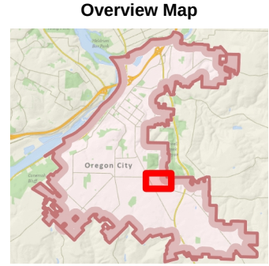


Legend

- Street Names
- Taxlots
- Unimproved ROW
- Landslides (SLIDO) - Historic Landslide
- Geologic Hazards - Landslides
  - Landslides
  - Buffered (200 ft)
- City Limits
- UGB
- Basemap

Notes

Overview Map



The City of Oregon City makes no representations, express or implied, as to the accuracy, completeness and timeliness of the information displayed. This map is not suitable for legal, engineering, surveying or navigation purposes. Notification of any errors is appreciated.

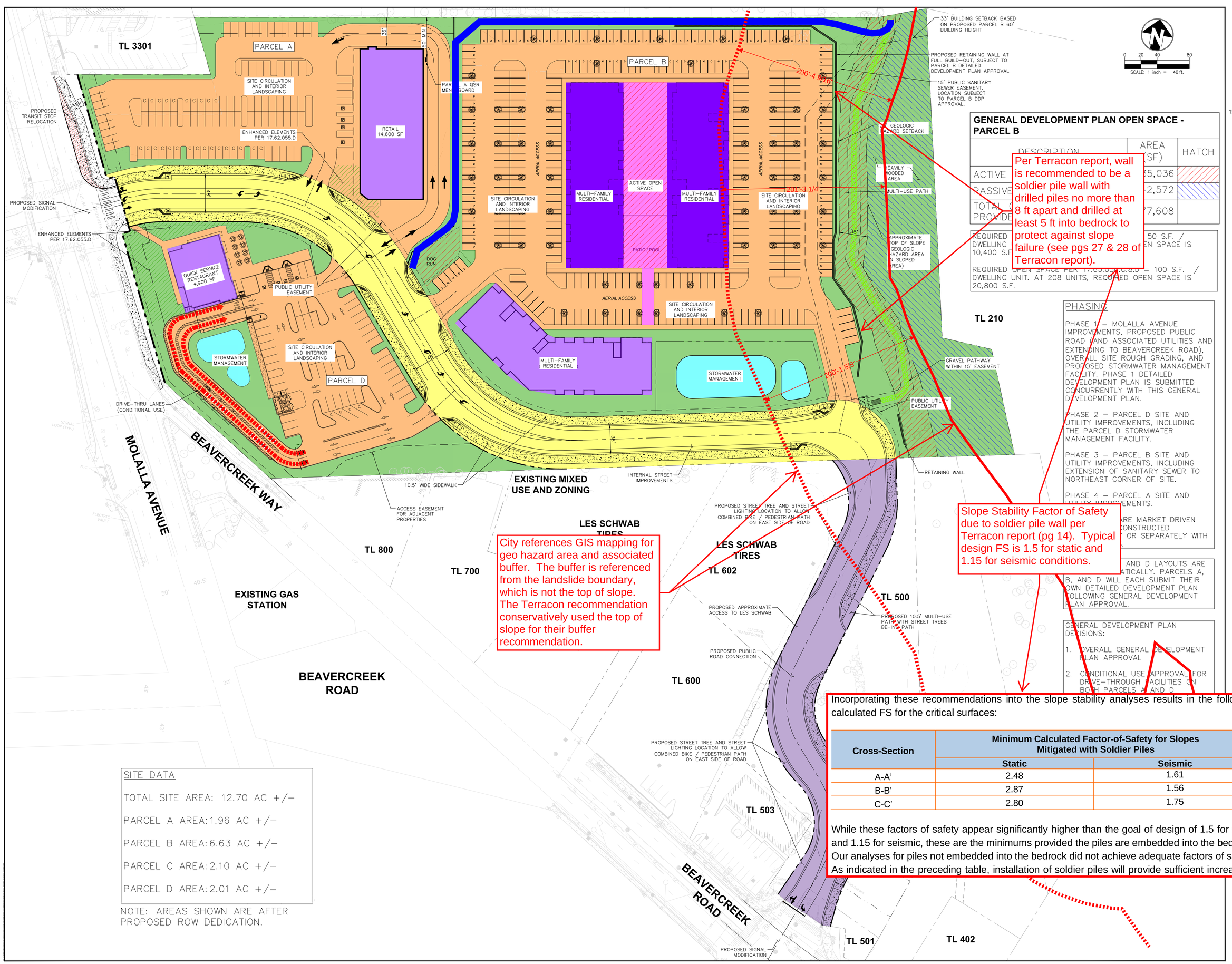
Map created 4/13/2026

N

0 400 800 Feet

1: 2,400

City of Oregon City
PO Box 3040
625 Center St
Oregon City
OR 97045
(503) 657-0891
www.orcity.org



GENERAL DEVELOPMENT PLAN OPEN SPACE - PARCEL B

DESCRIPTION	AREA (SF)	HATCH
ACTIVE	35,036	
PASSIVE	2,572	
TOTAL PROVIDED	37,608	

REQUIRED DWELLING 10,400 S.F

50 S.F. / EN SPACE IS

REQUIRED OPEN SPACE PER 17.62.055.C.3.b = 100 S.F. / DWELLING UNIT. AT 208 UNITS, REQUIRED OPEN SPACE IS 20,800 S.F.

Per Terracon report, wall is recommended to be a soldier pile wall with drilled piles no more than 8 ft apart and drilled at least 5 ft into bedrock to protect against slope failure (see pgs 27 & 28 of Terracon report).

PHASING

PHASE 1 – MOLALLA AVENUE IMPROVEMENTS, PROPOSED PUBLIC ROAD (AND ASSOCIATED UTILITIES AND EXTENDING TO BEAVERCREEK ROAD), OVERALL SITE ROUGH GRADING, AND PROPOSED STORMWATER MANAGEMENT FACILITY. PHASE 1 DETAILED DEVELOPMENT PLAN IS SUBMITTED CONCURRENTLY WITH THIS GENERAL DEVELOPMENT PLAN.

PHASE 2 – PARCEL D SITE AND UTILITY IMPROVEMENTS, INCLUDING THE PARCEL D STORMWATER MANAGEMENT FACILITY.

PHASE 3 – PARCEL B SITE AND UTILITY IMPROVEMENTS, INCLUDING EXTENSION OF SANITARY SEWER TO NORTHEAST CORNER OF SITE.

PHASE 4 – PARCEL A SITE AND UTILITY IMPROVEMENTS.

ARE MARKET DRIVEN CONSTRUCTED OR SEPARATELY WITH

AND D LAYOUTS ARE ATICALLY. PARCELS A, B, AND D WILL EACH SUBMIT THEIR OWN DETAILED DEVELOPMENT PLAN FOLLOWING GENERAL DEVELOPMENT PLAN APPROVAL.

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1. OVERALL GENERAL DEVELOPMENT PLAN APPROVAL
2. CONDITIONAL USE APPROVAL FOR DRIVE-THROUGH FACILITIES ON BOTH PARCELS A AND D

Slope Stability Factor of Safety due to soldier pile wall per Terracon report (pg 14). Typical design FS is 1.5 for static and 1.15 for seismic conditions.

City references GIS mapping for geo hazard area and associated buffer. The buffer is referenced from the landslide boundary, which is not the top of slope. The Terracon recommendation conservatively used the top of slope for their buffer recommendation.

Incorporating these recommendations into the slope stability analyses results in the following calculated FS for the critical surfaces:

Cross-Section	Minimum Calculated Factor-of-Safety for Slopes Mitigated with Soldier Piles	
	Static	Seismic
A-A'	2.48	1.61
B-B'	2.87	1.56
C-C'	2.80	1.75

While these factors of safety appear significantly higher than the goal of design of 1.5 for static and 1.15 for seismic, these are the minimums provided the piles are embedded into the bedrock. Our analyses for piles not embedded into the bedrock did not achieve adequate factors of safety. As indicated in the preceding table, installation of soldier piles will provide sufficient increase in

SITE DATA

TOTAL SITE AREA: 12.70 AC +/-

PARCEL A AREA: 1.96 AC +/-

PARCEL B AREA: 6.63 AC +/-

PARCEL C AREA: 2.10 AC +/-

PARCEL D AREA: 2.01 AC +/-

NOTE: AREAS SHOWN ARE AFTER PROPOSED ROW DEDICATION.

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CLIENT/OWNER

CYPRESS EQUITIES

PROJECT NAME

OREGON CITY MIXED USE GENERAL DEVELOPMENT PLAN

LANGAN PROJECT NUMBER: 794-002-701

PROJECT ADDRESS

1367 MOLALLA AVENUE
OREGON CITY, OR 97045

STAMP

REVISIONS

REV	ISSUED FOR:	DATE
0	GDP SUBMITTAL	11/14/2025
1	GDP SUBMITTAL	12/09/2025
2	GDP SUBMITTAL	03/02/2026

811

, TOWNSHIP, RANGE:

ON 16, TOWNSHIP 3 RANGE 2 EAST, W.M.

OJECT TEAM

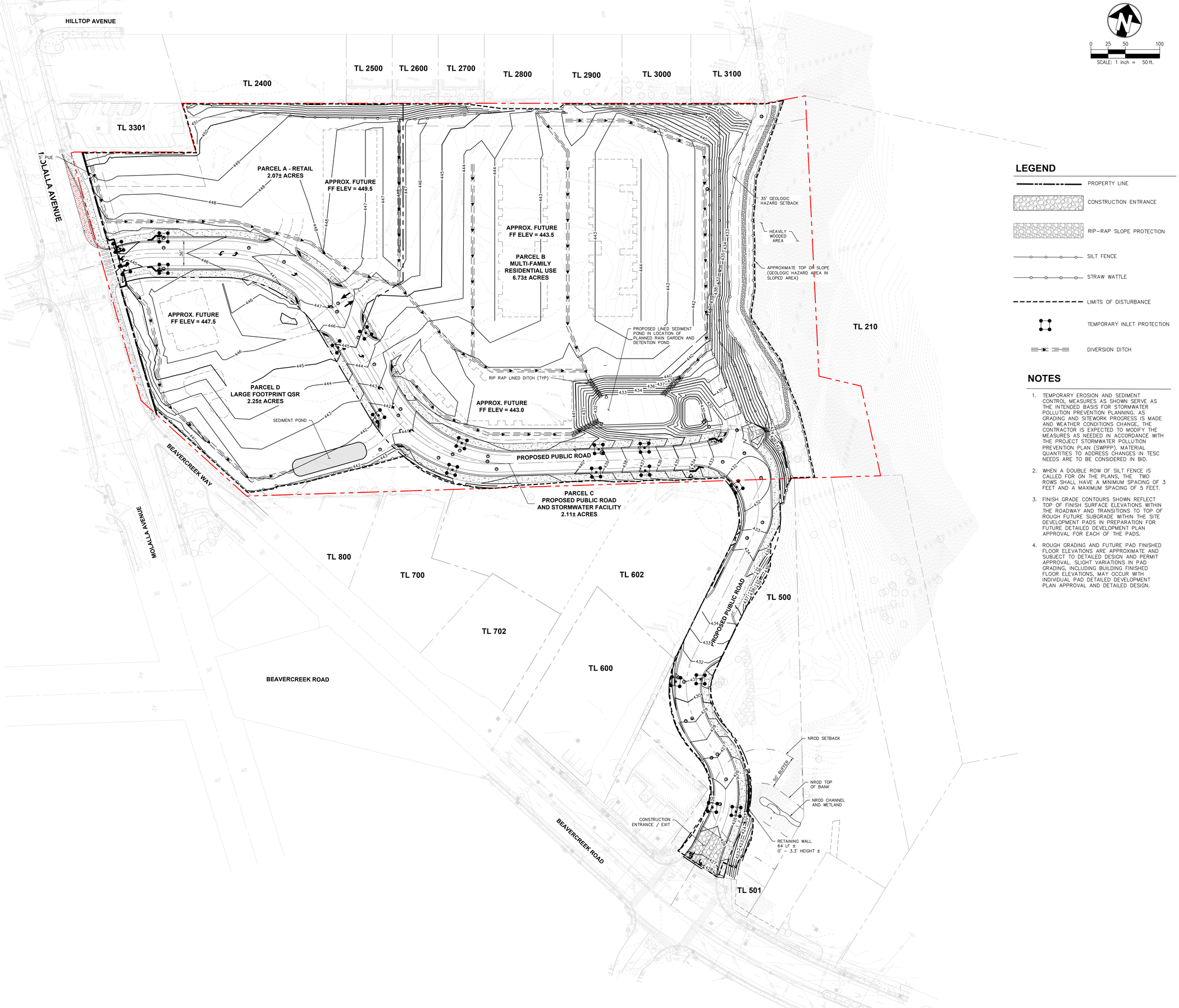
BY: S.FRANKLIN
BY: T.SHABRAM

SHEET NAME

GENERAL DEVELOPMENT PLAN

SHEET NUMBER

GDP-C1.0



0 25 50 100

SCALE: 1 inch = 50 ft.

LEGEND

- PROPERTY LINE
- CONSTRUCTION ENTRANCE
- RIP–RAP SLOPE PROTECTION
- SILT FENCE
- STRAW WATTLE
- LIMITS OF DISTURBANCE
- TEMPORARY INLET PROTECTION
- DIVERSION DITCH

NOTES

1. TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES AS SHOWN SERVE AS THE INTENDED BASIS FOR STORMWATER POLLUTION PREVENTION PLANNING. AS GRADING AND SITEWORK PROGRESS IS MADE AND WEATHER CONDITIONS CHANGE, THE CONTRACTOR IS EXPECTED TO MODIFY THE MEASURES AS NEEDED IN ACCORDANCE WITH THE PROJECT STORMWATER POLLUTION PREVENTION PLAN (SWPPP). MATERIAL QUANTITIES TO ADDRESS CHANGES IN TESC NEEDS ARE TO BE CONSIDERED IN BID.
2. WHEN A DOUBLE ROW OF SILT FENCE IS CALLED FOR ON THE PLANS, THE TWO ROWS SHALL HAVE A MINIMUM SPACING OF 3 FEET AND A MAXIMUM SPACING OF 5 FEET.
3. FINISH GRADE CONTOURS SHOWN REFLECT TOP OF FINISH SURFACE ELEVATIONS WITHIN THE ROADWAY AND TRANSITIONS TO TOP OF ROUGH FUTURE SUBGRADE WITHIN THE SITE DEVELOPMENT PADS IN PREPARATION FOR FUTURE DETAILED DEVELOPMENT PLAN APPROVAL FOR EACH OF THE PADS.
4. ROUGH GRADING AND FUTURE PAD FINISHED FLOOR ELEVATIONS ARE APPROXIMATE AND SUBJECT TO DETAILED DESIGN AND PERMIT APPROVAL. SLIGHT VARIATIONS IN PAD GRADING, INCLUDING BUILDING FINISHED FLOOR ELEVATIONS, MAY OCCUR WITH INDIVIDUAL PAD DETAILED DEVELOPMENT PLAN APPROVAL AND DETAILED DESIGN.

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CLIENT/OWNER

CYPRESS EQUITIES

PROJECT NAME

OREGON CITY MIXED USE DETAILED DEVELOPMENT PLAN

LANGAN PROJECT NUMBER: 794-002-701

PROJECT ADDRESS

1367 MOLALLA AVENUE
OREGON CITY, OR 97045

STAMP

REVISIONS

REV	ISSUED FOR:	DATE
0	DDP SUBMITTAL	11/14/2025
1	DDP SUBMITTAL	12/09/2025
2	DDP SUBMITTAL	03/02/2026

SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

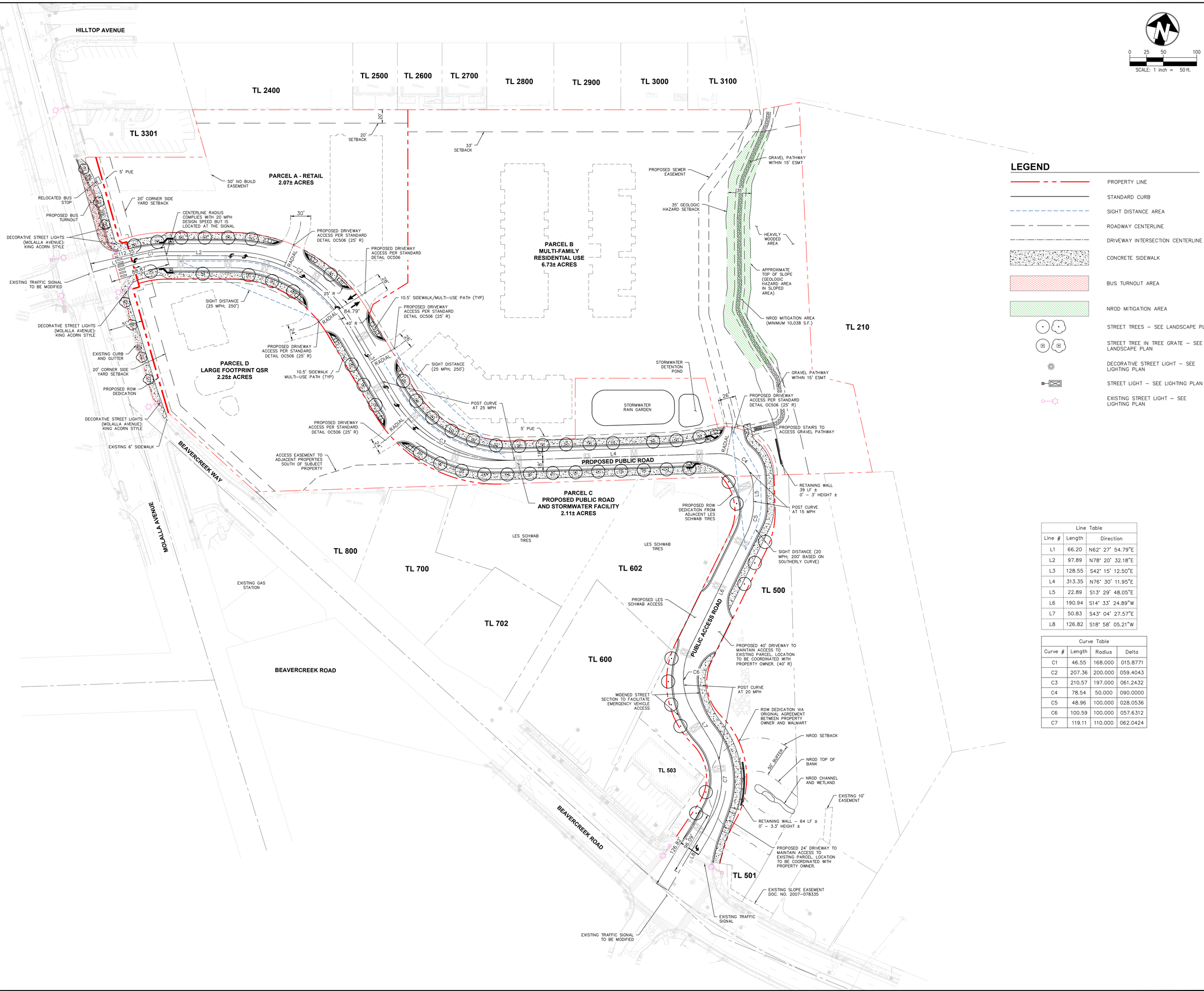
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

PRELIMINARY ROUGH GRADING AND EROSION CONTROL PLAN

SHEET NUMBER

DDP-C0.1



LEGEND

- PROPERTY LINE
- STANDARD CURB
- SIGHT DISTANCE AREA
- ROADWAY CENTERLINE
- DRIVEWAY INTERSECTION CENTERLINE
- CONCRETE SIDEWALK
- BUS TURNOUT AREA
- NROD MITIGATION AREA
- STREET TREES – SEE LANDSCAPE PLAN
- STREET TREE IN TREE GRATE – SEE LANDSCAPE PLAN
- DECORATIVE STREET LIGHT – SEE LIGHTING PLAN
- STREET LIGHT – SEE LIGHTING PLAN
- EXISTING STREET LIGHT – SEE LIGHTING PLAN

Line Table		
Line #	Length	Direction
L1	66.20	N62° 27' 54.79"E
L2	97.89	N78° 20' 32.18"E
L3	128.55	S42° 15' 12.50"E
L4	313.35	N76° 30' 11.95"E
L5	22.89	S13° 29' 48.05"E
L6	190.94	S14° 33' 24.89"W
L7	50.83	S43° 04' 27.57"E
L8	126.82	S18° 58' 05.21"W

Curve Table			
Curve #	Length	Radius	Delta
C1	46.55	168.000	015.8771
C2	207.36	200.000	059.4043
C3	210.57	197.000	061.2432
C4	78.54	50.000	090.0000
C5	48.96	100.000	028.0536
C6	100.59	100.000	057.6312
C7	119.11	110.000	062.0424

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Clackamas, OR 97015
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CLIENT/OWNER

CYPRESS EQUITIES

PROJECT NAME

OREGON CITY MIXED USE DETAILED DEVELOPMENT PLAN

LANGAN PROJECT NUMBER: 794-002-701

PROJECT ADDRESS

1367 MOLALLA AVENUE
OREGON CITY, OR 97045

STAMP

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0	DDP SUBMITTAL	11/14/2025
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SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

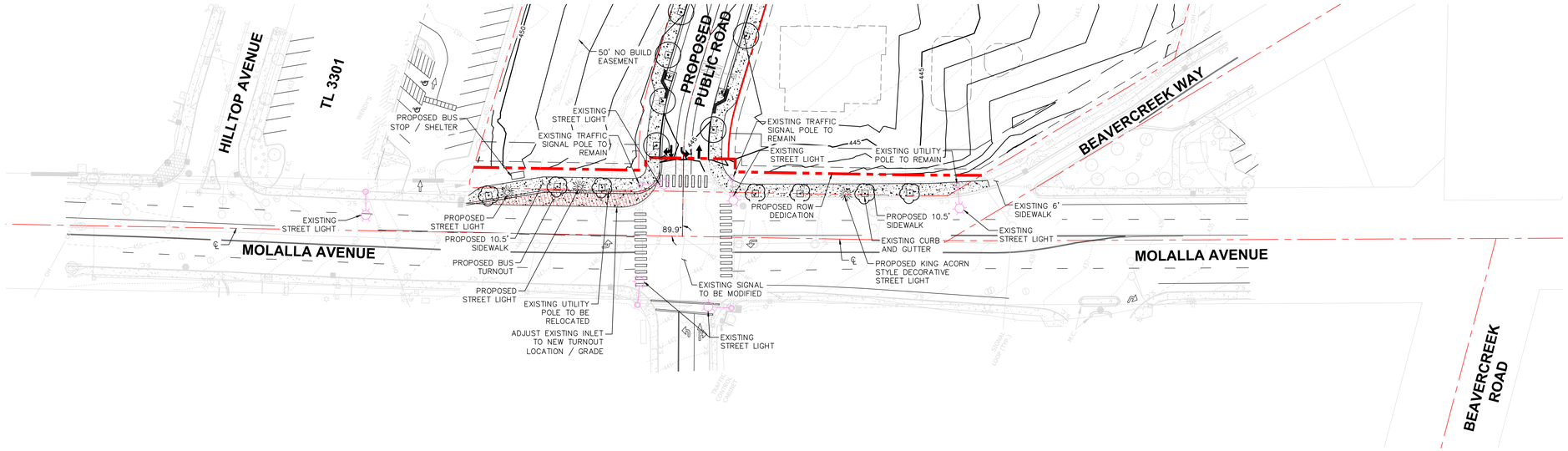
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

CIVIL SITE PLAN

SHEET NUMBER

DDP-C1.0

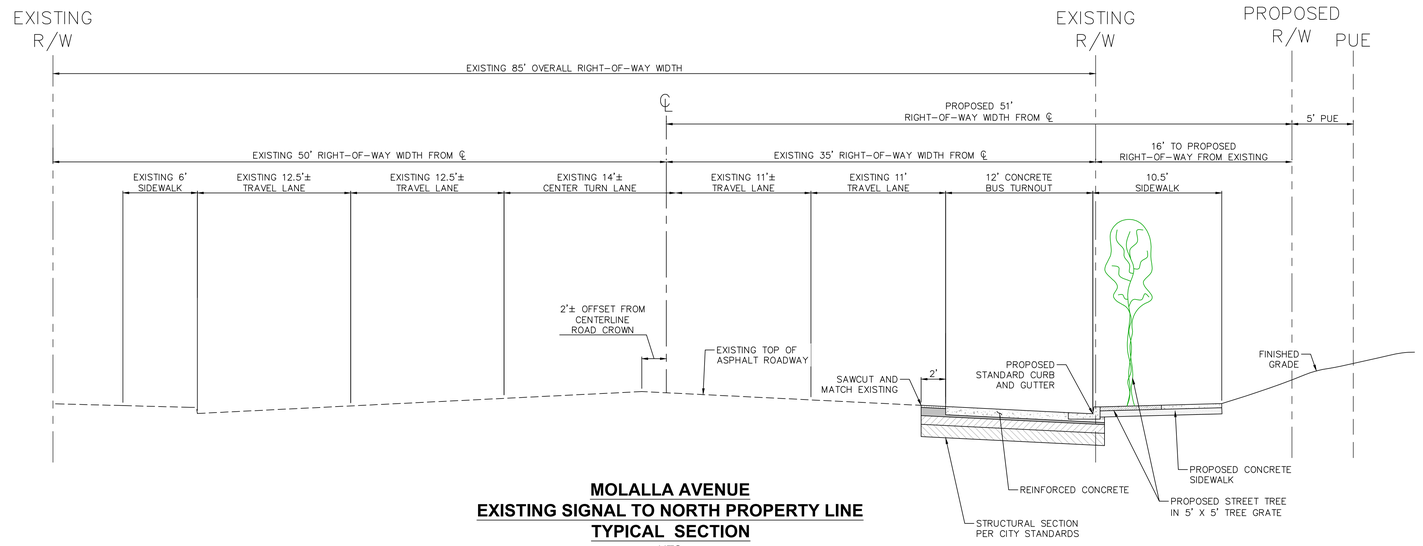


0 20 40 80

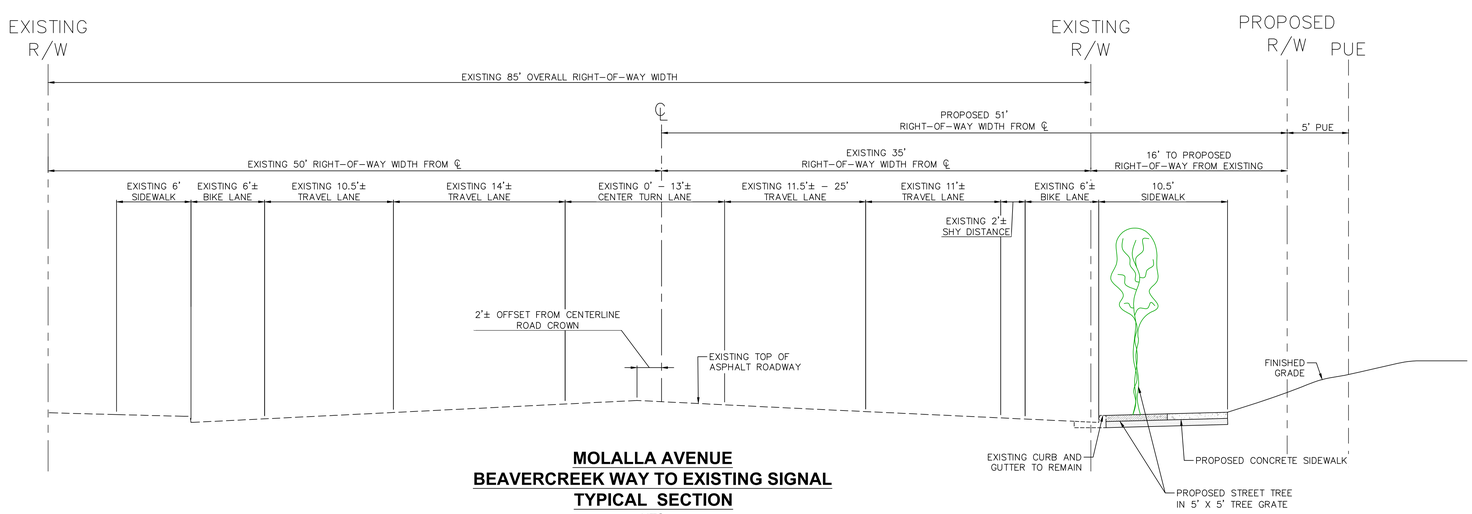
SCALE: 1 inch = 40 ft.

LEGEND

- PROPERTY LINE
- STANDARD CURB
- ROAD CENTER LINE
- 5' PUE
- CONCRETE SIDEWALK
- STREET TREE IN TREE GRATE – SEE LANDSCAPE PLAN
- DECORATIVE STREET LIGHT – SEE LIGHTING PLAN
- STREET LIGHT – SEE LIGHTING PLAN
- EXISTING STREET LIGHT – SEE LIGHTING PLAN



MOLALLA AVENUE
EXISTING SIGNAL TO NORTH PROPERTY LINE
TYPICAL SECTION
NTS



MOLALLA AVENUE
BEAVERCREEK WAY TO EXISTING SIGNAL
TYPICAL SECTION
NTS

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SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

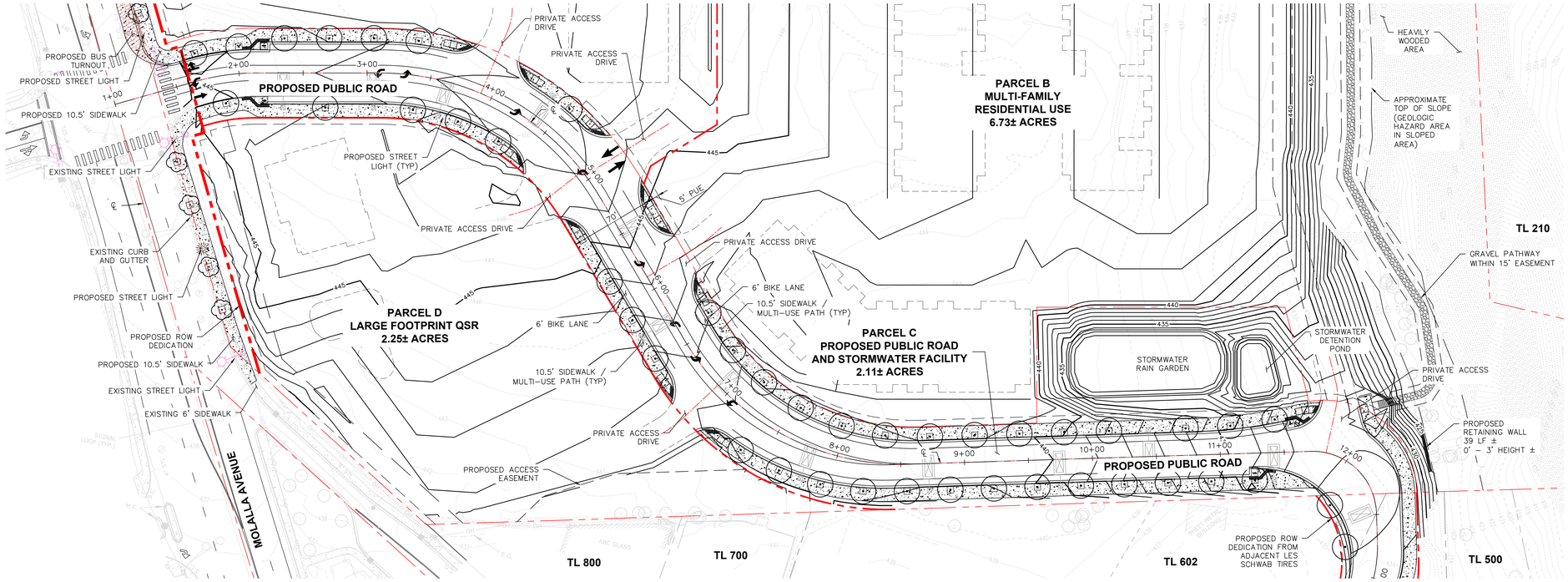
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

MOLALLA AVENUE STREET PLAN AND TYPICAL SECTIONS

SHEET NUMBER

DDP-C1.1



0 20 40 80

SCALE: 1 inch = 40 ft.

LEGEND

- PROPERTY LINE
- STANDARD CURB
- ROAD CENTER LINE
- 5' PUE
- CONCRETE SIDEWALK
- STREET TREES – SEE LANDSCAPE PLAN
- STREET TREE IN TREE GRATE – SEE LANDSCAPE PLAN
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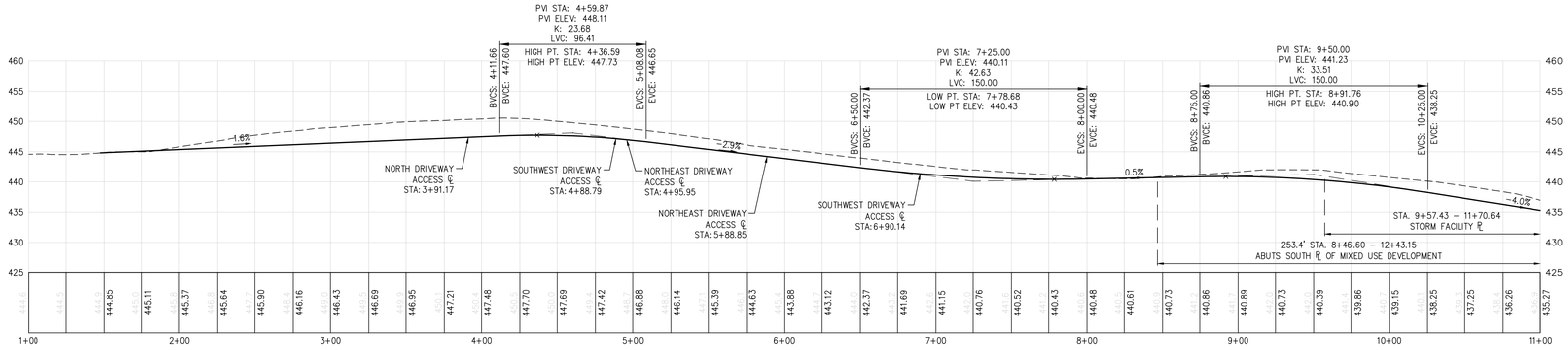
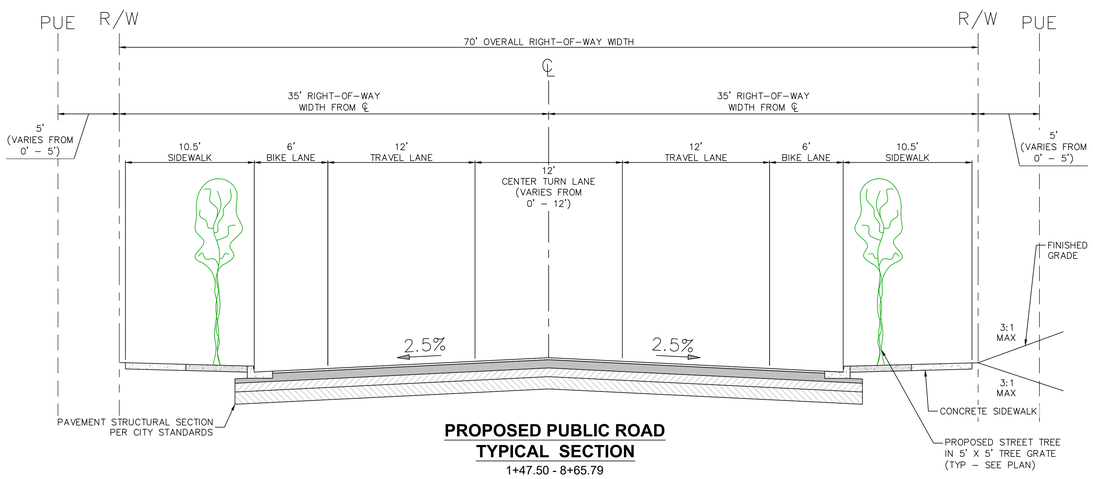
- STREET LIGHT – SEE LIGHTING PLAN
- EXISTING STREET LIGHT – SEE LIGHTING PLAN



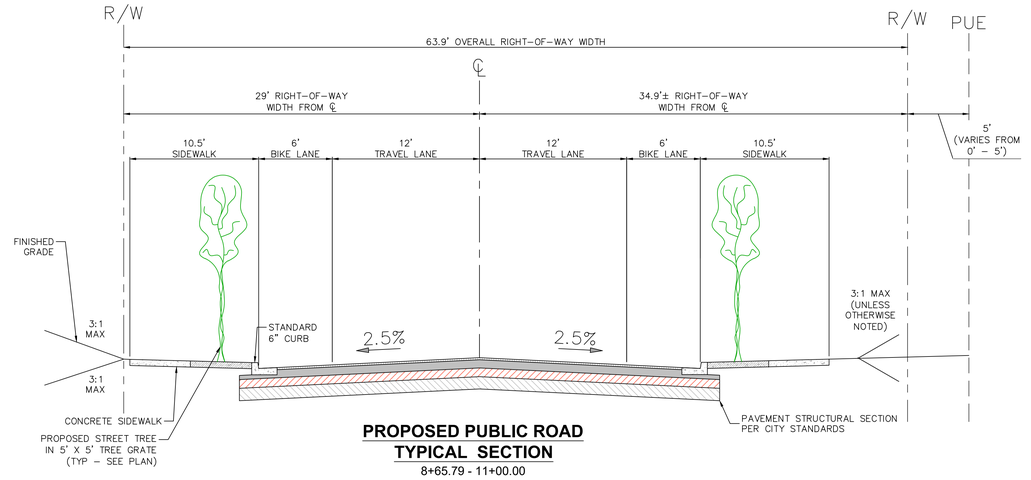
PROPOSED PUBLIC ROAD PROFILE

SCALE:
HORIZONTAL: 1" = 40'
VERTICAL: 1" = 10'



PROPOSED PUBLIC ROAD TYPICAL SECTION

1+47.50 - 8+65.79
NTS



PROPOSED PUBLIC ROAD TYPICAL SECTION

8+65.79 - 11+00.00
NTS

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CYPRESS EQUITIES

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SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

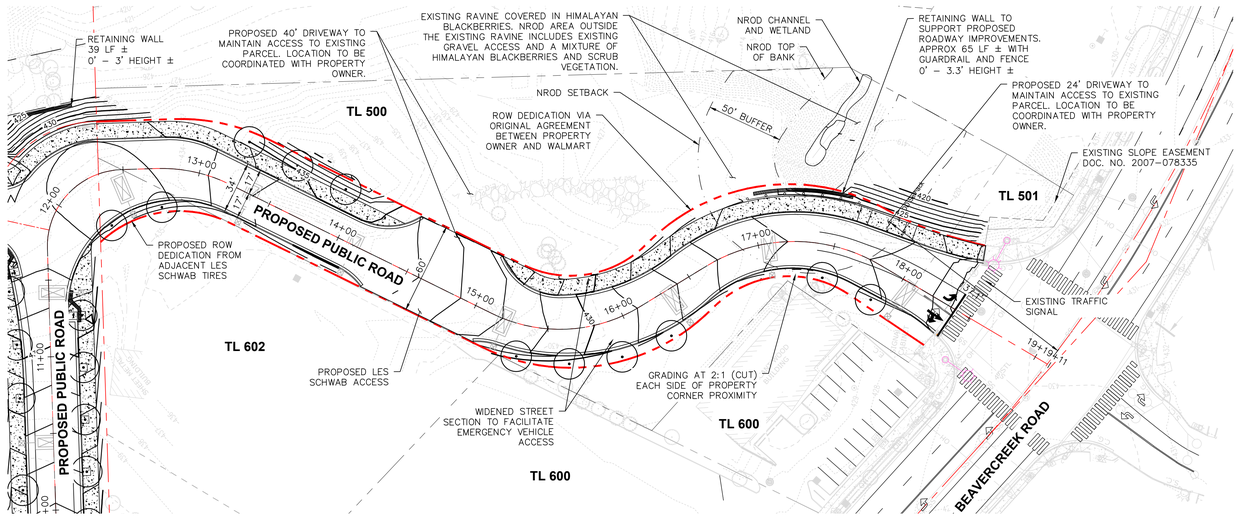
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

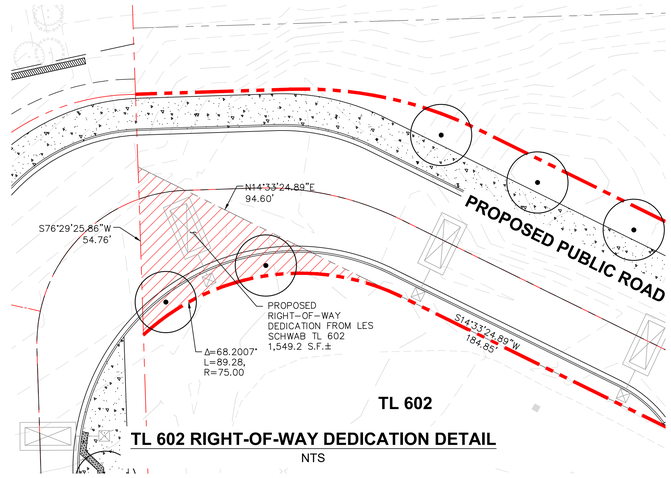
SHEET NAME

PROPOSED PUBLIC ROAD PLAN, PROFILE, AND TYPICAL SECTIONS

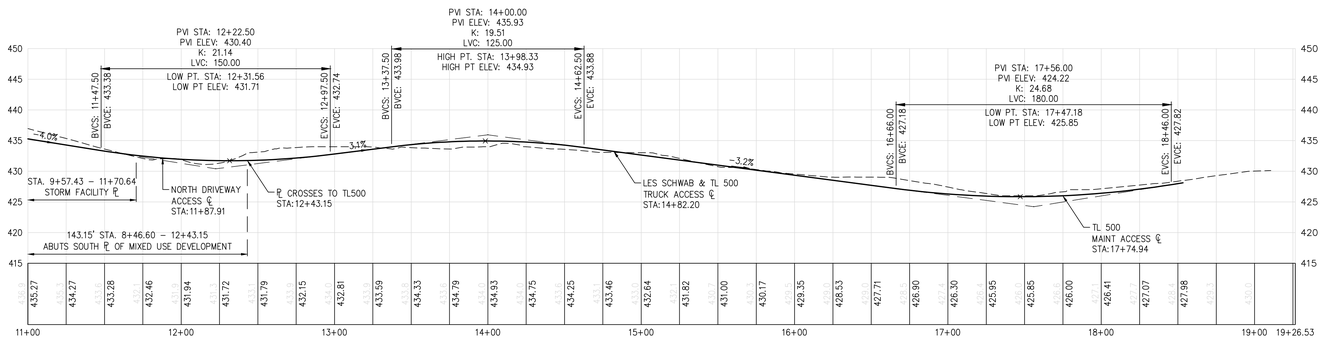
SHEET NUMBER

DDP-C1.2

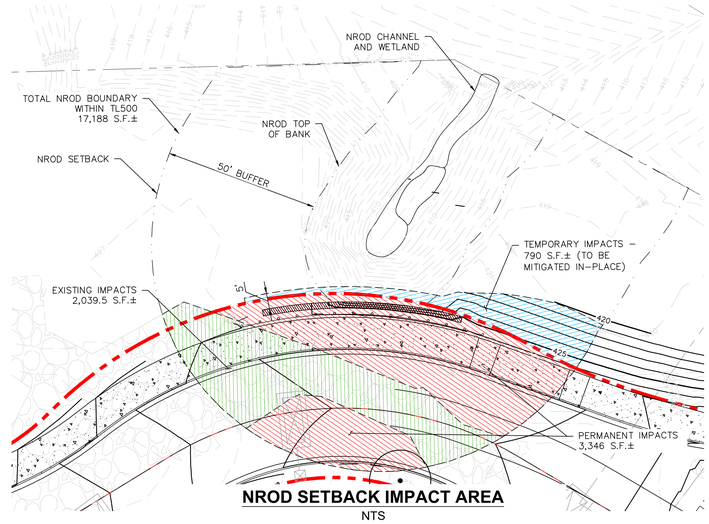




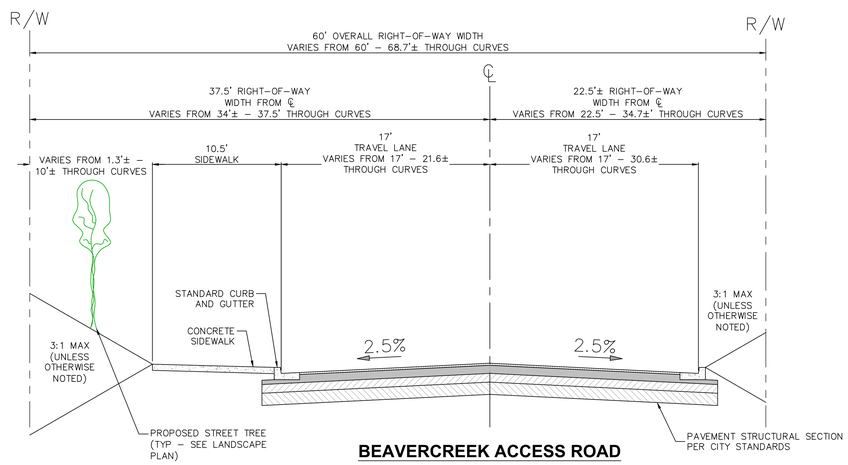
TL 602 RIGHT-OF-WAY DEDICATION DETAIL
NTS



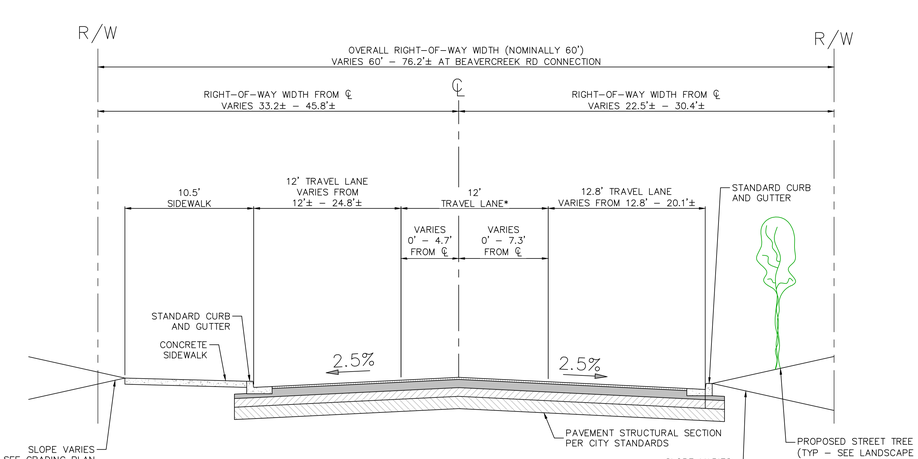
PROPOSED PUBLIC ROAD PROFILE
SCALE:
HORIZONTAL: 1" = 40'
VERTICAL: 1" = 10'



NROD SETBACK IMPACT AREA
NTS



BEAVERCREEK ACCESS ROAD
TYPICAL SECTION
12+33.65 - 14+92.03
NTS



BEAVERCREEK ACCESS ROAD
TYPICAL SECTION
14+92.03 - 18+59
NTS

NOTES:
* CENTER TRAVEL LANE BEGINS AT STATION 17+39.33.



LEGEND

- PROPERTY LINE
- STANDARD CURB
- ROAD CENTER LINE
- 5' PUE
- CONCRETE SIDEWALK
- STREET TREES – SEE LANDSCAPE PLAN
- STREET TREE IN TREE GRATE – SEE LANDSCAPE PLAN
- DECORATIVE STREET LIGHT – SEE LIGHTING PLAN
- STREET LIGHT – SEE LIGHTING PLAN
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CLIENT/OWNER

CYPRESS EQUITIES

PROJECT NAME

OREGON CITY MIXED USE DETAILED DEVELOPMENT PLAN

LANGAN PROJECT NUMBER: 794-002-701

PROJECT ADDRESS

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OREGON CITY, OR 97045

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SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

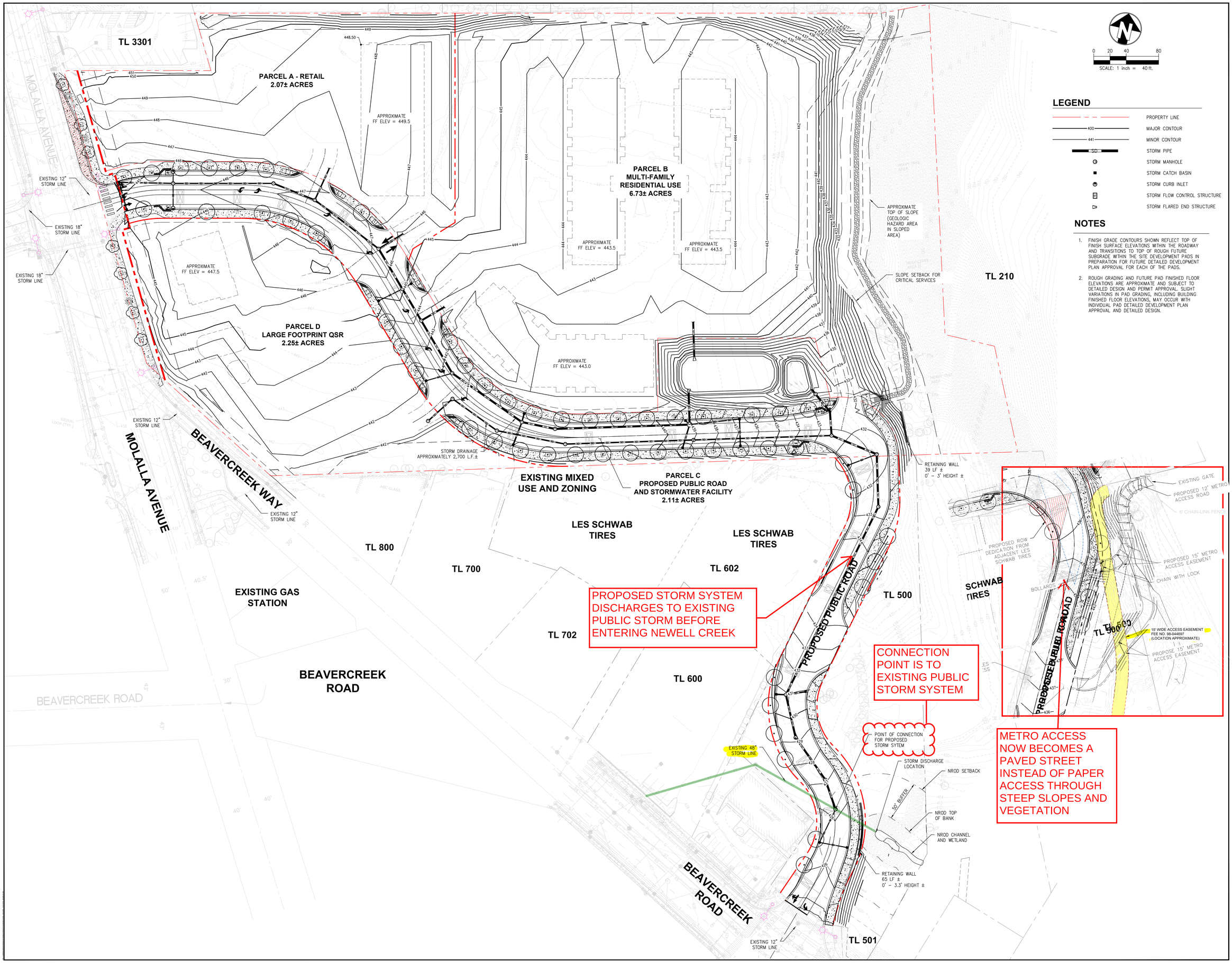
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

PROPOSED PUBLIC ROAD PLAN, PROFILE, AND TYPICAL SECTIONS

SHEET NUMBER

DDP-C1.3



0 20 40 80

SCALE: 1 inch = 40 ft.

LEGEND

- PROPERTY LINE
- 400 MAJOR CONTOUR
- 441 MINOR CONTOUR
- SD STORM PIPE
- STORM MANHOLE
- STORM CATCH BASIN
- STORM CURB INLET
- STORM FLOW CONTROL STRUCTURE
- STORM FLARED END STRUCTURE

NOTES

1. FINISH GRADE CONTOURS SHOWN REFLECT TOP OF FINISH SURFACE ELEVATIONS WITHIN THE ROADWAY AND TRANSITIONS TO TOP OF ROUGH FUTURE SUBGRADE WITHIN THE SITE DEVELOPMENT PADS IN PREPARATION FOR FUTURE DETAILED DEVELOPMENT PLAN APPROVAL FOR EACH OF THE PADS.
2. ROUGH GRADING AND FUTURE PAD FINISHED FLOOR ELEVATIONS ARE APPROXIMATE AND SUBJECT TO DETAILED DESIGN AND PERMIT APPROVAL. SLIGHT VARIATIONS IN PAD GRADING, INCLUDING BUILDING FINISHED FLOOR ELEVATIONS, MAY OCCUR WITH INDIVIDUAL PAD DETAILED DEVELOPMENT PLAN APPROVAL AND DETAILED DESIGN.

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CLIENT/OWNER

CYPRESS EQUITIES

PROJECT NAME

OREGON CITY MIXED USE DETAILED DEVELOPMENT PLAN

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811

SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

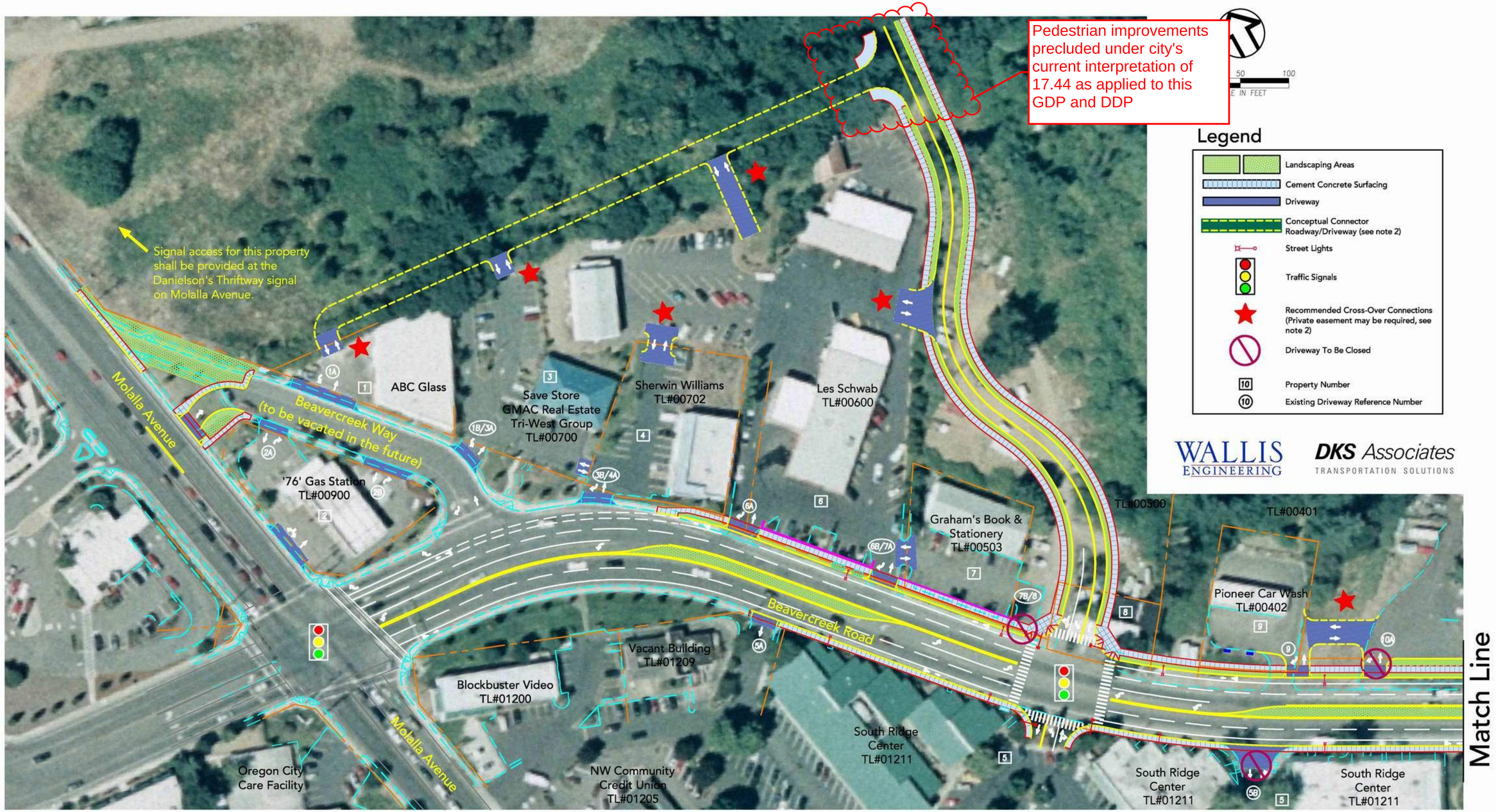
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

PRELIMINARY CIVIL GRADING AND DRAINAGE PLAN

SHEET NUMBER

DDP-C2.0



WALLIS ENGINEERING

DKS Associates
TRANSPORTATION SOLUTIONS

Notes:

1. The goal of the Long Term Access Management Plan is to reduce conflict points, improve safety, and increase vehicle capacity of Beavercreek Road. The specific objectives of the Long Term Access Management Plan are to provide all properties adjacent to Beavercreek Road connectivity to a signalized intersection on Beavercreek Road, and to close and/or consolidate driveways to reduce conflict points and improve overall safety.
2. Crossover agreements between properties shall be provided during redevelopment to meet the above goals and objectives. Locations of crossover connections have been shown conceptually. Final locations may be adjusted during the site plan process provided the goal of the Long Term Plan is met.
3. This plan shall be implemented as redevelopment and/or property consolidation occurs along Beavercreek Road.

Figure 8
Long-Term Access Management Plan

Adopted October 19, 2005
by Ordinance No. 05-1007
Page 1 of 2

STORMWATER
RAIN GARDEN

5' PUE

PROPOSED PUBLIC ROAD

PROPOSED STAIRS TO
ACCESS GRAVEL PATHWAY

RETAINING WALL
39 LF ±
0' – 3' HEIGHT ±

EXISTING GATE

PROPOSED 12' METRO
ACCESS ROAD

6' CHAIN-LINK FENCE

PROPOSED ROW
DEDICATION FROM
ADJACENT LES
SCHWAB TIRES

TING MIXED USE
AND ZONING

CEL C
PUBLIC ROAD
ATER FACILITY
ACRES

LES SCHWAB
TIRES

TL 602

TL 500

PROPOSED PUBLIC ROAD

PROPOSED LES
SCHWAB ACCESS

15' WIDE ACCESS EASEMENT
FEE NO. 98-044697
(LOCATION APPROXIMATE)

PROPOSE 15' METRO
ACCESS EASEMENT

4' BARBED WIRE FENCE

TL 600

PROPOSED 40' DRIVEWAY TO
MAINTAIN ACCESS TO
EXISTING PARCEL. LOCATION
TO BE COORDINATED WITH
PROPERTY OWNER. (40' R)

WIDENED STREET
SECTION TO FACILITATE
EMERGENCY VEHICLE
ACCESS

EXTG GRAVEL
ACCESS

GRADING EASEMENT
AGREEMENT
FEE NO. 2013-058815

ROW DEDICATION VIA
ORIGINAL AGREEMENT
BETWEEN PROPERTY
OWNER AND WALMART

NROD SETBACK

50' BUFFER

NROD TOP OF
BANK

NROD CHANNEL
AND WETLAND

TL 503

STORM MANHOLE
RIM: 430.18'
IE 12" CPP (E): 423.15'
IE 36" CONC (S): 422.91'
IE 36" CONC (N): 422.62'

6' WOOD FENCE

STORM MANHOLE
RIM: 424.51'
FULL OF DEBRIS

STORM MANHOLE AT INLET
RIM: 429.77'
IE 12" CPP (E): 426.57'

ROUND CATCH BASIN
RIM: 429.03'
IE 12" CPP (W): 426.40'

ACCESS AND UTILITY EASEMENT
(AS SHOWN ON EXHIBIT A, 5 OF 14
CASE NO. CV 9

0 10 20 40
SCALE: 1 inch = 20 ft.

LEGEND

- PROPERTY LINE
- STANDARD CURB
- SIGHT DISTANCE AREA
- ROADWAY CENTERLINE
- DRIVEWAY INTERSECTION CENTERLINE
- CONCRETE SIDEWALK
- BUS TURNOUT AREA
- NROD MITIGATION AREA
- STREET TREES – SEE LANDSCAPE PLAN
- STREET TREE IN TREE GRATE – SEE LANDSCAPE PLAN
- DECORATIVE STREET LIGHT – SEE LIGHTING PLAN
- STREET LIGHT – SEE LIGHTING PLAN
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CLIENT/OWNER

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SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

METRO ACCESS ROAD EXHIBIT - OPTION 1

SHEET NUMBER

EXH-1.0

STORMWATER
RAIN GARDEN

5' PUE

PROPOSED PUBLIC ROAD

PROPOSED STAIRS TO
ACCESS GRAVEL PATHWAY

RETAINING WALL
39 LF ±
0' – 3' HEIGHT ±

EXISTING GATE

PROPOSED 12' METRO
ACCESS ROAD

6' CHAIN-LINK FENCE

TING MIXED USE
AND ZONING

CEL C
PUBLIC ROAD
ATER FACILITY
ACRES

PROPOSED ROW
DEDICATION FROM
ADJACENT LES
SCHWAB TIRES

LES SCHWAB
TIRES

BOLLARDS

PROPOSED 15' METRO
ACCESS EASEMENT

CHAIN WITH LOCK

TL 602

TL 500

PROPOSED PUBLIC ROAD

PROPOSED LES
SCHWAB ACCESS

15' WIDE ACCESS EASEMENT
FEE NO. 98-044697
(LOCATION APPROXIMATE)

4' BARBED WIRE FENCE

TL 600

PROPOSED 40' DRIVEWAY TO
MAINTAIN ACCESS TO
EXISTING PARCEL. LOCATION
TO BE COORDINATED WITH
PROPERTY OWNER. (40' R)

WIDENED STREET
SECTION TO FACILITATE
EMERGENCY VEHICLE
ACCESS

EXTG GRAVEL
ACCESS

GRADING EASEMENT
AGREEMENT
FEE NO. 2013-058815

ROW DEDICATION VIA
ORIGINAL AGREEMENT
BETWEEN PROPERTY
OWNER AND WALMART

STORM MANHOLE
RIM: 430.18'
IE 12" CPP (E): 423.15'
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IE 36" CONC (N): 422.62'

6' WOOD FENCE

STORM MANHOLE
RIM: 424.51'
FULL OF DEBRIS

STORM MANHOLE AT INLET
RIM:
IE 12" CPP (E): 426.57'
429.77'

ROUND CATCH BASIN
RIM:
IE 12" CPP (W): 426.40'
429.03'

NROD SETBACK

50' BUFFER

NROD TOP OF
BANK

NROD CHANNEL
AND WETLAND

TL 503

ACCESS AND UTILITY EASEMENT
(AS SHOWN ON EXHIBIT A, 5 OF 14
CASE NO. CV 9

0 10 20 40
SCALE: 1 inch = 20 ft.

LEGEND

- PROPERTY LINE
- STANDARD CURB
- SIGHT DISTANCE AREA
- ROADWAY CENTERLINE
- DRIVEWAY INTERSECTION CENTERLINE
- CONCRETE SIDEWALK
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SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

METRO ACCESS ROAD EXHIBIT - OPTION 2

SHEET NUMBER

EXH-2.0

BEFORE THE PLANNING COMMISSION
OF
OREGON CITY

In the Matter of Applicant Cypress Acquisitions, LLC's application for: Masterplan General Development Plan Approval, Conditional Use Approval for Drive-Through Uses, and Maximum Parking Adjustment (1367 Molalla Avenue) – GLUA 25-00025, CU-25-00001, MAS-25-00001, PARK-25-00001); and application for Detailed Development Review-GLUA 25-0025, MAS 25-0002, GEO 25-0007	**FINAL WRITTEN ARGUMENT AND PROPOSED FINDINGS OF FACT**

INTRODUCTION

The Planning Commission at its April 13, 2026, hearing heard testimony from Cypress Acquisitions, LLC ("Cypress") that the last-minute change of position by Staff regarding the location of the Shared Path and development within the City's Landslide and Buffer Zone not only caught Cypress off guard, but would significantly impact and compromise its proposed development. Moving the Shared Path from the eastern portion of its property (as designated in the City's TSP) to another location compromises development of Parcel B. Limiting development within the City's Landslide and Buffer Zone, as staff has interpreted OCMC 17.44,

would make the proposed development uneconomical and not in compliance with the code as we'll explain below.

Cypress discussed how it had cooperatively worked with Staff for a year to acquire Staff's positive recommendations for approval only to have Staff change their positions as late as March 24, 2026. None of the last minute issues raised by Staff were ever discussed with Cypress representatives during its Pre-Application Conference nor in any conversations between City Staff and Cypress until Staff raised them on March 23rd and March 24th. Cypress respectfully requests the Planning Commission to confirm with Staff that this statement is accurate at its April 20th meeting.

Cypress made it clear, however, that while it was understandably upsetting, it wished to focus on solutions. As a result, Cypress provided the following solutions to the Planning Commission:

Shared Path

Mr. Franklin, Cypress's Project Engineer, showed the Planning Commission how Cypress could relocate the Shared Path. Mr. Williams, the Managing Director of Cypress, offered to dedicate an easement for the Shared Path and provide a fee in lieu of constructing it now. He emphasized,

as had Metro, it made no sense to build a "path to nowhere" under today's current conditions.

The land value of the dedication would be $200,000. The fee in lieu would be approximately $80,000 based upon the City's calculations in Staff's Revised Report. Mr. Williams believed this approach was fair, appropriate and represented Cypress's proportionate share associated with the Shared Path.

Proposed Development in the City's Landslide and Buffer Zone

Mr. Williams emphasized that Staff's change of position to significantly limit any development in this area would be economically devastating to the proposed project. He and Mr. Franklin also emphasized that relocating the Shared Path, as proposed at the hearing, would be adversely affected by Staff's change of position on this issue. Additionally, the Project's Storm Water Facility, that will control water discharge in this area, is located in the Landslide and Buffer Zone.

The Cypress Project Team explained that their Geotechnical Report from Terracon demonstrated that the proposed development in this area would be feasible and adequate to prevent landslides or damage to property in compliance with OCMC 17.44.060.L.

In particular, Terracon's Report demonstrated that with implementation of its report and recommendations, the proposed development would avoid disturbance of mapped landslide areas; use engineered stabilization measures where required; provide factors of safety exceeding minimum industry standard and, therefore, exceeding code requirements; prevent increased hazard to adjacent properties (in fact improve the condition of downslope properties from a shallow landslide risk); and provide long-term geological stability of the proposed development.

The City's Geotechnical Engineer confirmed that the technical analysis by Terracon was sound (conference call with City Staff, City Attorney, City's Geotechnical Engineer on April 1). City Staff confirmed the same at the hearing.

Staff, however, stated that OCMC 17.44.060.L did not permit such development despite everyone's agreement that it would be safe and actually improve the condition in this area by controlling drainage.

The City Attorney advised the Planning Commission it was her interpretation of the City's Code that any development in this area was

limited and would not allow the proposed development notwithstanding the fact it would be safe and appropriate.

Mr. Hathaway advised the Planning Commission it was Cypress's interpretation that OCMC 17.044.060.L did permit the City to allow the proposed development since everyone agreed that the science and engineering was correct. He stated that OCMC 17.44.060.L was a procedural vehicle for the City's Geotechnical Engineer and Staff to exercise discretion to permit such development within the Landslide and Buffer Zone.

Based on the foregoing, Mr. Hathaway stated it was his opinion that a favorable resolution of the interpretation of the City's Code would enable Cypress to proceed with its proposed solutions. The Planning Commission agreed that a key issue was whether the City's Code could be interpreted to permit the proposed solutions.

Mr. Hathaway advised Staff this week that he would provide the Planning Commission his Interpretation Assessment by Friday at 4:00 p.m., so the Planning Commission would be able to review it prior to its deliberations on April 20th.

INTERPRETATION ASSESSMENT

The question is whether OCMC 17.44.060.L permits the City to exercise its discretion and permit development within a City's Landslide and Buffer Zone if there is supporting documentation that such development is appropriate based on an acceptable Geotechnical Report.

It is the City Attorney's opinion that OCMC 17.44.060.L does not provide the City any flexibility in permitting Cypress to build within the City's Landslide and Buffer Zone as proposed despite everyone's agreement such development would be safe (and even better). The City Attorney stated that OCMC 17.44.060.L did not provide for a "variance" or "adjustment" to the City's Geologic Hazard Standards.

Cypress representatives responded stating it was their opinion that OCMC 17.44.060.L was not a "variance" or "adjustment" standard but the clear right of the City to exercise its discretion and permit the proposed development within the Landslide and Buffer Zone if the science and engineering supported such proposed development. It is our opinion that OCMC 17.44.060.L does provide the City flexibility. It is not an absolute rigid standard as described below.

The following Interpretation Assessment supports Cypress's position and enables the Planning Commission to approve Cypress's proposed development in this area. Our Interpretation Assessment will review the key provisions of the OCMC Chapter 44 (Geologic Hazards) and provide findings that the Planning Commission can adopt in support of Cypress's position. It is intended to be a guide to assist the Planning Commission in making its interpretation.

TEXT ASSESSMENT

OCMC 17.44.010 - Intent and purpose.

The Intent and Purpose of the provisions of OCMC Chapter 17.44 are:

A. To ensure that activities in geologic hazard areas are designed based on detailed knowledge of site conditions in order to reduce the risk of private and public losses;

B. To establish standards and requirements for the use of lands within geologic hazard areas;

C. To provide safeguards to prevent undue hazards to property, the environment, and public health, welfare, and safety in connection with use of lands within geologic hazard areas;

D. To mitigate risk associated with geologic hazard areas, not to act as a guarantee that the hazard risk will be eliminated, nor as a guarantee that there is a higher hazard risk at any location. Unless otherwise provided, the geologic hazards regulations are in addition to generally applicable standards provided elsewhere in the Oregon City Municipal Code.

Finding: These Intent and Purpose statements are the centerpiece for the Planning Commission's interpretation of OCMC 17.44.060.L. Everything is measured by these Intent and Purpose Statements. OCMC 17.44.010.A-D speak to a **DESIGN** solution, not a limitation imposed by a line on a map or a surface impact limitation without regard to any site-specific conditions that may exist that could otherwise be addressed by a **DESIGN** solution.

Terracon's Geotechnical Report satisfies each of these elements, considering site-specific **DESIGN** parameters and has been accepted by City Staff.

OCMC 17.44.050 - Development—Application requirements and review procedures and approvals.

A. A geological assessment and geotechnical report that specifically includes, but is not limited to:

1. Comprehensive information and data regarding the nature and distribution of underlying geology, the physical and chemical properties of existing soils and groundwater; an opinion of site geologic stability, and conclusions regarding the effect of geologic conditions on the proposed development…."

2. Information and recommendations regarding existing local drainage, proposed permit activity impacts on local drainage, and mitigation to address adverse impacts;

3. Comprehensive information about site topography;

4. Opinion as to the adequacy of the proposed development from an engineering standpoint;

5. Opinion as to the extent that instability on adjacent properties may adversely affect the project;

6. Description of the field investigation and findings, including logs of subsurface conditions and laboratory testing results;

7. Conclusions regarding the effect of geologic conditions on the proposed development, tree removal, or grading activity;

8. Specific requirements and recommendations for plan modification, corrective grading, and special techniques and systems to facilitate a safe and stable site;

9. Recommendations and types of considerations as appropriate for the type of proposed development:

10. Scaled drawings that describe topography and proposed site work, including:

    a. Natural physical features, topography at two or ten-foot contour intervals locations of all test excavations or borings, watercourses both perennial and intermittent, ravines and all existing and man-made structures or features all fully dimensioned, trees six-inch caliper or greater measured four feet from ground level, rock outcroppings and drainage facilities;

    b. All of the features and detail required for the site plan above, but reflecting preliminary finished grades and indicating in cubic yards whether and to what extent there will be a net increase or loss of soil.

c. A cross-section diagram, indicating depth, extent and approximate volume of all excavation and fills.

Finding: The Terracon Geological Report meets all of the above requirements and has been accepted by Staff.

11. For properties greater than one acre and any property that has any portion of its property existing within a mapped landslide, where the activity is not exempted by Section 17.44.035, a preliminary hydrology report, prepared by a suitably qualified and experienced hydrology expert, addressing the effect upon the watershed in which the proposed development is located; the effect upon the immediate area's stormwater drainage pattern of flow, the impact of the proposed development upon downstream areas and upon wetlands and water resources; and the effect upon the groundwater supply.

Finding: Langan, the Project Engineers (through Mr. Franklin), submitted a Storm Water Report that included a Hydrology Report.

B. Review procedures and approvals require the following:

1. Examination to ensure that:

a. Required application requirements are completed;

b. Geologic assessment and geotechnical report procedures and assumptions are generally accepted; and

c. All conclusions and recommendations are supported and reasonable.

2. Conclusions and recommendations stated in an approved assessment or report shall then be directly incorporated as permit conditions or provide the basis for conditions of approval for the regulated activity.

3. All geologic assessments and geotechnical reports shall be reviewed by an engineer certified for expertise in geology or geologic engineering and geotechnical engineering, respectively, as determined by the city. The city will prepare a list of prequalified consultants for this purpose. The cost of review by independent review shall be paid by the applicant.

Finding: The City reviewed Terracon's Geological Report and determined it satisfied all of the above requirements.

C. The city engineer may waive one or more requirements of subsections A and B of this section if the city engineer determines that site conditions, size or type or development of grading requirements do not warrant such detailed information. If one or more requirements are waived, the city engineer shall, in the staff report or decision, identify the waived provision(s), explain the reasons for the waiver, and state that the waiver may be challenged on appeal and may be denied by a subsequent review authority.

Finding: The City did not waive any of the above requirements.

Overall OCMC 17.44.050 Finding: The entire section of OCMC 17.44.050 outlines the requirements of a detailed Geotechnical Analysis, including specific recommendations, techniques, and systems to facilitate a safe and stable site for the type of proposed development. OCMC 17.44.050.B.2 indicates that the conclusions and

recommendations stated in an approved assessment or report shall then be directly incorporated as permit conditions or provide the basis for conditions of approval for the regulated activity. This requirement is unambiguous.

OCMC 17.44.060 - Development standards

The following standards shall apply to the review of any development proposal subject to this chapter.

OCMC 17.44.060.L provides as follows:

> The review authority shall determine whether the proposed methods of rendering a known or potential hazard site safe for construction, including proposed geotechnical remediation methods, are feasible and adequate to prevent landslides or damage to property and safety.
>
> The review authority shall consult with the City's geotechnical engineer in making this determination. Costs for such consultation shall be paid by the applicant.
>
> The review authority may allow development in a known or potential hazard area **as provided in this chapter** if specific findings are made that the specific provisions in the design of the proposed development will prevent landslides or damage. The review authority may impose any conditions, including limits on type or intensity of land use, which it determines are necessary to assure that landslides or property damage will not occur. (Empasis Added)

Finding: The DDP Staff report indicates on page 76 that the applicant believes that OCMC 17.44.060.L gives City Staff the authority to grant a "variance" or otherwise "adjust" the otherwise applicable development standards. That is not at all what Cypress is arguing. Cypress is not seeking a "variance" or "adjustment". A "variance" or "adjustment" is not required to allow the City to accept Terracon's Geological Report pursuant to OCMC 17.44.060.L. Section L speaks for itself and states outright that there can be a **DESIGN** solution—as there is in this review.

It is Cypress's position that OCMC 17.44.060.L carries equal weight with the rest of the Development Code Provisions within Chapter 17.44, and specifically within OCMC 17.44.060. Section "L" is not intended to have less meaning than either Sections "H" or "I". It is at the same level and includes within it the specific requirement that the review authority **shall** determine whether the proposed methods of rendering a known or potential hazard site safe for construction, including proposed geotechnical remediation methods, are feasible and adequate to prevent landslides or damage to property and safety.

Further, Section "L" specifically states that:

> "[The] review authority may allow development in a known or potential hazard area **as provided in this chapter** if specific findings are made that the specific provisions in the **DESIGN** of the proposed development will prevent landslides or damage."

The DDP Staff Report references the clarifying term "**as provided in this chapter"** in OCMC 17.44.060.L noting that this is a key term and emphasizing that term only permits development that is otherwise authorized in OCMC Chapter 17.44. Cypress suggests that the City has misconstrued the use of this term.

Staff ignores the fact that the provisions of OCMC 17.44.060.L that allow the City to exercise its discretion enabling development within the Landslide and Buffer Zone <u>are</u> part of OCMC Chapter 17.44. Therefore, OCMC 17.44.060.L, which permits the City to exercise its discretion to allow the proposed development, is development in a known or potential hazard area as provided in Chapter 17.44. As a result, the City is not precluded from permitting development within a Landslide and Buffer Zone if a Geotechnical Report is accepted by the City.

The Staff's DDP findings attempt to justify the City's position stating that Cypress's interpretation of OCMC 17.44.060.L would inject subjectivity

into the City's decision-making process that is somehow inappropriate. First, this position is irrelevant since OCMC 17.44.060.L speaks for itself and allows development within a Landslide and Buffer Zone. Second, any exercise of "subjectivity" has specific guardrails under the City's Code that clearly defines the City's obligation in how it exercises its discretion.

CONCLUSION

Based on the foregoing, Cypress respectfully requests the Planning Commission to interpret OCMC 17.44.060.L in a manner that will allow the City to permit the proposed development within the City's Landslide and Buffer Zone based on Terracon's Geological Report. This interpretation will allow the Planning Commission to relocate the Shared Path and allow the proposed development within the City's Landslide and Buffer Zone.

Cypress's Interpretation achieves the following:

1. It provides the City absolute discretion (with appropriate guard rails) to determine whether the design of a proposed development would prevent landslides or damage.
2. It allows the City to impose conditions to assure that landslides or property damages will not occur.

3. It achieves the legislative intent behind protecting the public's health, safety and welfare;
4. It provides a dedicated easement for the Shared Path and a fee in lieu in the amount of $80,000 if the proposed project is allowed to proceed. It is unlikely that the proposed project (or any other project) will be able to proceed if Cypress's proposed solutions cannot be implemented. As a result, the City will lose an opportunity to acquire property and create a fund for future construction of its Shared Path.
5. It allows much needed housing in Oregon City; and
6. It allows this property to finally develop which will change the current condition of the area.

Cypress understands the potential dilemma confronting your Planning Commission in its interpretation of OCMC 17.44.060.L. Having been a local government attorney, I appreciate the relationship between your Planning Commission and Staff. It is often times difficult for a Commission to render a different decision than recommended by Staff. We believe this is one of those times.

Your Planning Commission has the authority to make an independent decision in the review of Cypress's applications. Cypress believes that your acceptance of its interpretation is not only legally defensible but allows your Planning Commission to implement Cypress's solutions to address the problems it did not expect.

PROPOSED MOTIONS

Based on the foregoing, Cypress respectfully requests the Planning Commission to make and adopt the following Motions:

(1) The Planning Commission moves to accept Cypress's Interpretation of the City's Municipal Code.

(2) The Planning Commission further moves to approve Cypress's relocation of the Shared Path including its agreement to dedicate an easement and provide a fee in lieu rather than require Cypress to construct the Shared Path.

(3) The Planning Commission also moves to approve Cypress's development in the City's Landslide and Buffer Zone including the future construction of the Shared Path and its Storm Water System.

(4) The Planning Commission lastly moves to approve the above-entitled applications subject to the Staff's Revised Reports as modified by the Planning Commission's acceptance of the relocation of the Shared Path and Cypress's development within the City's Landslide and Buffer Zone.

DATED this 17th day of April 2026.

HATHAWAY LARSON LLP

By: /s/Gregory S. Hathaway

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625 Center Street
Oregon City, OR 97045
503-657-0891

CITY OF OREGON CITY

Staff Report

To: Planning Commission **Agenda Date:** April 20, 2026
From:

SUBJECT:
Item 2.b. - GLUA-25-00025: MAS-25-00002, GEO-25-00007, NROD-25-00012-1367 Molalla Ave -Detailed Development Review (DDP) for the construction of a new public road (Parcel C)

STAFF RECOMMENDATION:
Staff recommends that the Planning Commission deliberate and make a final decision on the application. Staff has provided a staff report that recommends conditional approval of the application. At the April 13, 2026 Planning Commission Meeting, the Planning Commission closed the record, allowed the applicant to submit final written arguments in support of their application as allowed by ORS 197.797, and continued the hearing to April 20, 2026.

No additional information or public comment may be added to the record.

During the deliberation, the Planning Commission will need to provide direction on the following aspects of the proposal:

- Do you agree or disagree with the staff recommendation to relocate the north end of the shared use path, integrate it into Parcel B to improve visibility, move it away from the geohazard buffer area, and allow its construction either concurrently with the DDP or as a Future DDP on Parcel B?
- Do you agree or disagree with Staff's interpretation of *OCMC 17.44.060(L) - Development* standards that staff does not have the authority to approve development in the buffer area beyond *"four thousand square feet of the surface area... graded or stripped of vegetation or covered with structures or impermeable surfaces"*

Please refer to the Applicant's final arguments for their response to the above questions.

Please reference the April 6, 2026 DDP staff report for the following topics: **shared use path location**:-46-47 pages, **Geohazard Overlay District:** pages 67-81, ***OCMC 17.44.060(L)*** *page 76.*

EXECUTIVE SUMMARY:
The Applicant is proposing a Master Plan (GLUA-25-00025: CU-25-00001, MAS-25-00001, PARK-25-00001) to create future development parcels for a site zoned Mixed Use Corridor

2. Once approved, each parcel will be submitted for a separate Type II Administrative Detailed Development Plan (DDP) Review when market conditions are ready for each development.

A Detailed Development Plan for the construction of a new public road (parcel C) and utilities has been submitted (MAS-25-002_GEO-25-007_NROD-25-012) concurrently with the Master Plan. The staff report will be part of the Planning Commission hearing and can be approved at the same time as the Master Plan.

At the March 23, 2026, hearing, the applicant requested a continuance to continue working with city staff on the details related to the shared use path on Parcel B. During that discussion, staff examined Parcel B more closely and determined that the applicant has designed the parking lot on Parcel B farther into the hillside than is permitted within the OCMC 17.44 Geologic Hazard buffer area. Although Parcel B is not being reviewed as a Detailed Development Plan (DDP) in this package, the applicant will need to redesign Parcel B when submitting a future Type II DDP. Conditions have been included to identify required revisions to comply with OCMC 17.44 for Parcel B. The revised staff report includes additional findings regarding the location and timing of the shared-use path to ensure it is placed in a safe area visible from the development on Parcel B when constructed.

At the April 13, 2026 meeting, both staff and the applicant presented additional information to address the location and timing of the shared- use path and the Geologic Hazard Overlay District, including a discussion of OCMC 17.44.060(L). The Planning Commission closed the record, allowed the applicant to submit final written arguments in support of their application as allowed by ORS 197.797, and continued the hearing to April 20, 2026, for deliberations and a decision.

BACKGROUND:
Please refer to the staff report for additional background information.

OPTIONS:

BUDGET IMPACT:
1. Approve the proposal with conditions (staff recommendation)
2. Approve the proposal with modified conditions and provide revised findings
3. Deny the proposal and provide revised findings.

OREGON CITY

Community Development – Planning

695 Warner Parrott Road | Oregon City OR 97045
Ph (503) 722-3789 | Fax (503) 722-3880

April 6, 2026

DETAILED DEVELOPMENT PLAN (DDP)- STREET IMPROVEMENTS

FILE NUMBER: **GLUA-25-00025**: **MAS-25-00002, GEO-25-00007, NROD-25-00012**

Application Submitted:06/27/2025
Application Incomplete: 7/26/2025
Application Complete:12/18/2025
120-Day Decision Deadline:04/17/2026
120-Day Deadline Extension 05/17/2026

APPLICANT: Cypress Acquisitions, LLC
8144 Walnut Hill Lane, Suite 1200
Dallas, TX 75231

OWNER:

TL 3200, 3201, 3300, & 3400:	Walmart Inc. 2608 SE J St. Bentonville, AR 72716-5510
TL 500, 501	Rocky Younger PO Box 1337 Oregon City, OR 97045
TL 602	Les Schwab 20900 Cooley Rd Bend, OR 97701

REQUEST: Masterplan Detailed Development Plan Approval
Natural Resource Overlay District (NROD) Approval
Geologic Hazard Overlay
Modification to Certain Public Improvements and Design Standards

LOCATION: 1367 Molalla Ave
Oregon City, OR 97045
3-2E-05DB TL 3200, 3201, 3300, &
3400, 500, 501, 602

REVIEWER: Christina Robertson-Gardiner, Senior Planner AICP
Erik Nichols, Project Engineer

ZONING: Mixed Use Corridor 2

DECISION: Approval with Conditions

PROCESS: Type III decisions involve the greatest amount of discretion and evaluation of subjective approval standards, yet are not required to be heard by the city commission, except upon appeal. Applications evaluated through this process include conditional use permits. The process for these land use decisions is controlled by ORS 197.763. Notice of the application and the planning commission hearing is published and mailed to the applicant, recognized neighborhood association and property owners within three hundred feet of the subject property. Notice must be issued at least twenty days pre-hearing, and the staff report must be available at least seven days pre-hearing. At the evidentiary hearing held before the planning commission, all issues are addressed. The decision is final unless appealed and description of the requirements for perfecting an appeal. The decision of the planning commission is appealable to the city commission within fourteen days of the issuance of the final decision. The city commission hearing on appeal is on the record and no new evidence shall be allowed. Only those persons or a city-recognized neighborhood association who have participated either orally or in writing have standing to appeal the decision of the planning commission. Grounds for appeal are limited to those issues raised either orally or in writing before the close of the public record. A city-recognized neighborhood association requesting an appeal fee waiver pursuant to OCMC 17.50.290.C must officially approve the request through a vote of its general membership or board at a duly announced meeting prior to the filing of an appeal. The city commission decision on appeal from the planning commission is the city's final decision and is appealable to the Land Use Board of Appeals (LUBA) within twenty-one days of when it becomes final.

CHAPTERS

CHAPTER 12.04 STREETS, SIDEWALKS, AND PUBLIC PLACES

CHAPTER 12.08 - PUBLIC AND STREET TREES

CHAPTER 13.12 STORMWATER MANAGEMENT

CHAPTER 15.48 - GRADING, FILLING AND EXCAVATING

CHAPTER 16.12 MINIMUM PUBLIC IMPROVEMENTS AND DESIGN STANDARDS FOR DEVELOPMENT

CHAPTER 17.29 MUC MIXED USE CORRIDOR DISTRICT

CHAPTER 17.41 TREE PROTECTION, PRESERVATION, REMOVAL & REPLANTING STANDARDS

CHAPTER 17.44 - US—GEOLOGIC HAZARDS

CHAPTER 17.47 CONSTRUCTION SITE RUNOFF CONTROLS

CHAPTER 17.49 NATURAL RESOURCES OVERLAY DISTRICT

CHAPTER 17.50 ADMINISTRATION AND PROCEDURES

CHAPTER 17.52 OFF-STREET PARKING AND LOADING

CHAPTER 17.54 SUPPLEMENTAL ZONING REGULATIONS AND EXCEPTIONS

CHAPTER 17.56 CONDITIONAL USES

CHAPTER 17.62 SITE PLAN AND DESIGN REVIEW

CHAPTER 17.65 MASTER PLANS AND PLANNED UNIT DEVELOPMENTS

REVISED Conditions of Approval
Planning File GLUA-25-00025: MAS-25-00002, GEO-25-00007, NROD-25-00012

(P) = Verify that condition of approval has been met with the Planning Division.
(DS) = Verify that condition of approval has been met with the Development Services Division.
(B) = Verify that condition of approval has been met with the Building Division.
(F) = Verify that condition of approval has been met with Clackamas Fire Department.

The applicant shall fulfill the following conditions prior to issuance of a public improvement and/or Building permit associated with the proposed application.

1. The development plans shall comply with all current Oregon City Public Works design standards, specifications, codes, and policies prior to receiving a permit and beginning construction. (DS)
2. The developer shall relocate portions of the stormwater management area outside of the Geologic Hazards Overlay Zone, separate public and private stormwater management or make all stormwater management private, and provide finalized engineered drainage plan(s), drainage report(s), and design flow calculation report(s) stamped and signed by a licensed engineer addressing all items from Section 9.3 & 9.4 of the Public Works Stormwater and Grading Design Standards prior to receiving a permit and beginning construction. (DS)
3. A City issued erosion and sediment control permit shall be obtained prior to commencement of any earth disturbing activities. (DS)
4. Erosion and sediment control plans shall be submitted for review and approval by the City prior to issuance of an erosion and sediment control permit. (DS)
5. The developer shall obtain a 1200-C (NPDES) permit from Oregon Department of Environmental Quality (DEQ) for construction activities one acre or greater prior to receiving a permit and beginning construction. (DS)
6. The applicant shall provide a grading and erosion control plan identifying onsite environmental cleanup activities. (DS)
7. Erosion control measures shall be in conformance with OCMC Chapter 17.47. (DS)
8. If the proposed roadway encroaches on the mapped stream or wetland, the applicant will coordinate with DSL or USACOE to obtain the proper permitting. (DS)
9. If the proposed roadway encroaches on the mapped stream or wetland, the applicant shall coordinate with ODFW to obtain the proper permitting.
10. The developer shall provide an engineered grading plan prepared by a professional engineer in compliance with the submittal requirements of the Public Works Stormwater and Grading Design Standards. (DS)
11. Public stormwater facilities shall only treat stormwater from publicly maintained right-of-way (i.e. public streets). The applicant shall either separate the public stormwater

from the private runoff with separate publicly maintained facilities (e.g. streetside planters or other separate facilities) and privately maintain facilities for private stormwater runoff; or the development can provide stormwater management in total for public and private improvements and maintain the facility or facilities privately. (DS)

12. Compliance with the "purpose and general provisions" of chapter 16.12 can be met by adhering to the following: The development plans shall comply with all current Oregon City Public Works design standards, specifications, codes, and policies prior to receiving a permit and beginning construction. (DS)
13. The applicant shall submit a request to the Community Development Department to receive approval for new street names. Street names shall be provided on the approved plans, and street signs shall be provided for review of the City prior to installation. All traffic control devices, such as signage, flashing lights/beacons, and traffic signals shall be designed using the MUTCD. The applicant shall provide a Traffic Signal Plan conforming to Clackamas County Standards. (DS)
14. On the development's frontage for Molalla Avenue, the applicant shall provide 16 feet of right-of-way-dedication (for a total of 51 feet from the street center to their property line), a 5-foot-wide public utility easement, a 6-foot-wide bicycle lane, and a 10.5-foot-wide sidewalk with tree wells. The frontage improvements on Molalla Avenue shall be consistent with the City's Street Design Standards for Molalla Avenue (e.g. light fixtures, sidewalk patterns, tree wells, etc.). (DS)
15. The applicant shall restripe the center turning lane on Molalla Avenue as a left turn lane into the property at the existing intersection following City, State, and Federal guidelines for left turn lane storage and taper. (DS)
16. The first segment of the new public road connecting Molalla Avenue and Beavercreek Road (~STA 1+46 - STA 8+66) shall have a cross-section with 70 feet of right-of-way with three (3) 12-foot-wide lanes, two (2) 6-foot-wide bicycle lanes, two (2) 10.5-foot-wide sidewalks with 5-foot-wide tree wells. (DS)
17. The second segment of the new public road connecting Molalla Avenue and Beavercreek Road (~STA 8+66 – STA 11+50) shall have 64 feet of right-of-way with two (2) 12-foot-wide lanes, two (2) 6-foot-wide bicycle lanes, two (2) 10.5-foot-wide sidewalks with 5-foot-wide tree wells and shall be designed to minimize grade change within the geologic hazards overlay zone to reduce areas graded or stripped of vegetation or covered with structures or impermeable surfaces to a maximum of 4,000 sf within the parcel for which segment 2 lies. (DS)
18. Segment 3 of the new public road connecting Molalla Avenue and Beavercreek Road (~STA 11+50 – STA 14+92) shall have 60-feet of right-of-way with two (2) 17 to 21-foot-wide lanes (to accommodate freight through curves), one (1) 10.5 foot-wide shared use path (striped), and landscaping located behind the shared use path or in other approved locations and shall be designed to minimize grade change within the geologic hazards overlay zone to reduce areas graded or stripped of vegetation or covered with structures or impermeable surfaces to a maximum of 4,000 sf within the parcel for which segment 3 lies.(DS)
19. Segment 4 of the new public road connecting Molalla Avenue and Beavercreek Road (~STA14+92 – STA 18+59) shall vary from 60 to approximately 76 feet of right-of-way with three (3) 12-foot-wide lanes (varied to accommodate freight movements), one (1) 10.5-

foot wide shared-use-path (striped), and landscaping either behind path or in approved locations. (DS)

20. The new shared use path shall transition from the curbed path along the new public road which connects Molalla Avenue to Beavercreek Road to the existing bicycle lane along Beavercreek Road either through modification of the existing ADA ramp or by other means evaluated during technical design review. (DS)
21. TSP Project S28 shall be constructed as a public off-street pedestrian/bicycle accessway for the portion on TL 3200 and 3400 per OCMC 16.12.032 standards. The applicant shall construct their portion of TSP Project S28 within Parcel C (shared use path) and as a 7-10 foot paved off-street ADA compliant pedestrian/bicycle accessway with lighting and landscaping as regulated by the code for the portion on Parcel B per OCMC 16.12.032 standards. S28 shall be designed to minimize grade change within the geologic hazards overlay zone to reduce areas graded or stripped of vegetation or covered with structures or impermeable surfaces to a maximum of 4,000 sf. The applicant may choose to delay the construction of the Parcel B portion of the path to the DDP whereby the path may be able to be constructed at grade adjacent to the proposed parking lot, potentially making it exempt from the Geologic Hazard code. (DS)
22. The construction of S28 within TL 3400 and TL 3200 shall be completed prior to occupancy of Parcel B.
23. The applicant shall provide a lighting plan on Molalla Avenue and the proposed new public road connecting Molalla Avenue and Beavercreek Road in conformance with all City standards, specifications, codes, and policies and as approved by Portland General Electric (PGE). Street Lights on Molalla Avenue shall be consistent with the City's Street Design Standards for Molalla Avenue. The applicant shall submit a photometric plan with their permitting plans. (DS)
24. Written approval from Trimet to relocate the existing bus stop on Molalla Avenue is required. (DS)
25. The applicant shall provide an updated TIA addressing compliance with access spacing standards or sight distance standards, pedestrian/bicycle routes to the nearest schools, and the project's internal vehicle, pedestrian and bicycle circulation. (DS)
26. All driveways, new and existing, shall meet the minimum driveway spacing standards identified in Table 16.12.035.A. The modified driveway locations for Parcel A and Parcel B appear to meet the intent of the spacing standards. Final driveway locations will be evaluated during the design review phase with the applicant's updated TIA. (DS)
27. All driveways (curb cuts), new and existing, shall meet the minimum driveway width standards identified in Table 16.12.035.D. Approved driveway widths will need to be included on engineering plans prior to receiving a permit and beginning construction. The applicant has proposed a modification to the driveway standard for Parcel D. The proposed modification to Parcel D complies as proposed. (DS)
28. If the NROD area is disturbed with this project, the applicant shall coordinate with the City's Planning Department on mitigations per the City's standards in OCMC 17.49 (P)
29. The proposed water main shall connect to the City's 30-inch Water Main on Molalla Avenue and the City's 20-inch main on Beavercreek Road. (DS)
30. The development shall provide an Access and Water Supply Plan to Clackamas Fire District #1 for review. An approved Access and Water Supply Plan is required prior to issuance of building permits for the development. (DS)

31. The engineering plans shall provide a local benchmark, onsite, using the NAVD88 datum prior to receiving a permit and beginning construction. (DS)
32. The applicant shall display the tree protection fencing specifications and notices per OCMC 17.41.130 on the grading and erosion control plan.
33. Per OCMC 17.41, the number of trees proposed to be removed will be replaced based on the size of the tree and the location of the removed tree according to Table 17.41.060-1 Tree Replacement Requirements. Prior to the release of the construction permits for the new road and any associated grading, the applicant shall update the existing, but out-of-date, 2012 tree inventory, making sure to include tax lots 500, 501, and 602, and confirm the number of mitigation trees required. Before the completion of the construction of the new public road, the applicant shall indicate the mitigation approach—Options 1, 2, 3, or a combination thereof—and confirm that all mitigation trees have been planted or fee-in-lieu paid. (P)

34. The applicant has proposed an NROD mitigation plan for the small section of the new Street that encroaches on the NROD buffer, which is consistent with the mitigation standards in OCMC 17.49.180 and OCMC 17.49.190. Prior to the release of construction permits, the applicant shall provide a final updated delineation with the final design of the new street at the Beavercreek Intersection, indicating the final calculation of NROD buffer impact and the location, size, and number of plantings as required by OCMC 17.49.180 and OCMC 17.49.190 for the mitigation area along the eastern edge of Parcel B or as amended if there are conflicts with the shared use path. The new public street shall be designed in compliance with 17.49.150 - Standards for vehicular or pedestrian paths and roads. (P).
35. The geotechnical report should clearly state recommendations regarding existing local drainage, any impacts on local drainage from the proposed development, and any mitigation required to address adverse impacts. The applicant shall update the report as part of design review. (DS)
36. The geologic assessment and geotechnical report shall address the effect on the site hydrology and provide the information listed in 17.44.050.A.11 as applicable to this project, considering the recommendations and design per the storm drainage analysis report. (DS)
37. The applicant shall provide final grading plans, including representative cross sections through the path and Geologic Hazards Overlay Zone, as necessary, to demonstrate final excavation and grading to be in compliance with Section 17.44. Final cut and fill volumes from excavation shall be stated as required by 17.44.050.A.10. (DS)
38. Impacts to the mapped landslide area and buffer located to the rear of the properties shall be limited to 4,000 square feet of grading, stripped vegetation, or by coverage in impermeable surfaces per parcel. The proposed stormwater pond and roadway improvements shall be redesigned or relocated outside of the geological hazard area to meet this standard. (DS)
39. Construction of retaining walls over 4 feet in height and terraced walls which create total cut or fill greater than 4 feet in height shall be certified by a licensed engineer qualified for the design of such walls. The developer shall submit engineered stamped calculations for proposed retaining walls showing compliance with applicable building codes. The developer shall provide sliding, overturning, bearing capacity, and global

stability design calculation for any retaining walls over 4 feet in height in accordance with the Oregon Structural Specialty Code. (DS)

40. The applicant's geotechnical engineer shall respond to written comments provided by the City's peer reviewer prior to issuance of building permits. (DS)
41. All new service utilities, both on-site and off-site, shall be placed underground and under roadbeds where practicable. The placement of existing utilities underground within areas of geologic hazard shall be reviewed and approved by the City. (DS)
42. The geotechnical engineer of record shall review final grading, drainage, and foundation plans and specifications and confirm in writing that they are in conformance with the recommendations provided in their report. As-builts conforming to City standards shall be provided within 90 days of completion of the project. (DS)
43. The developer's geotechnical consultant shall review the drainage design for the project so that it does not negatively impact the underlying drainageway cross section and certify that the design is consistent with the conclusions and recommendations stated in their geologic assessment and geotechnical report. The project's civil or geotechnical engineer shall inspect any stormwater management feature and must certify that the stormwater management feature was constructed per plan and with the recommendations of the geotechnical engineer prior to receiving occupancy. (DS)

<u>The following conditions of approval shall be met to the satisfaction of the City during construction.</u>

44. Pavement cuts are proposed within a public street due to proposed utility service installations and required frontage improvements. Pavement cuts or other improvements made in a City street shall be done in accordance with the City of Oregon City Public Works Pavement Cut Standards and restored in accordance with the City of Oregon City Public Works Pavement Cut Standards. (DS)
45. The workmanship and materials for any work performed under permits issued by Oregon City Public Works shall be in accordance with the edition of the "Oregon Standard Specifications for Construction" as prepared by the Oregon Department of Transportation (ODOT) and the Oregon Chapter of American Public Works Association (APWA) and as modified and adopted by the City. (DS)
46. The developer's project engineer shall inspect construction of public improvements and stormwater management facilities at the cost of the applicant. The City will perform inspections in accordance with city policies and standards. See section 16.12.014 of this report regarding inspection fees. (DS)
47. New franchise utilities shall be placed underground and all existing overhead utilities adjacent to the property frontage shall be relocated underground unless deemed infeasible by the City and franchise utility provider(s) prior to occupancy of the first parcel. (DS)
48. Underground utilities, waterlines, sanitary sewers and storm drains proposed to be installed in streets shall be constructed prior to the surfacing of the streets. Stubs for service connections for underground utilities, such as, storm, water and sanitary sewer

shall be placed beyond the ten-foot wide franchise utility easement within private property. (DS)

49. The applicant shall construct their portion of the Sewer Master Plan's 8-inch sewer from Beavercreek Road to stub into Parcel B while ensuring it is designed and built to be able to be extended to Hilltop Avenue. (DS)
50. The applicant shall comply with permitted hours of construction as set forth by the City Engineer for any public improvements (in existing public right-of-way or easements or which will be dedicated in public right-of-way or easements) that will not follow OCMC 9.12.023.D. as stated and written in the pre-construction meeting notes. (DS)
51. Grading, drainage improvements or other land disturbances shall be restricted to between May 1 and October 31, unless extended by the City Engineer consistent with 17.44. The developer shall submit a work schedule which has been reviewed and approved by a licensed geotechnical engineer with regard to the viability of completing necessary project goals within the aforementioned time period. Erosion control measures and temporary protective fencing around all trees and vegetation designed for protection shall be installed prior to the commencement of grading or other soil disturbance. Erosion control measures shall be in conformance with OCMC Chapter 17.47. (DS)
52. Existing vegetative cover shall be maintained to the maximum extent practicable within the geological hazard areas. The applicant shall install appropriate barriers or protective fencing during construction to ensure existing vegetation is not disturbed. (DS)
53. The developer shall retain the services of a licensed geotechnical engineer to conduct inspections prior to and during construction activities which involve removal or addition of vegetation, building structures, retaining walls or earth. The geotechnical engineer shall provide reports to confirm that standards from Section 17.44.100 are met. The geotechnical engineer of record shall observe all excavations and geologic conditions exposed during construction and document that the conditions are consistent with the conditions assumed in the geotechnical hazard evaluation. If the conditions are different than assumed in the preliminary report, the effect of the new observations shall be evaluated and mitigation provided as required. Additional geologic hazards review may be required at the City's discretion. (DS)
54. The developer's geotechnical engineer shall certify, during construction, that structural fill used on the site meets the provided design specifications and is placed as designed. The certification shall be in writing and shall be signed and stamped by a licensed engineer in the State of Oregon. (DS)

<u>The following conditions of approval shall be met to the satisfaction of the City prior to recording of the plat associated with the proposed development [final occupancy] or as noted.</u>

55. As-built construction plans and digital copies of as-built drawings shall be filed with the City Engineer within 90 days of completing improvements. (DS)
56. Public improvements and all items from the city-provided punch list shall be completed and accepted by the City prior to occupancy of the first parcel. (DS)
57. The property owner(s) shall sign a Restrictive Covenant Non-Remonstrance Agreement for the purpose of making storm sewer, sanitary sewer, water, or street improvements in

the future that benefit the property, and all fees associated with processing and recording the Non-Remonstrance Agreement shall be paid prior to occupancy of the first parcel. (DS)

58. A Performance Guarantee, which is equal to 120% of the estimated cost for construction of public improvements as shown in City-approved construction plans, shall be provided prior to receiving a permit and beginning construction. The estimated costs shall be supported by a verified engineering estimate and approved by the City engineer. The guarantee shall be in a form identified in Code 17.50.140.A section of the Oregon City Municipal Code. The guarantee shall remain in effect until the construction of all required improvements are completed and accepted by the City. (DS)
59. Maintenance Guarantee equal to fifteen percent of the estimated cost for construction of public improvements, as shown in City-approved construction plans, shall be provided prior to occupancy of the first parcel. The estimated costs shall be supported by a verified engineering estimate approved by the City Engineer. The guarantee shall be in a form identified in Code 17.50.140.A section of the Oregon City Municipal Code. The maintenance guarantee shall warrant to the City of Oregon City that construction of public improvements will remain, for a period of twenty-four (24) months from the date of acceptance, free from defects in materials and workmanship. (DS)
60. The property owner(s) shall execute an agreement providing maintenance of, and giving Oregon City access to, privately-owned stormwater management facilities and pay associated recording fees. The agreement shall include a site plan identifying all privately-owned stormwater management facilities and an operation and maintenance plan for each type of stormwater facility in accordance with the Public Works Stormwater and Grading Design Standards. The agreement shall run with the land and be applicable to subsequent property owners. The agreement shall be reviewed and accepted by the City prior to occupancy of the first parcel. (DS)
61. Responsibility for maintenance of public stormwater facilities, including all landscaping, irrigation systems, structures, and appurtenances, shall remain with the property owner/developer for two years (known as the warranty or maintenance period). The owner/developer shall provide the City with a separate two-year landscaping maintenance bond equal to one hundred ten percent of the landscaping costs or pay a fee-in-lieu and sign a contract with the City to cover the maintenance period prior to occupancy of the first parcel. (DS)
62. The applicant shall provide a public access easement for TL 800 and TL 700 to facilitate future connections to the new proposed roadway. (DS)
63. A pedestrian and bicycle accessway is proposed along the rear of the property. A public access easement shall be provided, allowing public use of the path through the property. (DS)
64. The applicant shall provide a covenant over the pedestrian and bicycle accessways and be responsible for the future maintenance and liability. (DS)
65. The development shall provide a public utility easement (PUE) along all property lines fronting existing or proposed public right-of-way. Zero setback sites may not require a PUE but may have dry utilities between the property line and curb the developer shall make all necessary arrangements with utility companies to ensure underground lines are not placed within the roadway. Approved PUE will need included on the final plat prior to recording the plat. The development shall provide a public utility easement for

the City's sewer for the sewer connecting Hilltop Avenue to Beavercreek Road. The final location and sizing will be determined during DDP and Design review based on the City's sewer design standards. A 15-foot-wide public access easement will be required for the portion of the shared-use path accessway, S28, that deviates from the public right-of-way. (DS)

66. The proposal includes installation of street trees along approximately 3,535 feet of frontage (Molalla Avenue, Parcel C), requiring 101 street trees (3,535 /35=101). The location of the street trees are subject to change with the placement of street lights, utility meters, etc. Prior to issuance of construction plans of the right-of-way improvements, the applicant shall submit a street tree plan which includes 101 street trees planted, spacing shall be evenly distributed throughout the total development in accordance with OCMC 12.08 or accept a fee-in-lieu of planting pursuant to OCMC 12.08 if site or other constraints prevent meeting the required total number of tree plantings. (P)
67. A financial guarantee for the establishment of the mitigation area, in a form approved by the City, shall be submitted before development within the NROD disturbance area commences. The City will release the guarantee at the end of the five-year monitoring period, or before, upon its determination that the mitigation plan has been satisfactorily implemented. (P)
68. The developer shall submit waiver of damages, indemnity and hold harmless agreement completed by all owners of property disturbed by the development. (DS)
69. A geotechnical engineer provides consultation services to the City. The geotechnical consultant provide review of all geologic assessments and geotechnical reports for the City. Costs associated with geologic hazard review of the land use application by the City's geotechnical engineer shall be paid by the developer. (DS)
70. Revisions and amendments to this DDP may be reviewed as a Type II administrative review, unless the reason qualifies for a Type III Planning Commission review as described in OCMC 17.6580 - Amendments to approved plans. (P)
71. The applicant shall record a restrictive covenant or conservation easement, in a form provided by the City, requiring the owners and assigns of properties subject to this section to comply with the applicable mitigation requirements of OCMC 17.49. Said covenant shall run with the land and permit the City to complete mitigation work in the event of default by the party responsible. Costs borne by the City for such mitigation shall be borne by the owner. A financial guarantee for the establishment of the mitigation area, in a form approved by the City, shall be submitted before development within the NROD disturbance area commences. The City will release the guarantee at the end of the five-year monitoring period, or before, upon its determination that the mitigation plan has been satisfactorily implemented. (P)
72. Prior to completion of the project, a monitoring and maintenance plan shall be submitted. The mitigation plan shall provide for a five-year monitoring and maintenance plan with annual reports in a form approved by the Community Development Director. Monitoring of the mitigation site is the ongoing responsibility of the property owner, assignee, or designee, who shall submit said annual report to the planning division, documenting plant survival rates of shrubs and trees on the mitigation site. Photographs shall accompany the report that indicates the progress of the mitigation. A minimum of 80% survival of the trees and shrubs of those species planted is required at the end of

the five-year maintenance and monitoring period. Any invasive species shall be removed, and plants that die shall be replaced in kind to meet the eighty percent survival requirement. Bare spots and areas of invasive vegetation larger than ten square feet that remain at the end of the five-year monitoring period shall be replanted or reseeded with native grasses and/or ground cover species. (P)

I. BACKGROUND:

1. Existing Conditions

The subject property is comprised of an assemblage of properties in the main development area which includes TL 3200, 3201, 3300, & 3400, Map 3 2E 05DB (On-Site) and a proposed public road through TL 500 & 501, Map 3 2E 05D (Off-site) that connects the on-site properties to Beavercreek Rd

The on-site properties are currently vacant and include a mixture of grasslands, scrub brush and scattered groves of trees, with more concentrated tree canopy along the north and south edges and in the southeast corner. The east side of the on-site properties extends into Newell Creek Canyon, is heavily forested, and lies within a geologic hazard area.

Past uses on TL 3200, 3201 and 3300 include a former wrecking yard whose operations started in 1953 and continued until late 2001 when the wrecking yard operations ceased. Environmental studies on these properties indicated low concentrations of petroleum hydrocarbons and/or metals in near surface and shallow soils, and that groundwater underlying the former wrecking yard was not impacted with contaminants of concern.

TL 3400 previously included a gas station and tavern in the vicinity of its southwest corner which has been removed. Environmental remediation occurred at the former gas station site and ODEQ issued a “No Further Action” letter indicating that ODEQ should be notified prior to installation of any groundwater supply wells and any construction or excavation in or around the former gas station pocket of contamination.

The on-site properties generally slope to the south with a portion of the west end of the site sloping to the southwest. The east end of the property includes a steep slope extending into Newell Creek Canyon and is heavily forested.

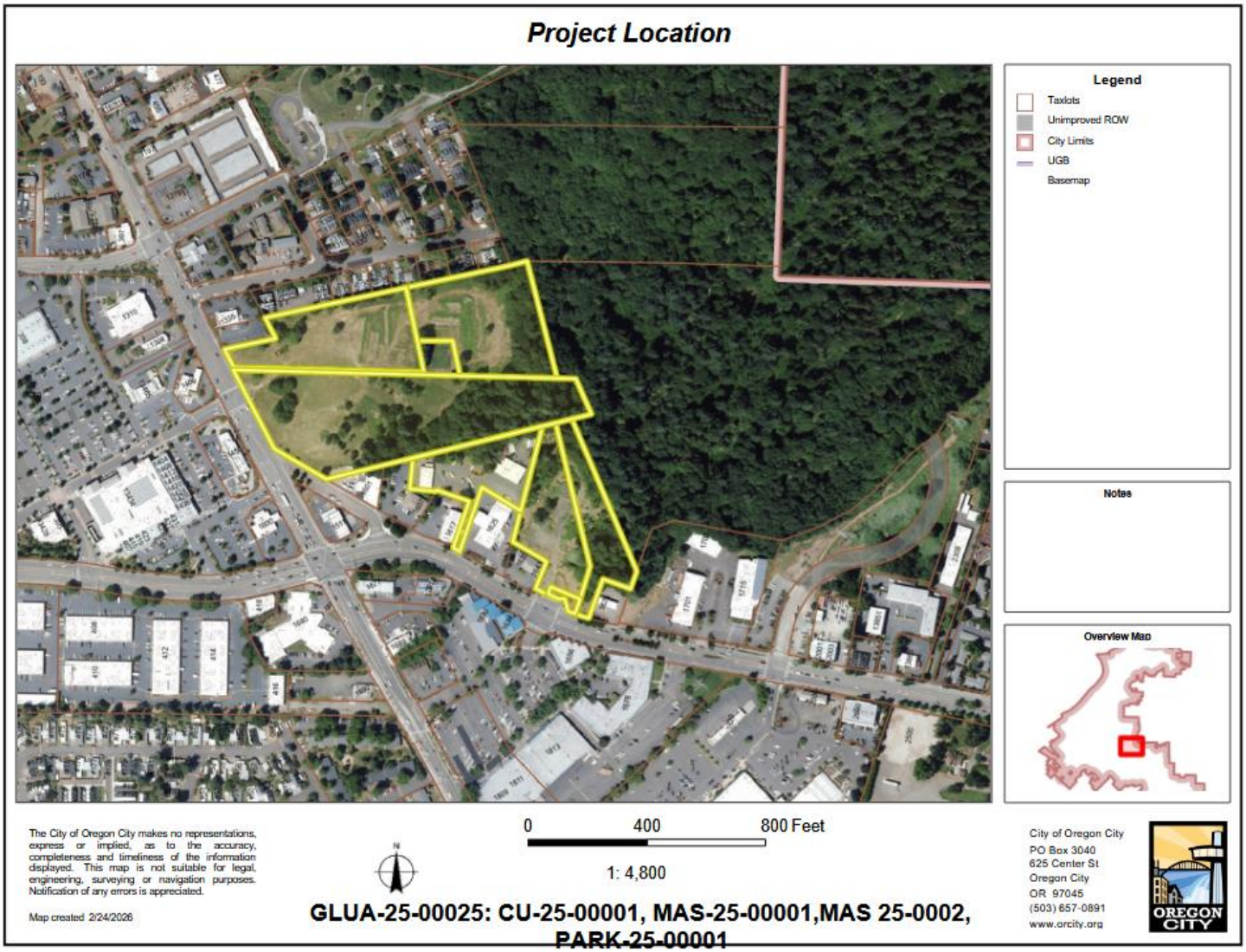

Figure 1. Vicinity Map & Existing Conditions – Aerial Image

2. Project Description

The Applicant is proposing a Master Plan (GLUA-25-00025: CU-25-00001, MAS-25-00001, PARK-25-00001) to create future development parcels for a site zoned Mixed Use Corridor 2. Once approved, each parcel will be submitted for a separate Type II Administrative Detailed Development Plan (DDP) Review when market conditions are ready for each development.

- Creation of 4 development parcels
  - Parcel A: Retail,
  - Parcel B: Multi-Family,
  - Parcel C: New Public Road,
  - Parcel D: Quick Serve Restaurant

A Detailed Development Plan for the construction of a new public road (parcel C) and utilities has been submitted (MAS-25-002_GEO-25-007_NROD-25-012) concurrently with the Master Plan. The staff report will be part of the Planning Commission hearing and can be approved at the same time as the Master Plan.



Figure 3: Proposed Site Plan (New Public Street Parcel C and shared use path)

3. **Permits and Approvals:** The applicant is responsible for obtaining approval and permits from each applicable governmental agency and department in Oregon City, including but not limited to the Engineering and Building Divisions.

4. **Public Comment**
   Public comments submitted include (Exhibit 3):

   Rocky Younger - Mr. Younger owns tax lots 500 and 501, which are part of the application for the purpose of building the Parcel C Road to the intersection of Beavercreek Road. Once completed, it will not be part of the 20-year Master Plan. A private easement was recorded, which requires the owner of the Master Plan lots to build out the full road for tax lots 500

and 501. The city is not a party to the easement, and it is not part of any city review criteria. Mr. Younger is tracking the land use review to ensure that the easement language is being fulfilled by the city's staff report and conditions. He has submitted the private easement to the record with this comment.

None of the comments provided indicates that an approval criterion has not been met or cannot be met through the Conditions of Approval attached to this Staff Report.

CHAPTER 12.04 – STREETS SIDEWALKS AND PUBLIC SPACES

12.04.005 - Jurisdiction and management of the public rights-of-way.
A. The City has jurisdiction and exercises regulatory management over all public rights-of-way within the City under authority of the City Charter and state law by issuing separate public works right-of-way permits or permits as part of issued public infrastructure construction plans. No work in the public right-of-way shall be done without the proper permit. Some public rights-of-way within the City are regulated by the State of Oregon Department of Transportation (ODOT) or Clackamas County and as such, any work in these streets shall conform to their respective permitting requirements.
B. Public rights-of-way include, but are not limited to, streets, roads, highways, bridges, alleys, sidewalks, trails, paths, public easements and all other public ways or areas, including the subsurface under and air space over these areas.
C. The City has jurisdiction and exercises regulatory management over each public right-of-way whether the City has a fee, easement, or other legal interest in the right-of-way. The City has jurisdiction and regulatory management of each right-of-way whether the legal interest in the right-of-way was obtained by grant, dedication, prescription, reservation, condemnation, annexation, foreclosure or other means.
D. No person may occupy or encroach on a public right-of-way without the permission of the City. The City grants permission to use rights-of-way by franchises, licenses and permits.
E. The exercise of jurisdiction and regulatory management of a public right-of-way by the City is not official acceptance of the right-of-way, and does not obligate the City to maintain or repair any part of the right-of-way.

Finding: Applicable. The City of Oregon City has jurisdiction over Beavercreek Road, Molalla Avenue, and the future roadway through the development that will be dedicated as public right-of-way.

12.04.025 - Driveways.
Driveways shall be reviewed in accordance with OCMC 16.12.035. Driveway requirements may be modified through the procedures in OCMC 16.12.013.

Finding: Applicable. See 16.12.035 for more information.

12.04.030 - Maintenance and repair.
The owner of land abutting the street where a sidewalk has been constructed shall be responsible for maintaining said sidewalk and abutting curb, if any, in good repair.

Finding: Applicable. The applicant acknowledges their responsibility to repairing sidewalk panels in disrepair. The sidewalks appear to be in acceptable condition on the property's frontages at the time of this report. However, if conditions worsen either by age or through construction in the future, repairs will be required.

12.04.031 - Liability for sidewalk injuries.
A. The owner or occupant of real property responsible for maintaining the adjacent sidewalk shall be liable to any person injured because of negligence of such owner or occupant in failing to maintain the sidewalk in good condition.
B. If the City is required to pay damages for an injury to persons or property caused by the failure of an owner or occupant to perform the duty that this chapter imposes, the owner or occupant shall compensate the City for the amount of the damages paid. The City may maintain an action in a court of competent jurisdiction to enforce this section.

Finding: Applicable. The property owner abutting the sidewalks is responsible for injuries due to sidewalk disrepair. The applicant acknowledges this standard.

12.04.032 - Required sidewalk repair.
A. When the public works director determines that repair of a sidewalk is necessary, written notice shall be provided to the owner of property adjacent to the defective sidewalk.
B. The notice shall require the owner of the property adjacent to the defective sidewalk to complete the repair of the sidewalk within ninety days after the service of notice. The notice shall also state that if the repair is not made by the owner, the City may do the work and the cost of the work shall be assessed against the property adjacent to the sidewalk.
1. All sidewalks hereafter constructed in the City on improved streets shall be constructed to city standards and widths required in the Oregon City Transportation System Plan and OCMC 16.12. Sidewalks and curbs are to be constructed according to plans and specifications approved by the City Engineer.
2. Sidewalks constructed on unimproved streets shall be constructed of concrete according to lines and grades approved by the City Engineer. On unimproved streets, curbs do not have to be constructed.
C. The public works director shall cause a copy of the notice to be served personally upon the owner of the property adjacent to the defective sidewalk, or the notice may be served by registered or certified mail, return receipt requested. If after diligent search the owner is not discovered, the public works director shall cause a copy of the notice to be posted in a conspicuous place on the property, and such posting shall have the same effect as service of notice by mail or by personal service upon the owner of the property.
D. The person serving the notice shall file with the City Recorder a statement stating the time, place and manner of service or notice.

Finding: Applicable. T The applicant acknowledges their responsibility to repairing sidewalk panels in disrepair. The sidewalks appear to be in acceptable condition on the property's frontages at the time of this report. However, if conditions worsen either by age or through construction in the future, repairs will be required.

12.04.050 - Retaining walls—Required.
Every owner of a lot within the City, abutting upon an improved street, where the surface of the lot or tract of land is above the surface of the improved street and where the soil or earth from the lot, or tract of land is liable to, or does slide or fall into the street or upon the sidewalk, or both, shall build a retaining wall, the outer side of which shall be on the line separating the lot, or tract of land from the improved street, and the wall shall be so constructed as to prevent the soil or earth from the lot or tract of land from falling or sliding into the street or upon the sidewalk, or both, and the owner of any such property shall keep the wall in good repair.

Finding: Complies as Proposed. The applicant acknowledges this section. Potential future retaining walls for Parcel B will be evaluated with it's DDP application. The applicant has also identified potential retaining walls associated with the new roadway.

12.04.100 - Excavations—Restoration of pavement.
Whenever any excavation shall have been made in any pavement or other street improvement on any street or alley in the City for any purpose whatsoever under the permit granted by the City Engineer, it shall be the duty of the person making the excavation to restore the pavement in accordance with the City of Oregon City Public Works Pavement Cut Standard in effect at the time a right-of-way permit is granted. The City Commission may adopt and modify the City of Oregon City Public Works Pavement Cut Standards by resolution as necessary to implement the requirements of this chapter.

Finding: Complies with Condition. Pavement cuts are proposed within a public street (Molalla Avenue and Beavercreek Road) due to proposed utility service installations and required frontage improvements. Pavement cuts or other improvements made in a City street shall be done in accordance with the City of Oregon City Public Works Pavement Cut Standards and restored in accordance with the City of Oregon City Public Works Pavement Cut Standards. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

12.04.120 - Obstructions—Permit required.
A. Permanent Obstructions. It is unlawful for any person to place, put or maintain any obstruction, other than a temporary obstruction, as defined in subsection B of this section, in any public street or alley in the City, without obtaining approval for a right-of-way permit from the City Commission by passage of a resolution.
1. The City Engineer shall provide applicants with an application form outlining the minimum submittal requirements.
2. The applicant shall submit at least the following information in the permitting process in order to allow the City Commission to adequately consider whether to allow the placement of an obstruction and whether any conditions may be attached:
a. Site plan showing right-of-way, utilities, driveways as directed by staff;
b. Sight distance per OCMC 10.32, Traffic Sight Obstructions;
c. Traffic control plan including parking per Manual on Uniform Traffic Control Devices (MUTCD);
d. Alternative routes if necessary;
e. Minimizing obstruction area; and
f. Hold harmless/maintenance agreement.

3. If the City Commission adopts a resolution allowing the placement of a permanent obstruction in the right-of-way, the City Engineer shall issue a right-of-way permit with any conditions deemed necessary by the City Commission.
4. Signage that acts as an obstruction is approved through OCMC 15.28.
B. Temporary Obstructions.
1. A "temporary obstruction" is defined as an object placed in a public street, sidewalk, road, or alley which is not permanently anchored to another surface such as the pavement, sidewalk, or a building. A "temporary obstruction" includes, but is not limited to, moving containers, debris dumpsters, and seating.
a. Planters and benches are exempt from permitting unless the City Engineer finds by inspection that the planter or bench is impeding use of the right-of-way. If deemed an impeding use, a planter or bench will comply with the requirements for temporary obstructions.
2. The City Engineer, or designee, is authorized to grant a permit for a temporary obstruction.
3. The City Engineer shall provide applicants with an application form outlining the minimum submittal requirements.
4. The applicant shall submit, and the City Engineer, or designee, shall consider, at least the following items in the permitting process. Additional information may be required in the discretion of the City Engineer:
a. Site plan showing right-of-way, utilities, driveways as directed by staff;
b. Sight distance per OCMC 10.32, Traffic Sight Obstructions;
c. Traffic control plan including parking per Manual on Uniform Traffic Control Devices (MUTCD);
d. Handicap accessible route complying with Americans with Disability Act (ADA) standards;
e. Alternative routes if necessary;
f. Minimizing obstruction area; and
g. Hold harmless/maintenance agreement.
5. In determining whether to issue a right-of-way permit to allow a temporary obstruction, the City Engineer may issue such a permit only after finding that the following criteria have been satisfied:
a. The obstruction will not unreasonably impair the safety of people using the right-of-way and nearby residents;
b. The obstruction will not unreasonably hinder the efficiency of traffic affected by the obstruction;
c. No alternative locations are available that would not require use of the public right-of-way; and
d. Any other factor that the City Engineer deems relevant.
6. The permittee shall post a weatherproof copy of the temporary obstruction permit in plain view from the right-of-way.
7. Types
a. A short-term temporary obstruction is allowed for a period of not more than sixty consecutive calendar days. It is permitted with a temporary obstruction in the right-of-way permit.
b. A long-term temporary obstruction is allowed for a period of not more than one year, and it is permitted with a renewable right-of-way permit.
8. Signage that acts as an obstruction is approved through OCMC 15.28
C. Fees. The fee for obtaining a right-of-way permit for either a permanent obstruction or a temporary obstruction shall be set by resolution of the City Commission.

Finding: Complies as Proposed. No obstructions are proposed within the right of way but the applicant has acknowledged this standard if design during the DDP permitting process requires an obstruction.

12.04.150 - Street and alley vacations—Cost.
At the time of filing a petition for vacation of a street, alley, or any part thereof, a fee as established by City Commission resolution shall be paid to the City. The City Commission, upon hearing such petition, may grant the same in whole or in part, or may deny the same in whole or in part, or may grant the same with such reservations as would appear to be for the public interest, including reservations pertaining to the maintenance and use of underground public utilities in the portion vacated.

Finding: Not Applicable. No vacations are proposed as part of this application.

12.04.170 - Street design—Purpose and general provisions.
All development shall be in conformance with the City's public facility master plans, public works policies, standard drawings, and engineering specifications. All streets shall be reviewed and approved by the City Engineer prior to construction. All streets and driveway connections to another jurisdiction's facility or right-of-way must be reviewed by the appropriate jurisdiction as a condition of the preliminary plat or site planning and when required by law or intergovernmental agreement shall be approved by the appropriate jurisdiction.

Finding: Complies with Condition. See findings from chapter 16.12 of this report.

12.04.270 - Standard construction specifications.
The workmanship and materials for any work performed under permits issued per this chapter shall be in accordance with the current edition of the "Oregon Standard Specifications for Construction" as prepared by the Oregon Department of Transportation (ODOT) and the Oregon Chapter of American Public Works Association (APWA) and as modified and adopted by the City in accordance with this ordinance, in effect at the time of application. The exception to this requirement is where this chapter and the public works street standard drawings provide other design details, in which case the requirements of this chapter and the public works street standard drawings shall control. In the case of work within ODOT or Clackamas County rights-of-way, work shall be in conformance with their respective construction standards.

Finding: Complies with Condition. The workmanship and materials for any work performed under permits issued by Oregon City Public Works shall be in accordance with the latest of the "Oregon Standard Specifications for Construction" as prepared by the Oregon Department of Transportation (ODOT) and the Oregon Chapter of American Public Works Association (APWA) and as modified and adopted by the City. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

CHAPTER 12.08 – PUBLIC AND STREET TREES

12.08.015 - Street tree selection, planting and maintenance requirements.
All development shall provide street trees adjacent to all street frontages. Species and locations of trees shall be selected based upon vision clearance requirements but shall in all cases be selected from the Oregon City Street Tree List, an approved street tree list for a jurisdiction in the Metropolitan region or be approved by a certified arborist unless otherwise approved pursuant to

this section. If a setback sidewalk has already been constructed or the public works department determines that the forthcoming street design shall include a setback sidewalk, then all street trees shall be installed with a planting strip or within tree-wells. If existing street design includes a curb-tight sidewalk, then all street trees shall be placed according to OCMC 12.08.035.C.

A. One street tree shall be planted for every thirty-five feet of property frontage. The tree spacing shall be evenly distributed throughout the total development frontage to meet the clearance distances required in subsection B below. The Community Development Director may approve an alternative street tree plan or accept fee-in-lieu of planting pursuant to OCMC 12.08.035, if site or other constraints prevent meeting the required total number of tree plantings.

B. The following clearance distances shall be maintained when planting trees:
1. Fifteen feet from street lights;
2. Five feet from fire hydrants;
3. Twenty feet from intersections;
4. Five feet from all public utilities (i.e. sewer, storm and water lines, utility meters, etc.).

C. All street trees planted in conjunction with development shall be a minimum of two inches in caliper at six inches above the root crown and installed to City specifications. Larger caliper size trees may be approved if recommended by a certified arborist or registered landscape architect.

D. All established trees shall be pruned tight to the trunk to a height that provides adequate clearance for street cleaning equipment and ensures ADA complaint clearance for pedestrians.

E. All trees planted within the right-of-way shall be planted with root barriers at least eighteen inches in depth adjacent to the sidewalk and curb to ensure proper root growth and reduce potential damage to sidewalks, curbs and gutters.

F. All trees planted beneath powerlines shall be selected based on what is appropriate for the location. In addition, the tree species shall be approved by the associated franchise powerline utility company.

G. Tree species, spacing and selection for stormwater facilities in the public right-of-way and in storm water facilities shall conform to requirements of OCMC 13.12 and the adopted stormwater and grading design standards and be approved by the City engineer.

H. Any public or street trees planted within the natural resource overlay district shall conform to the applicable requirements of OCMC 17.49, Natural Resources Overlay District (NROD).

Finding: Complies with Condition. The proposal includes installation of street trees along approximately 3,535 feet of frontage (Molla Avenue, Parcel C), requiring 101 street trees (3,535 /35=101). The location of the street trees are subject to change with the placement of street lights, utility meters, etc. Prior to issuance of construction plans of the right-of-way improvements, the applicant shall submit a street tree plan which includes 101 street trees planted, spacing shall be evenly distributed throughout the total development in accordance with OCMC 12.08 or accept a

fee-in-lieu of planting pursuant to OCMC 12.08 if site or other constraints prevent meeting the required total number of tree plantings. (P)

CHAPTER 13.12 – STORMWATER MANAGEMENT

13.12.050 - Applicability and exemptions.
This chapter establishes performance standards for stormwater conveyance, quantity and quality. Additional performance standards for erosion prevention and sediment control are established in OCMC 17.47.
A. Stormwater Conveyance. The stormwater conveyance requirements of this chapter shall apply to all stormwater systems constructed with any development activity, except as follows:
1. The conveyance facilities are located entirely on one privately owned parcel;
2. The conveyance facilities are privately maintained; and
3. The conveyance facilities receive no stormwater runoff from outside the parcel's property limits. Those facilities exempted from the stormwater conveyance requirements by the above subsection will remain subject to the requirements of the Oregon Uniform Plumbing Code. Those exempted facilities shall be reviewed by the building official.

Finding: Applicable. Connection to a public stormwater conveyance system is required to serve this development. The applicant has acknowledged this chapter.

B. Water Quality and Flow Control. The water quality and flow control requirements of this chapter shall apply to the following proposed uses or developments, unless exempted under subsection C:
1. Activities located wholly or partially within water quality resource areas pursuant to OCMC 17.49 that will result in the creation of more than five hundred square feet of impervious surface within the NROD or will disturb more than one thousand square feet of existing impervious surface within the NROD as part of a commercial or industrial redevelopment project. These square footage measurements will be considered cumulative for any given five-year period; or
2. Activities that create or replace more than five thousand square feet of impervious surface, cumulated over any given five-year period.

Finding: Applicable. The proposed development will create or replace more than 5000 square feet of impervious area and therefore OCMC 13.12 is applicable to this development.

C. Exemptions. The following exemptions to subsection B of this section apply:
1. An exemption to the flow control requirements of this chapter will be granted when the development site discharges to the Willamette River, Clackamas River or Abernethy Creek; and either lies within the one hundred-year floodplain or is up to ten feet above the design flood elevation as defined in OCMC 17.42, provided that the following conditions are met:
a. The project site is drained by a conveyance system that is comprised entirely of man-made elements (e.g. pipes, ditches, culverts outfalls, outfall protection, etc.) and extends to the ordinary high water line of the exempt receiving water; and
b. The conveyance system between the project site and the exempt receiving water has sufficient hydraulic capacity and erosion stabilization measures to convey discharges from the proposed conditions of the project site and the existing conditions from non-project areas from which runoff is collected.

2. Projects in the following categories are generally exempt from the water quality and flow control requirements:
a. Stream enhancement or restoration projects approved by the city.
b. Farming practices as defined by ORS 30.960 and farm use as defined in ORS 214.000; except that buildings associated with farm practices and farm use are subject to the requirements of this chapter.
c. Actions by a public utility or any other governmental agency to remove or alleviate an emergency condition.
d. Road and parking area preservation/maintenance projects such as pothole and square cut patching, surface sealing, replacing or overlaying of existing asphalt or concrete pavement, provided the preservation/maintenance activity does not expand the existing area of impervious coverage above the thresholds in subsection B of this section.
e. Pedestrian and bicycle improvements (sidewalks, trails, pathways, and bicycle paths/lands) where no other impervious surfaces are created or replaced, built to direct stormwater runoff to adjacent vegetated areas.
f. Underground utility projects that replace the ground surface with in-kind material or materials with similar runoff characteristics.
g. Maintenance or repair of existing utilities.

Finding: Not Applicable. The proposed development does not meet the criteria for exemption to the flow control requirements of this chapter.

D. Uses Requiring Additional Management Practices. In addition to any other applicable requirements of this chapter, the following uses are subject to additional management practices, as defined in the public works stormwater and grading design standards:
1. Bulk petroleum storage facilities;
2. Above ground storage of liquid materials;
3. Solid waste storage areas, containers, and trash compactors for commercial, industrial, or multi-family uses;
4. Exterior storage of bulk construction materials;
5. Material transfer areas and loading docks;
6. Equipment and/or vehicle washing facilities;
7. Development on land with suspected or known contamination;
8. Covered vehicle parking for commercial or industrial uses;
9. Industrial or commercial uses locating in high traffic areas, defined as average daily count trip of two thousand five hundred or more trips per day; and
10. Land uses subject to DEQ 1200-Z Industrial Stormwater Permit Requirements.

Finding: Applicable. The applicant has noted that the site includes environmental contamination from previous historical uses. Remediation will be required and identified as part of the permitting for construction. The applicant acknowledges this standard. The applicant shall provide a grading and erosion control plan identifying onsite environmental cleanup activities. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

13.12.080 - Submittal requirements.

A. Applications subject to stormwater conveyance, water quality, and/or flow control requirements of this chapter shall prepare engineered drainage plans, drainage reports, and design flow calculation reports in compliance with the submittal requirements of the public works stormwater and grading design standards.
B. Each project site, which may be composed of one or more contiguous parcels of land, shall have a separate valid City approved plan and report before proceeding with construction.

Finding: Complies with Condition. See findings from section 13.12.090 of this report.

13.12.090 - Approval criteria for engineered drainage plans and drainage report.
An engineered drainage plan and/or drainage report shall be approved only upon making the following findings:
A. The plan and report demonstrate how the proposed development and stormwater facilities will accomplish the purpose statements of this chapter.
B. The plan and report meet the requirements of the public works stormwater and grading design standards adopted by resolution under OCMC 13.12.020.
C. The storm drainage design within the proposed development includes provisions to adequately control runoff from all public and private streets and roof, footing, and area drains and ensures future extension of the current drainage system.
D. Streambank erosion protection is provided where stormwater, directly or indirectly, discharges to open channels or streams.
E. Specific operation and maintenance measures are proposed that ensure that the proposed stormwater quantity control facilities will be properly operated and maintained.

Finding: Complies with Condition. The developer has provided a preliminary stormwater report as part of their application. The stormwater plans may change due to modifications that occur during the design review process. The developer shall relocate portions of the stormwater management area outside of the Geologic Hazards Overlay Zone, separate public and private stormwater management or make all stormwater management private, and provide finalized engineered drainage plan(s), drainage report(s), and design flow calculation report(s) stamped and signed by a licensed engineer addressing all items from Section 9.3 & 9.4 of the Public Works Stormwater and Grading Design Standards prior to receiving a permit and beginning construction. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

13.12.100 - Alternative materials, alternative design and methods of construction.
The provisions of this chapter are not intended to prevent the use of any material, alternate design or method of construction not specifically prescribed by this chapter or the public works stormwater and grading design standards, provided any alternate has been approved and its use authorized by the City Engineer. The City Engineer may approve any such alternate, provided that the City Engineer finds that the proposed design is satisfactory and complies with the intent of this chapter and that the material, method, or work offered is, for the purpose intended, at least the equivalent of that prescribed by this chapter in effectiveness, suitability, strength, durability and safety. The City Engineer shall require that sufficient evidence or proof be submitted to substantiate any claims that may be made regarding its use. The details of any action granting approval of an alternate shall be recorded and entered in the City files.

Finding: Not Applicable. The applicant has not proposed alternative design methods requiring special approval by the City Engineer. However, should the applicant propose such methods with the public facilities construction plan submittal, the proposal will be reviewed and approved by the City Engineer as required.

13.12.110 - Transfer of engineering responsibility.
Project drainage plans shall always have a project engineer. If the project engineer is changed during the course of the work, the City shall be notified in writing and the work shall be stopped until the replacement engineer has agreed to accept the responsibilities of the project engineer. The new project engineer shall provide written notice of accepting project responsibility to the City within seventy-two hours of accepting the position as project engineer.

Finding: See section 16.12.014 regarding requirement to execute a "Developer/Engineer Agreement for Public Works Improvements"

13.12.120 - Standard construction specifications.
The workmanship and materials shall be in accordance with the current edition of the "Standard Specifications for Public Works Construction," as prepared by the Oregon Chapter of American Public Works Association (APWA) and as modified and adopted by the City, in effect at the time of application. The exception to this requirement is where this chapter and the Public Works Stormwater and Grading Design Standards provide other design details, in which case the requirements of this chapter and the Public Works Stormwater and Grading Design Standards shall be complied with.

Finding: Complies with Condition. The workmanship and materials for any work performed under permits issued by Oregon City Public Works shall be in accordance with the edition of the "Oregon Standard Specifications for Construction" as prepared by the Oregon Department of Transportation (ODOT) and the Oregon Chapter of American Public Works Association (APWA) and as modified and adopted by the city. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

13.12.140 - Maintenance of public stormwater facilities.
A. A stormwater facility that receives stormwater runoff from a public right-of-way shall be a public facility. Upon expiration of the warranty period and acceptance by the City as described below, the City shall be responsible for maintenance of those public stormwater facilities. Access for maintenance of the stormwater facilities shall be provided to the City through the granting of a stormwater easement or other means acceptable to the City.

Finding: Complies with Condition. The applicant has proposed a tract for stormwater on the preliminary plat as a public facility. The proposed stormwater design shows that the stormwater pond within the public tract will receive stormwater from the proposed public right-of-way for treatment. The stormwater pond will also treat stormwater from Parcels A and B, while Parcel D will have it's own stormwater treatment facility. The applicant's stormwater report notes that the combined stormwater collection area to be treated for Parcels A and B is approximately 4 times the size of the proposed public roadway. The proposed Pond is primarily designed to treat the private

properties within this development. Typically, with commercial properties (shopping centers, apartment complexes, industrial complexes, etc.) the stormwater facilities are privately owned and maintained. Public stormwater facilities shall only treat stormwater from publicly maintained rights-of-way (i.e. public streets). The applicant shall either separate the public stormwater runoff from the private runoff with separate publicly maintained facilities (e.g. streetside planters or other separate facilities) and privately maintain facilities for private stormwater runoff; or the development can enter into an agreement with the City to privately maintain a combined pond. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval**

B. Responsibility for maintenance of stormwater facilities including all landscaping, irrigation systems, structures and appurtenances shall remain with the property owner/developer for two years (known as the warranty period). The owner/developer shall provide the City a separate two-year landscaping maintenance surety bond for one hundred ten percent of the landscaping cost. Transfer of maintenance of stormwater conveyance systems shall occur when the City accepts the stormwater conveyance system.

Finding: Complies with Condition. The proposed combined stormwater pond receives approximately 4 times the runoff from the private parcels as it does from the proposed public street. The burden to treat stormwater runoff from private properties should not be the responsibility of the City. Typically, commercial properties, like the proposed, manage and treat their own stormwater runoff. The City does not agree with the proposed combined stormwater management facility to be owned and maintained by the public. The pond shall be privately maintained. If the applicant separates the runoff from the public street, those facilities will be publicly managed. Responsibility for maintenance of public stormwater facilities including all landscaping, irrigation systems, structures and appurtenances shall remain with the property owner/developer for two years (known as the warranty or maintenance period). The owner/developer shall provide the City a separate two-year landscaping maintenance bond equal to one hundred ten percent of the landscaping costs or pay a fee-in-lieu and sign a contract with the City to cover the maintenance period prior to occupancy of the first parcel. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

13.12.145 - Maintenance of private stormwater facilities.
A. An applicant shall submit an operation and maintenance plan for each proposed stormwater facilities, unless exempted in the Public Works Stormwater and Grading Design Standards. The information in the operation and maintenance plan shall satisfy the requirements of the Public Works Stormwater and Grading Design Standards.
B. Private owners are required to inspect and maintain stormwater facilities on their property in accordance with an approved operation and maintenance plan. A maintenance log is required to document facility inspections and specific maintenance activities. The log shall be available to City inspection staff upon request.
C. Failure to operate or maintain a stormwater facility according to the operation and maintenance plan may result in an enforcement action under Section 13.12.150.

Finding: Complies with Condition. The proposed stormwater pond is designed to collect and treat approximately 4 times the amount of stormwater from private properties as it is from the public roadway. Maintenance and treatment of private stormwater will be the responsibility of the private property owners. The public stormwater can either be separated from the proposed pond into separate treatment facilities, which will be maintained by the City per OCMC 13.14.140, or the development may keep the proposed combined design and maintain the stormwater pond as a private facility. The property owner(s) shall execute an agreement providing maintenance of, and giving Oregon City access to, privately-owned stormwater management facilities and pay associated recording fees. The agreement shall include a site plan identifying all privately-owned stormwater management facilities and an operation and maintenance plan for each type of stormwater facility in accordance with the Public Works Stormwater and Grading Design Standards. The agreement shall run with the land and be applicable to subsequent property owners. The agreement shall be reviewed and accepted by the City prior to occupancy of the first parcel. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

13.12.170 - Permits from other jurisdictions.
A. The Oregon State Department of Environmental Quality (DEQ) currently issues NPDES 1200-C permits for projects that cover areas of one acre or greater. No permit shall be issued for projects of this size (or any other size as modified by DEQ) without a copy of said DEQ permit being on file with Oregon City. DEQ is responsible for policing its own permits; however, if City personnel observe conditions that are believed to be in violation of any such permit, and cannot get corrections made, the City will bring such conditions to the attention of the appropriate DEQ representatives.

Finding: Complies with Condition. The development exceeds 1.0 acre in disturbed area and therefore requires DEQ permitting. The developer shall obtain a 1200-C (NPDES) permit from Oregon Department of Environmental Quality (DEQ) for construction activities one acre or greater prior to receiving a permit and beginning construction. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

B. Projects may require Oregon State Division of State Lands (DSL) and/or United States Army Corps of Engineers (USACE) permits. If such permits are required, no permission to construct will be granted until such a time as a copy of such permit is on file with the City or notice is receved from those agencies that a permit is not required. DSL/USACE is responsible for enforcing its own permits; however, if City personnel observe conditions that are believed to be in violation of any such permit, and cannot get corrections made, the City will bring such conditions to the attention of the appropriate DSL/USACE representatives.

Finding: Complies with Condition. Portions of the new access road to Beavercreek Road crosses a culvertized stream. The construction of the new road may impact the wetland and stream that abuts this roadway based on its final design and alignment. If the proposed roadway encroaches on the mapped stream or wetland, the applicant shall coordinate with DSL and/or USACOE to obtain the proper permitting. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

C. Projects may require Oregon State Department of Fish and Wildlife (ODFW) permits. When ODFW permits are required, no work will be authorized until the receipt of a copy of the ODFW permit. ODFW is responsible for policing its own permits; however, if City personnel observe conditions that are believed to be in violation of any such permit, and cannot get corrections made, the City will bring such conditions to the attention of the appropriate ODFW representatives.

Finding: **Complies with Condition.** Portions of the new access road to Beavercreek Road crosses a culvertized stream. The construction of the new road may impact the wetland and stream that abuts this roadway based on its final design and alignment. If the proposed roadway encroaches on the mapped stream or wetland, the applicant shall coordinate with ODFW to obtain the proper permitting. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

CHAPTER 15.48 – GRADING, FILLING AND EXCAVATING

15.48.030 Applicability—Grading permit required.
A. A city-issued grading permit shall be required before the commencement of any of the following filling or grading activities:
1. Grading activities in excess of ten cubic yards of earth;
2. Grading activities which may result in the diversion of existing drainage courses, both natural and man-made, from their natural point of entry or exit from the grading site;
3. Grading and paving activities resulting in the creation of impervious surfaces greater than two thousand square feet or more in area;
4. Any excavation beyond the limits of a basement or footing excavation, having an unsupported soil height greater than five feet after the completion of such a structure; or
5. Grading activities involving the clearing or disturbance of one-half acres (twenty-one thousand seven hundred eighty square feet) or more of land.
B. Those fill and grading activities proposed to be undertaken in conjunction with a land use application, including but not limited to subdivisions, planned unit developments, partitions and site plan reviews, are subject to the standards of this chapter. However, a separate grading permit is not required. Approval of the construction plans submitted through the land use application process shall constitute the grading permit required under this chapter.

Finding: Applicable. The preliminary plan presents grading and paving activities that will result in the disturbance of more than one-half acre. Fill and grading activities are proposed to be undertaken in conjunction with a land use application. A separate grading permit is not required. Construction plans are required to be submitted after the land use application has been processed and associated construction permit issued shall constitute the grading permit required under this chapter.

15.48.040 - Grading permit exemptions.
The following filling and grading activities shall not require the issuance of a grading permit:
A. Excavation for utilities, or for wells or tunnels allowed under separate permit by other governmental agencies;

B. An excavation below finished grade for basements and footings of a building, retaining wall or other structure authorized by a valid building permit. The placement of any fill material removed from such an excavation requires a grading permit if:
1. It exceeds fifty cubic yards,
2. More than ten cubic yards are removed from the site, or
3. The fill is placed on the site to a depth greater than one foot;
C. Farming practices as defined in ORS 30.930 and farm uses as defined in ORS 215.203, except that buildings associated with farm practices and farm uses are subject to the requirements of this chapter;
D. Excavation for cemetery graves;
E. Sandbagging, diking, ditching, filling or similar work when done to protect life or property during an emergency;
F. Repaving of existing paved surfaces that does not alter existing drainage patterns;
G. Maintenance work on public roads performed under the direction of the city, Clackamas County or Oregon State Department of Transportation personnel.

Finding: Not Applicable. The application does not qualify for an exemption.

15.48.090 Submittal requirements.
An engineered grading plan or an abbreviated grading plan shall be prepared in compliance with the submittal requirements of the Public Works Stormwater and Grading Design Standards whenever a city approved grading permit is required. In addition, a geotechnical engineering report and/or residential lot grading plan may be required pursuant to the criteria listed below.
A. Abbreviated Grading Plan. The city shall allow the applicant to submit an abbreviated grading plan in compliance with the submittal requirements of the Public Works Stormwater and Grading Design Standards if the following criteria are met:
1. No portion of the proposed site is within the flood management area overlay district pursuant to ***Chapter 17.42****, the unstable soils and hillside constraints overlay district pursuant to* ***Chapter 17.44****, or a water quality resource area pursuant to* ***Chapter 17.49****; and*
2. The proposed filling or grading activity does not involve more than fifty cubic yards of earth.
B. Engineered Grading Plan. The city shall require an engineered grading plan in compliance with the submittal requirements of the Public Works Stormwater and Grading Design Standards to be prepared by a professional engineer if the proposed activities do not qualify for abbreviated grading plan.
C. Geotechnical Engineering Report. The city shall require a geotechnical engineering report in compliance with the minimum report requirements of the Public Works Stormwater and Grading Design Standards to be prepared by a professional engineer who specializes in geotechnical work when any of the following site conditions may exist in the development area:
1. When any publicly maintained facility (structure, street, pond, utility, park, etc.) will be supported by any engineered fill;
2. When an embankment for a stormwater pond is created by the placement of fill;
3. When, by excavation, the soils remaining in place are greater than three feet high and less than twenty feet wide.
D. Residential Lot Grading Plan. The city shall require a residential lot grading plan in compliance with the minimum report requirements of the Public Works Stormwater and Grading Design Standards to be prepared by a professional engineer for all land divisions creating new residential

building lots or where a public improvement project is required to provide access to an existing residential lot.

Finding: Complies with Conditions. The developer shall provide an engineered grading plan prepared by a professional engineer in compliance with the submittal requirements of the Public Works Stormwater and Grading Design Standards. S**taff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

CHAPTER 16.12 – MINIMUM PUBLIC IMPROVEMENTS AND DESIGN STANDARDS FOR DEVELOPMENT

16.12.008 Definitions.
Whenever the words or terms and their derivatives are used in this chapter, they shall have the meaning
herein ascribed to them as described in OCMC 17.04 unless the context dictates application of a different meaning.

16.12.010 - Purpose and general provisions.
The purpose of this chapter is to identify the standards for development in and adjacent to spaces which
benefit the public including right-of-way, access to the right-of-way, public off-street pedestrian and bicycle accessways, and easements. All development shall be in conformance with the policies and design standards established by this chapter and with applicable standards in the City's public facility master plans and city design standards and specifications. In reviewing applications for development, the City Engineer shall take into consideration any approved development and the remaining development potential of adjacent properties. All street, water, sanitary sewer, storm drainage and utility plans associated with any development shall be reviewed and approved by the City Engineer prior to construction. All streets, driveways or storm drainage connections to another jurisdiction's facility or right-of-way shall be reviewed by the appropriate jurisdiction as a condition of the preliminary plat and when required by law or intergovernmental agreement shall be approved by the appropriate jurisdiction.

Finding: Complies with Condition. Compliance with the "purpose and general provisions" of chapter 16.12 can be met by adhering to the following: The development plans shall comply with all current Oregon City Public Works design standards, specifications, codes, and policies prior to receiving a permit and beginning construction. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

16.12.011 - Applicability.
A. Compliance with this chapter is required for all development including land divisions, site plan and design review, master plan, detailed development plan and conditional use applications and all public improvements that are required in conjunction with a land use decision.
B. Compliance with this chapter is also required for new construction or additions which exceed fifty percent of the existing square footage of all single-family detached residential and middle housing units' living space. Garages, carports, sheds, and porches may not be included in the calculation if these spaces are not living spaces. Accessory dwelling units are not subject to

compliance with this chapter. All single-family detached residential and middle housing units shall provide any necessary dedications, easements or agreements as identified in the transportation system plan and this chapter, subject to constitutional limitations. In addition, the street frontage shall be improved to include the following priorities for improvements:
1. Improve street pavement, construct curbs, gutters, sidewalks and planter strips; and
2. Plant street trees.
The cost of compliance with the standards identified in subsections 16.12.011.B.1 and 16.12.011.B.2 is calculated based on the square footage valuation from the state of Oregon Building Codes Division and limited to ten percent of the total construction costs. The value of the alterations and improvements is based on the total construction costs for a complete project rather than costs of various project component parts subject to individual building permits. The entire proposed construction project cost includes engineering and consulting fees and construction costs. It does not include permit fees, recording fees, or any work associated with drafting or recording dedications or easements.
C. Exemptions. The following are exempt from review by this chapter unless public improvements, driveways, PUEs, or other items regulated by this chapter are proposed:
1. Minor Site Plan and Design Review applications.
2. Work within the right-of-way.
3. Lot Line Adjustments and Abandonments.
4. Public capital improvement projects.

Finding: Applicable. The application is development design review; therefore, the development shall follow the standards set forth in OCMC 16.12.

16.12.012 - Jurisdiction and management of the public rights-of-way.
The City has jurisdiction and exercises regulatory management over all public rights-of-way as defined and outlined within 12.04 of the Oregon City Municipal Code.

Finding: Applicable. The City has exercised its regulatory management authority by providing findings within this staff report with conditions to be met by the applicant prior to working within all public rights-of-way (e.g Molalla Avenue, Beavercreek Road, Beavercreek Way, etc.).

16.12.013 - Modifications.
The applicant may request and the review body may consider modification of the standards in this chapter resulting from constitutional limitations restricting the City's ability to require the dedication of property or for any other reason, based upon the criteria listed below and other criteria identified in the standard to be modified. All modifications, except for adjustments approved by the City Engineer for tree preservation purposes pursuant to Section 16.12.013.A, shall be processed through a Type II land use application and may require additional evidence from a transportation engineer or others to verify compliance. Compliance with the following criteria is required:
A. Compliance with the following criteria is required:
1. The modification meets the intent of the standard;

2. The modification provides safe and efficient movement of pedestrians, motor vehicles, bicyclists and freight;

3. The modification is consistent with an adopted transportation or utility plan;

4.The modification is complementary with a surrounding street design; or, in the alternative;

5.If a modification is requested for constitutional reasons, the applicant shall demonstrate the constitutional provision or provisions to be avoided by the modification and propose a modification that complies with the state or federal constitution. The City shall be under no obligation to grant a modification in excess of that which is necessary to meet its constitutional obligations.

Finding: Complies with Condition. This development proposes a new street through the site connecting the two major arterial roads of Molalla Avenue and Beavercreek Road. Per discussions with City Staff prior to this application, the proposed roadway was deemed to be a collector road as it connects two major arterial roads together and the proposed street would serve mixed use commercial areas with regular large truck delivery requirements. The Applicant's TIA also notes the need for a center turn lane for the Parcels A, B and part of D which is consistent with the City's collector road standard vs. a two-lane local road for a Mixed-Use area.

The Applicant has made 3 modification requests to the City's collector road standard for a mixed-use development (see Table 16.12.016 below for the standard cross-section):

1. Eliminate the required on-street parking along the proposed collector road.
2. Allow the reduction in the number of travel lanes, from three to two, east of Parcel D to Beavercreek Road.
3. Allow a reduced-cross section street design through Tax Lot 500, 501 and 602.

City Staff agrees and supports each modification request under each catagory:

1. *The modification meets the intent of the standard;*
The proposed cross sections for Modifications 1, 2, and 3 meet the intent of the code as noted in 16.12.013.1.a. Each modification provides safe means of travel for vehicles (including large trucks and emergency vehicles), pedestrians, and bicycles. Modification 1 is consistent with a collector road with the exception of the parking lane. The applicant has noted that the developed parcels will contain more than the required parking and street parking would not be needed. The new street will also act as a connection between Beavercreek Road and Molalla Avenue with commuters not needing to use the standard parking area associated with a collector.
Modification 2 meets the intent of the code by reducing the collector street's standard 3 lanes down to two lanes. The applicant's TIA notes that the proposed roadway will function properly with adequate sizing for freight and emergency vehicles with only two lanes for the site with the exception of the driveway accesses for Parcels A, B, and D. There the standard third lane will be constructed for turning in and out of the businesses, which is consistent with a collector road.

Modification 3 meets the intent by providing a half street type roadway where the applicant has proposed providing two full travel lanes with an expanded sidewalk acting as a shared use path on the eastside of the new street. The west side would not have a bike lane or sidewalk. When the developments on the westside develop they will construct that side of the new proposed roadway. This is consistent with half street improvements and the City's Beavercreek Access Plan.

2. The modification provides safe and efficient movement of pedestrians, motor vehicles, bicyclists and freight;

Modification 1's request to remove the required parking lane does not affect the safety of travel for motorized vehicles, bicyclists, or pedestrians. The applicant has proposed adequate spacing for emergency vehicles and freight and separated bike lanes and sidewalks will be provided.
Modification 2's request also does not affect safety. The applicant's TIA notes that a third lane is not required for the easterly portion of the development. Separated bike lanes and sidewalks are provided. The City concurs.
Modification 3 provides proper spacing for large emergency vehicles and freight to move through the site connecting Beavercreek Road to Molalla Avenue. The share use path on the eastside will allow pedestrians and bicyclists to safely move between the 2 major arterial roads.

3. The modification is consistent with an adopted transportation or utility plan;

The proposed roadway modifications also meet the City's Transportation System Planning (TSP) goals. The new street is consistent with the City's Beavercreek Access Management Plan (2005). Specifically, the Short-Term Access Management Plan identified in Figure 7 for the portion of the new street within Lot 500. The new street provides access points to the properties abutting Beavercreek Road (Lots 600, 602, 700, 800, and 500) allowing for the future closure of driveways on Beavercreek Road and the vacation of Beavercreek Way as identified in the Access Plan. The proposed modification also provides a shared bicycle pedestrian area through TL 500/501 consistent with the TSP Project S28 which is a shared use path connecting the Hilltop Avenue neighborhood with the commercial areas on Beavercreek Road.

4.The modification is complementary with a surrounding street design; or, in the alternative;

The proposed modifications meet the surrounding street designs. Modification 1 only reduces the street section of a collector road by eliminating the parking aisle. The two major arterial roads that this new street connects to (Molalla Avenue and Beavercreek Road) do not have parking aisles as well. All three streets will provide wide sidewalks with landscaping and bicycle lanes.
Modification 2 and are also complementary as Modifcation 1 above. Wide sidewalks with tree wells and bicycle lanes will provide a continuation of of the existing streetscape as travelers commute through the site.

5.If a modification is requested for constitutional reasons, the applicant shall demonstrate the constitutional provision or provisions to be avoided by the modification and propose a modification that complies with the state or federal constitution. The City shall be under no obligation to grant a modification in excess of that which is necessary to meet its constitutional obligations.

The applicant does not seek modification for constitutional reasons.

The applicant's request for reductions in the number of travel lanes, parking lanes and to provide only a "half-street" within Lot 500/501 is supported by City Staff. See OCMC 16.12.016 for specific cross-section dimensions requirements.
Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.

B. The following modifications shall be processed as a Type I modification by the City Engineer using the criteria in 16.12.13.A.
1. Modifications to driveway location, size, and sharing standards in 16.12.035;
2. Modifications to sidewalk and planter strips widths and location in 16.12.016 that preserve existing street trees or trees on private property to ensure compliance with ADA standards.

Finding: Complies with Condition. The applicant has made driveway modification request under 16.12.035. It appears that the sizing modification request for the driveway to Parcel D and the spacing request between the easterly driveway for Parcel A and the westerly driveway for Parcel D meet the intent of the code. Final driveway locations for will be evaluated during the design review phase with the applicant's updated TIA. See OCMC 16.12.035. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

16.12.014 - Administrative provisions.
An applicant shall submit the following items to the City and complete the following tasks prior to proceeding with construction of proposed development plans. These items include the following:
Pre-Design Meeting;
Final Engineering Plans, Stamped and Signed by an Oregon Licensed Professional Engineer;
Stormwater Report, Stamped and Signed by an Oregon Licensed Professional Engineer;
D. Geotechnical Report, Stamped and Signed by an Oregon Licensed Professional Engineer (if applicable);
E. Engineer's Preliminary and Final Cost Estimates (also may be known as engineer's opinion of probable construction cost);
F. Plan Check and Inspection Fees (as set by City resolution);
G. Certificate of Liability Insurance for City funded public projects contracted by the City (not less than one million dollars single incident and two million dollars aggregate);
H. Preconstruction Meeting;
I. Financial Guarantee(s) per OCMC 17.50.140;
J. Applicable Approvals/Permits from other agencies or entities;
K. Developer/Engineer Agreement for public works improvements.
An applicant shall submit the following additional items to the City and complete the following tasks prior to completing construction of proposed development plans. These items include the following:
L. Project Engineer's Certificate of Completion;
M. Stormwater Operation and Maintenance Easement (if applicable);

N. Deed of Dedication (Bargain and Sale Deed);
O. Recorded Plat and/or Easements (if applicable);
P. Recorded Non-Remonstrance Covenant Agreement;
Q. Land Division Compliance Agreement (if applicable);
R. Permanent Stabilization and/or Restoration of the impact from the development;
S. Fulfillment of all Conditions of Approval;
T. Payment of all Outstanding Fees;
U. Maintenance Guarantee(s). per OCMC 17.50.141;
V. Indemnity Agreement (if applicable);
W. Completed Punchlist;
X. As-Built Drawings;
Details on individual items required by this subsection can be obtained by contacting public works. Many items, such as the engineer's cost estimate and plan check and inspection fee, maybe be submitted in conjunction with documentation for other infrastructure improvements that are done with the development (such as street, sanitary sewer, and water).

Finding: Complies with Condition. The developer shall submit or address all items in section 16.12.014 of the Oregon City Municipal Code based on the timing requirements contained therein and as deemed applicable by the City.
Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.

16.12.015 - Street design—Generally.
Development shall be required to provide existing or future connections to adjacent sites through the use of vehicular and pedestrian access easements where applicable. Development shall provide any necessary dedications, easements or agreements as identified in the transportation system plan, trails master plan, and/or parks and recreation master plan and this chapter, subject to constitutional limitations. The location, width and grade of street shall be considered in relation to: Existing and planned streets, topographical conditions, public convenience and safety for all modes of travel, existing and identified future transit routes and pedestrian/bicycle accessways, overlay districts, and the proposed use of land to be served by the streets. The street system shall assure an adequate traffic circulation system with intersection angles, grades, tangents and curves appropriate for the traffic to be carried considering the terrain. To the extent possible, proposed streets shall connect to all existing or approved stub streets that abut the development site. The arrangement of streets shall either:
A. Provide for the continuation or appropriate projection of existing principal streets in the surrounding area and on adjacent parcels or conform to a plan for the area approved or adopted by the City to meet a particular situation where topographical or other conditions make continuance or conformance to existing streets impractical;
B. Where necessary to give access to or permit a satisfactory future development of adjoining land, streets shall be extended to the boundary of the development and the resulting dead-end street (stub) may be approved with a temporary turnaround as approved by the City Engineer. Notification that the street is planned for future extension shall be posted on the stub street until the street is extended and shall inform the public that the dead-end street may be extended in the future. Access control in accordance with OCMC 16.12.017 shall be required to preserve the objectives of street extensions.

C. Adequate right-of-way and improvements to streets, pedestrian ways, bike routes and bikeways, and transit facilities shall be provided and be consistent with the City's transportation system plan. Consideration shall be given to the need for street widening and other improvements in the area of the proposed development impacted by traffic generated by the proposed development. This shall include, but not be limited to, improvements to the right-of-way, such as installation of lighting, signalization, turn lanes, median and parking strips, traffic islands, paving, curbs and gutters, sidewalks, bikeways, street drainage facilities and other facilities needed because of anticipated vehicular and pedestrian traffic generation.

Finding: Complies with Condition. The location, widths, and grades of the proposed street system provides for the continuation or appropriate projection of existing principal streets in the surrounding area and gives access for future development of adjoining land. The development has provided a convenient street system for the safety of all modes of travel, including pedestrian and bicycle to, from, and through the subject site.

The proposed development abuts Molalla Avenue. The current public facilities along Molalla Avenue abutting the property are not consistent with City Standards for a Major Arterial or the Molalla Avenue Streetscape Standards noted in the City's Street Design Standards. On the development's frontage for Molalla Avenue, the applicant shall provide 16 feet of right-of-way-dedication (for a total of 51 feet from the street center to their property line), a 5-foot-wide public utility easement, a 6-foot-wide bicycle lane, and a 10.5-foot-wide sidewalk with tree wells. The frontage improvements on Molalla Avenue shall be consistent with the City's Street Design Standards for Molalla Avenue (e.g. light fixtures, sidewalk patterns, tree wells, etc.) (e.g. light fixtures, sidewalk patterns, tree wells, etc.).

The development also proposes a new modified street through the properties in this application. The City supports the street modification request above in OCMC 16.12.013. The new street contains multiple cross sections as it makes it way from Molalla Avenue, through this development and then with the Beavercreek Access Road through Lots 602 and 500 for a total of four (4) distinct segments. The first segment of the new road contains three lanes and starts at Molalla Avenue and tapers to 2 lanes roughly 700 feet into the development. The first segment of the new public road connecting Molalla Avenue and Beavercreek Road (~STA 1+46 - STA 8+66) shall have a cross-section with 70 feet of right-of-way with three (3) 12-foot-wide lanes, two (2) 6-foot-wide bicycle lanes, two (2) 10.5-foot-wide sidewalks with 5-foot-wide tree wells. Segment 2 continues eastward from Segment 1 and tapers the three-lane section in Segment 1 down to two lanes. The second segment of the new public road connecting Molalla Avenue and Beavercreek Road (~STA 8+66 – STA 11+50) shall have 64 feet of right-of-way with two (2) 12-foot-wide lanes, two (2) 6-foot-wide bicycle lanes, two (2) 10.5-foot-wide sidewalks with 5-foot-wide tree wells and shall be designed to minimize grade change within the geologic hazards overlay zone to reduce areas graded or stripped of vegetation or covered with structures or impermeable surfaces to a maximum off 4,000 sf within the parcel which segment 2 lies.

The next portion of the new street continues through Tax Lot 500 to Beavercreek Road and is consistent with Figure 7: Short-Term Access Plan of the Beavercreek Access Management Plan. This portion of the roadway does not include a sidewalks or a bicycle lane on the west side. Future developments along the western lots TL 602 and 600 will complete the public improvements along

their frontages. Segment 3 of the new public road connecting Molalla Avenue with Beavercreek Road (~STA 11+50 – STA 14+92) shall have 60-feet of right-of-way with two (2) 17 to 21-foot-wide lanes (to accommodate freight through curves), one (1) 10.5 foot-wide shared use path (striped), and landscaping located behind the shared use path or in other approved locations and shall be designed to minimize grade change within the geologic hazards overlay zone to reduce areas graded or stripped of vegetation or covered with structures or impermeable surfaces to a maximum of 4,000 sf within the parcel for which segment 3 lies.

Segment 4 of the new public road connecting Molalla Avenue with Beavercreek Road (~STA14+92 – STA 18+59) of the new roadway is the connection to Beavercreek Road. Segment 4 shall vary from 60 to approximately 76 feet of right-of-way with three (3) 12-foot-wide lanes (varied to accommodate freight movements), one (1) 10.5-foot wide shared-use-path (striped), and landscaping either behind path or in approved locations.

The proposed shared use path along the new street on TL 500/501 connects to the eastern ADA ramp on Beavercreek Road. The existing ramp layout restricts the ability for bicyclists traveling on Beavercreek Road to safely transition onto the proposed shared use path. The new shared use path shall transition from the curbed path along the new road which connects Molalla Avenue to Beavercreek Road to the existing bicycle lane along Beavercreek Road either through modification of the existing ADA ramp or by other means evaluated during technical design review.

Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.

16.12.016 - Street design.
All development regulated by this chapter shall provide street improvements in compliance with the
standards in Table 16.12.016 depending on the street classification set forth in the transportation system plan and the comprehensive plan designation of the adjacent property, unless an alternative plan has been adopted. The table implements the adopted transportation system plan and illustrates the maximum design standards. These standards may be reduced with an alternative street design which may be approved based on the modification criteria in OCMC 16.12.013. The steps for reducing the street design are found in the transportation system plan.

Table 16.12.016 Street Design
To read the table select the road classification as identified in the Transportation System Plan and the Comprehensive Plan designation of the adjacent properties to find the maximum design standards for the road cross section. If the Comprehensive Plan designation for lands on either side of the street differs, the wider right-of-way standard shall apply.

Road Classification	***Comprehensive Plan Designation***	***Right-of-Way Width***	***Pavement Width***	***Public Access***	***Sidewalk***	***Landscape Strip***	***Bike Lane***	***Street Parking***	***Travel Lanes***	***Median***
Major Arterial	*Mixed Use, Commercial or Public/ Quasi Public*	*116 ft.*	*94 ft.*	*0.5 ft.*	*10.5 ft. sidewalk including 5 ft. x 5 ft. tree wells*		*6 ft.*	*8 ft.*	*(5) 12 ft. Lanes*	*6 ft.*
	Industrial	*120 ft.*	*88 ft.*	*0.5 ft.*	*5 ft.*	*10.5 ft.*	*6 ft.*	*N/A*	*(5) 14 ft. Lanes*	*6 ft.*
	Residential	*126 ft.*	*94 ft.*	*0.5 ft.*	*5 ft.*	*10.5 ft.*	*6 ft.*	*8 ft.*	*(5) 12 ft. Lanes*	*6 ft.*
Minor Arterial	*Mixed Use, Commercial or Public/Quasi Public*	*116 ft.*	*94 ft.*	*0.5 ft.*	*10.5 ft. sidewalk including 5 ft. x 5 ft. tree wells*		*6 ft.*	*8 ft.*	*(5) 12 ft. Lanes*	*6 ft.*
	Industrial	*118 ft.*	*86 ft.*	*0.5 ft.*	*5 ft.*	*10.5 ft.*	*6 ft.*	*7 ft.*	*(5) 12 ft. Lanes*	*N/A*
	Residential	*100 ft.*	*68 ft.*	*0.5 ft.*	*5 ft.*	*10.5 ft.*	*6 ft.*	*7 ft.*	*(3) 12 ft. Lanes*	*6 ft.*
Collector	*Mixed Use,*	*86 ft.*	*64 ft.*	*0.5 ft.*	*10.5 ft. sidewalk including 5 ft. x 5 ft.*		*6 ft.*	*8 ft.*	*(3) 12 ft.*	*N/A*

Road Classification	Comprehensive Plan Designation	Right-of-Way Width	Pavement Width	Public Access	Sidewalk	Landscape Strip	Bike Lane	Street Parking	Travel Lanes	Median
	Commercial or Public/Quasi Public				tree wells				Lanes	
	Industrial	88 ft.	62 ft.	0.5 ft.	5 ft.	7.5 ft.	6 ft.	7 ft.	(3) 12 ft. Lanes	N/A
	Residential	85 ft.	59 ft.	0.5 ft.	5 ft.	7.5 ft.	6 ft.	7 ft.	(3) 11 ft. Lanes	N/A
Local	Mixed Use, Commercial or Public/ Quasi Public	62 ft.	40 ft.	0.5 ft.	10.5 ft. sidewalk including 5 ft. x 5 ft. tree wells		N/A	8 ft.	(2) 12 ft. Lanes	N/A
	Industrial	60 ft.	38 ft.	0.5 ft.	5 ft.	5.5 ft.	(2) 19 ft. Shared Space			N/A
	Residential	54 ft.	32 ft.	0.5 ft.	5 ft.	5.5 ft.	(2) 16 ft. Shared Space			N/A

1. Pavement width includes bike lane, street parking, travel lanes and median.
2. Public access, sidewalks, landscape strips, bike lanes and on-street parking are required on both sides of the street in all designations. The right-of-way width and pavement widths identified above include the total street section.
3. A 0.5 foot curb is included in landscape strip or sidewalk width.
4. Travel lanes may be through lanes or turn lanes.
5. The 0.5 foot public access provides access to adjacent public improvements.

6. Alleys shall have a minimum right-of-way width of twenty feet and a minimum pavement width of sixteen feet. If alleys are provided, garage access shall be provided from the alley.
7. A raised concrete median or landscape median shall be utilized for roads identified to have access restrictions.
8. A public utility easement (PUE) shall be provided on both sides of the right-of-way or public access easement on private property as identified in 16.12.085.

Finding: Complies with Condition. See specific street cross sections above in OCMC 16.12.015. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

A. Sidewalks. The applicant shall provide for sidewalks on both sides of all public streets, on any private street if so required by the decision-maker, and in any special pedestrian way within the development. Both sidewalks and curbs are to be constructed to city standards and at widths set forth above, and according to plans and specifications provided by the City Engineer. Exceptions to this requirement may be allowed in order to accommodate topography, trees or some similar site constraint. In the case of major or minor arterials, the decision-maker may approve a development without sidewalks where sidewalks are found to be dangerous or otherwise impractical to construct or are not reasonably related to the applicant's development. The decision-maker may require the applicant to provide sidewalks concurrent with the issuance of the initial building permit within the area that is the subject of the development application. Applicants for partitions may be allowed to meet this requirement by providing the City with a financial guarantee per OCMC 16.12.110.

Finding: Complies as proposed. The applicant has proposed sidewalks along all public streets fronting the development. See OCMC 16.12.015 above for specific requirements of the public sidewalks.

B. Pedestrian and Bicycle Accessways Routes. If deemed appropriate to extend pedestrian and bicycle routes, existing or planned, the decision-maker may require the installation of separate pedestrian and bicycle facilities.

Finding: Complies with Condition. The City's TSP project S28 identifies a shared use path along the eastern boundary of the proposed development. The applicant has proposed to construct an expanded sidewalk along the eastern side of the new street on TL 500/501 as a shared-use path consistent with S28. The applicant shall continue the paved shared-use path from TL 500/501 to the northern property line of TL 3200. See additional conditions under 16.12.032. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

C. Street Name Signs and Traffic Control Devices. The applicant shall install street signs and traffic control devices as directed by the City Engineer. Street name signs and traffic control devices shall be in conformance with all applicable city regulations and standards.

Finding: Complies with Condition. The applicant shall submit a request to the Community Development Department to receive approval for new street names. Street names shall be

provided on the approved plans, and street signs shall be provided for review of the City prior to installation. All traffic control devices, such as signage, flashing lights/beacons, and traffic signals shall be designed using the MUTCD. The applicant shall provide a Traffic Signal Plan conforming to Clackamas County Standards. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

D. Street Lights. The applicant shall install street lights which shall be served from an underground source of supply. Street lights shall be in conformance with all City regulations.

Finding: Complies with Condition. The applicant shall provide a lighting plan on Molalla Avenue and the proposed new public road connecting Molalla Avenue and Beavercreek Road in conformance with all City standards, specifications, codes, and policies and as approved by Portland General Electric (PGE). Street lights on Molalla Avenue shall be consistent with the City's Street Design Standards for Molalla Avenue. The applicant shall submit a photometric plan with their permitting plans. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

E. Any new street proposed with a pavement width of less than thirty-two feet shall be processed through OCMC 16.12.013 and meet minimum life safety requirements, which may include fire suppression devices as determined by the Fire Marshall to assure an adequate level of fire and life safety. The modified street shall have no less than a twenty-foot wide unobstructed travel lane.

Finding: Not applicable. No street is proposed to be less than 32 feet wide.

F. All development shall include vegetated planter strips that are five feet in width or larger and located between the sidewalk and curb unless otherwise approved pursuant to this chapter. All development shall utilize the vegetated planter strip for the placement of street trees or place street trees in other acceptable locations, as prescribed by OCMC 12.08. Development proposed along a collector, minor arterial, or major arterial roads may place street trees within tree wells within a wider sidewalk in lieu of a planter strip. In addition to street trees per OCMC 12.08, vegetated planter strips shall include ground cover and/or shrubs spaced four feet apart and appropriate for the location. No invasive or nuisance plant species shall be permitted.

Finding: Complies with Condition. See section 16.12.016 regarding requirements for vegetated planter strips located between the sidewalk and curb for the placement of street trees. See section 12.08 regarding placement of street trees. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

G. Vehicle and pedestrian access easements may serve in lieu of streets when approved by the decision maker and only where dedication of a street is deemed impracticable.

Finding: Complies with Condition. A pedestrian and bicycle accessway is proposed along the rear of the property. A public access easement shall be provided, allowing public use of the path through the property. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

H. Vehicular and pedestrian easements shall allow for public access and shall comply with all applicable pedestrian access requirements.

Finding: Complies with Condition. The access easements proposed along the southern properties (TL 800 and Tl 700) complies as proposed. The applicant shall provide a public access easement for TL 800 and TL 700 to facilitate future connections to the new proposed roadway. A shared use path is proposed along the rear of the property. A public access easement shall be provided, allowing public use of the path through the property. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

16.12.017 - Street design—Access control.
A. A street which is dedicated to end at the boundary of the development or in the case of half-streets dedicated along a boundary shall have an access control granted to the City as a City controlled plat restriction for the purposes of controlling ingress and egress to the property adjacent to the end of the dedicated street. The access control restriction shall exist until such time as a public street is created, by dedication and accepted, extending the street to the adjacent property.

Finding: Not Applicable. No new streets with access control are required. Access to the new street by adjoining properties will be regulated by code section 16.12.035.

B. The City may grant a permit for the adjoining owner to access through the access control.

Finding: Not Applicable. No new streets with an access control are required. Access to the new street by adjoining properties will be regulated by code section 16.12.035.

C. The plat shall contain the following access control language or similar on the face of the map at the end of each street for which access control is required: "Access Control (See plat restrictions)."

Finding: Not Applicable. No new streets with access control are required. Access to new street by adjoining properties will be regulated by code section 16.12.035.

D. Said plats shall also contain the following plat restriction note(s): "Access to (name of street or tract) from adjoining tracts (name of deed document number[s]) shall be controlled by the City of Oregon City by the recording of this plat, as shown. These access controls shall be automatically terminated upon the acceptance of a public road dedication or the recording of a plat extending the street to adjacent property that would access through those Access Controls."

Finding: Not Applicable. No new streets with access control are required. Access to the new street by adjoining properties will be regulated by code section 16.12.035.

16.12.018 - Street design—Alignment.
The centerline of streets shall be:
A. Aligned with existing streets by continuation of the centerlines; or

B. Offset from the centerline by no more than five feet, provided appropriate mitigation, in the judgment of the City Engineer, is provided to ensure that the offset intersection will not pose a safety hazard.
C. Driveways that are at least twenty-four feet wide shall align with existing or planned streets on adjacent sites.

Finding: Complies as Proposed. The proposed street alignments meet the City requirements. This standard is met.

16.12.019 - Traffic sight obstructions.
All new streets shall comply with the Traffic Sight Obstructions in Chapter 10.32.

Finding: Complies as Proposed. Applicant acknowledges streets will be designed per this standard. No current site obstructions are shown, however if any are proposed during design, the standard shall apply.

16.12.020 - Street design—Intersection angles.
Except where topography requires a lesser angle, streets shall be laid out to intersect at angles as near as possible to right angles. In no case shall the acute angles be less than eighty degrees unless there is a special intersection design. An arterial or collector street intersecting with another street shall have at least one hundred feet of tangent adjacent to the intersection unless topography requires a lesser distance. Other streets, except alleys, shall have at least fifty feet of tangent adjacent to the intersection unless topography requires a lesser distance. All street intersections shall be provided with a minimum curb return radius of twenty-five feet for local streets. Larger radii shall be required for higher street classifications as determined by the City Engineer. Additional right-of-way shall be required to accommodate curb returns and sidewalks at intersections. Ordinarily, intersections should not have more than two streets at any one point.

Finding: Complies as Proposed. The proposed intersection meets the City requirements. This standard is met.

16.12.021 - Street design—Grades and curves.
Grades and center line radii shall conform to standards approved by the City Engineer.

Finding: Complies as Proposed. Applicant acknowledges streets will be designed per this standard.

16.12.022 - Street design—Development abutting arterial or collector street.
Where development abuts or contains an existing or proposed arterial or collector street, the decision maker may require: Access control; screen planting or wall contained in an easement or otherwise protected by a restrictive covenant in a form acceptable to the decision maker along the rear or side property line; or such other treatment it deems necessary to adequately protect residential properties or afford separation of through and local traffic. Reverse frontage lots with suitable depth may also be considered an option for residential property that has arterial frontage. Where access for development abuts and connects for vehicular access to another jurisdiction's facility then authorization by that jurisdiction may be required.

Finding: Complies as proposed. The new street connecting Molalla Avenue (Major Arterial Road) and Beavercreek Road (Major Arterial Road) is considered a collector road. Landscaping along the proposed roadway is proposed as identified above in 16.12.013 and 16.12.016.

16.12.023 - Street design—Pedestrian and bicycle safety.

Where deemed necessary to ensure public safety, reduce traffic hazards and promote the welfare of pedestrians, bicyclists and residents of the subject area, the decision maker may require that local streets be so designed as to discourage their use by nonlocal automobile traffic.

The City Engineer may require that crosswalks include a large vegetated or sidewalk area which extends into the street pavement as far as practicable to provide safer pedestrian crossing opportunities. These curb extensions can increase the visibility of pedestrians and provide a shorter crosswalk distance as well as encourage motorists to drive slower. The City Engineer may approve an alternative design that achieves the same standard for constrained sites.

Finding: Not Applicable. The development does not require a street design that discourages use by non-local traffic. The City Engineer has not required that crosswalks include a large vegetated or sidewalk area which extends into the street pavement as far as practicable to provide safer pedestrian crossing opportunities.

16.12.024 - Street design—Half street.
Half streets, while generally not acceptable, may be approved where essential to the development, when in conformance with all other applicable requirements, and where it will not create a safety hazard. When approving half streets, the decision maker shall first determine that it will be practical to require the dedication of the other half of the street when the adjoining property is divided or developed. Where the decision maker approves a half street, the applicant shall construct a half street with at least twenty feet of pavement width and provide signage prohibiting street parking so as to make the half street safe until such time as the other half is constructed. Whenever a half street is adjacent to property capable of being divided or developed, the other half of the street shall be provided and improved when that adjacent property divides or develops. Access control may be required to preserve the objectives of half streets.

When the remainder of an existing half-street improvement is completed it shall include the following items: Dedication of required right-of-way, construction of the remaining portion of the street including pavement, curb and gutter, landscape strip, sidewalk, street trees, lighting and other improvements as required for that particular street. It shall also include at a minimum the pavement replacement to the centerline of the street. Any damage to the existing street shall be repaired in accordance with the City's "Pavement Cut Standards" or as approved by the City Engineer.

Finding: Complies as Proposed. The new street within TL 500/501 is a “Half-Street”. See specific cross section requirements in 16.12.015 and the modification request in 16.12.013. The applicant has proposed to construct two full travel lanes (of varying widths) within TL 500/501 to accommodate vehicle access (including freight and emergency vehicles) through the proposed

development connecting Molalla Avenue and Beavercreek Road. They have also proposed an expanded sidewalk on the east side of the proposed street to accommodate a shared use path. They do not propose a sidewalk or bike lane on the west side of the street within TL 500/501.

The applicant proposes this layout due to a previously determined access agreement between the property owner of TL 500/501 and the proposed lots of this development. The access easement was previously sized with a smaller cross-section of roadway that did not take into account large truck movements (freight or emergency). The boundaries of the access agreement were laid out to also provide TL 500/501 space for future development. Due to the constrained size of the access agreement, the applicant has proposed this "half-street" layout. The future abutting properties to the west will add public improvements along their frontages completing the standards roadway when they develop. This is consistent with the City's Beavercreek Road Access Management Plan and typical Half-street standards.

16.12.025 - Street design—Cul-de-sacs and dead-end streets.
The City discourages the use of cul-de-sacs and permanent dead-end streets except where construction of a through street is found by the decision maker to be impracticable due to topography or some significant physical constraint such as geologic hazards, wetland, natural or historic resource areas, pre-existing dedicated open space, pre-existing development patterns, arterial access restrictions or similar situation as determined by the decision maker. This section is not intended to preclude the use of curvilinear eyebrow widening of a street where needed.
A. When permitted, access from new cul-de-sacs and permanent dead-end streets shall be limited to a maximum of twenty-five dwelling units.

Finding: Not Applicable. No cul-de-sacs or dead-end streets are proposed or required for this development.

B. Cul-de-sacs and permanent dead-end streets shall include pedestrian/bicycle accessways to meet minimum block width standards as prescribed in OCMC 16.12.030.

Finding: Not Applicable. No cul-de-sacs or dead-end streets are proposed or required for this development.

C. Cul-de-sacs shall have sufficient radius to provide adequate turn-around for emergency vehicles in accordance with fire district and City adopted street standards.

Finding: Not Applicable. No cul-de-sacs or dead-end streets are proposed or required for this development.

D. Permanent dead-end streets shall provide public street right-of-way/easements sufficient to provide a sufficient amount of turn-around space complete with appropriate no-parking signs or markings to accommodate waste disposal, sweepers, emergency and other long vehicles in the form of a hammerhead or other design to be approved by the decision maker.

Finding: Not Applicable. No cul-de-sacs or dead-end streets are proposed or required for this development.

E. In the case of dead-end stub streets that will connect to streets on adjacent sites in the future, notification that the street is planned for future extension shall be posted on the stub street until the street is extended and shall inform the public that the dead-end street may be extended in the future. A dead-end street shall include signage or barricade meeting Manual on Uniform Traffic Control Devices (MUTCD).

Finding: Not Applicable. No dead-end stub streets are proposed or required for this development.

16.12.026 - Street design—Alleys.
Alleys with public access easements on private property shall be provided in the Park Place and South End concept plan areas for the following districts R-5, R-3.5, R-2, MUC-1, MUC-2 and NC zones unless other permanent provisions for private access to off-street parking and loading facilities are approved by the decision maker. All alleys intended to provide access for emergency vehicles shall be a minimum width of twenty feet. The corners of alley intersections shall have a radius of not less than ten feet and shall conform to standards approved by the City Engineer. Access easements and maintenance agreements shall be recorded on affected properties.

Finding: Not Applicable. Alleys are not proposed or required for this development.

16.12.027 - Street design—Off-site street improvements.
During consideration of the preliminary plan for a development, the decision maker shall determine whether existing streets impacted by, adjacent to, or abutting the development meet the applicable design or dimensional requirements. Where such streets fail to meet these requirements, the decision-maker shall require the applicant to make proportional improvements sufficient to achieve conformance with minimum applicable design standards required to serve the proposed development.

Finding: Complies with Condition. The proposed development will create a new roadway connecting Molalla Avenue and Beavercreek Road. The Applicant has proposed to modify the existing signals on Molalla Avenue and Beavercreek Road. The City takes no exception to this. The applicant shall restripe the center turning lane on Molalla Avenue as a left turn lane into the property at the existing intersection following City, State, and Federal guidelines for left turn lane storage and taper.

The City has identified TSP Project D95 for the intersection of Beavercreek Road and OR-213. New developments that impact that intersection are identified to contribute to upgrade the intersection as part of D95 with pro-rata share contribution based on the projected trips generated. This DDP does not generate new trips to the D95 intersection. When Parcel's A, B, and D develop, their contributions will be required at that time based on the identified trips noted in their Traffic Impact Analyses at each DDP. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

16.12.028 - Street design—Transit.
Streets shall be designed and laid out in a manner that promotes pedestrian and bicycle circulation. The applicant shall coordinate with transit agencies where the application impacts

transit streets as identified in OCMC 17.04.1310. Pedestrian/bicycle access ways shall be provided as necessary to minimize the travel distance to transit streets and stops and neighborhood activity centers. The decision maker may require provisions, including easements, for transit facilities along transit streets where a need for bus stops, bus pullouts or other transit facilities within or adjacent to the development has been identified.

Finding: Complies with Condition. The proposed streets provide bicycle and pedestrian access between Molalla Avenue and Beavercreek Road. The applicant has also proposed to relocate the existing bus stop to the north of the Molalla Traffic signal with a pull out and shelter. Written approval from Trimet to relocate the existing bus stop on Molalla Avenue is required. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

16.12.029 - Excavations—Restoration of pavement.
Whenever any excavation shall have been made in any pavement or other street improvement on any street or alley in the City for any purpose whatsoever under the permit granted by the engineer, it shall be the duty of the person making the excavation to restore the pavement in accordance with the City of Oregon City Public Works Pavement Cut Standards in effect at the time the permit is granted. The City Commission may adopt and modify the City of Oregon City Public Works Pavement Cut Standards by resolution as necessary to implement the requirements of this chapter.

Finding: Complies with Condition. Pavement cuts are proposed within Molalla Avenue and Beavercreek Road due to proposed utility service installations and required frontage improvements. Pavement cuts or other improvements made in a City street shall be done in accordance with the City of Oregon City Public Works Pavement Cut Standards and restored in accordance with the City of Oregon City Public Works Pavement Cut Standards. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

16.12.030 - Blocks—Width.
The width of blocks shall ordinarily be sufficient to allow for two tiers of lots with depths consistent with the type of land use proposed. The length, width and shape of blocks shall take into account the need for adequate building site size, convenient motor vehicle, pedestrian, bicycle and transit access, control of traffic circulation, and limitations imposed by topography and other natural features.

All new streets shall be designed as local streets unless otherwise designated as arterials and collectors in the current adopted transportation system plan. The maximum block spacing between streets is five hundred thirty feet and the minimum block spacing between streets is one hundred fifty feet as measured between the right-of-way centerlines except in zones GI, CI, MUE, I, and WFDD where determining the appropriate street spacing will be determined by the City Engineer. If the maximum block size is exceeded, pedestrian accessways shall be provided every three hundred thirty feet. The spacing standards within this section do not apply to alleys.

Finding: Complies as Proposed. The layout of the proposed development shows block lengths which are less than 530 feet.
16.12.031 - Street design—Street names.
Except for extensions of existing streets, no street name shall be used which will duplicate or be confused with the name of an existing street. Street names shall conform to the established standards in the City and shall be subject to the approval of the City.

Finding: Complies with Condition. The developer shall submit a request to the Community Development Department to receive approval for new street names; only approved street names shall be included on the final construction plans prior to occupancy of the first parcel. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval**.

16.12.032 – Public off-street pedestrian and bicycle accessways.
Pedestrian/bicycle accessways are intended to provide direct, safe and convenient connections between
residential areas, retail and office areas, institutional facilities, industrial parks, transit streets, neighborhood activity centers, rights-of-way, and pedestrian/bicycle accessways which minimize out-of-direction travel, and transit orientated developments where public street connections for automobiles, bicycles and pedestrians are unavailable. Pedestrian/bicycle accessways are appropriate in areas where public street options are unavailable, impractical or inappropriate. Pedestrian and bicycle accessways are required through private property or as right-of-way connecting development to the right-of-way at intervals not exceeding three hundred thirty feet of frontage; or where the lack of street continuity creates inconvenient or out of direction travel patterns for local pedestrian or bicycle trips.

Finding: Complies with Condition. The applicant has provided sidewalks and bicycle lanes along the proposed new street connecting Molalla Avenue with Beavercreek Road. The applicant has also proposed providing an expanded sidewalk along the eastern side of the new road within TL 500/501. This expanded sidewalk will act as a shared-use path that is consistent with the City's TSP project S28. The shared-use path S28 is intended to connect Hilltop Avenue to Beavercreek Road for pedestrians and bicycles as part of the City's goals of providing multi-modal forms of transportation throughout the City.

As previously noted, the Applicant has provided a portion of the Share-Use Path along the side of the new street within TL 500/501. The City takes no exception to this portion of the proposed S28 shared use path. The applicant proposes transitioning the shared use path to an unpaved nature trail on TL 3400 and 3200 as it continues north towards Hilltop Avenue. Due to the grades/elevation of the new roadway, a stairwell is shown to access the proposed path below street level from the paved shared-use path on TL 500/501.

The proposed stairwell and nature path are not consistent with the intent of the City's TSP project S28 or as a public off-street accessway which is intended to provide a safe and convenient connection for pedestrians and bicycles outside of the public street system. The proposed stairwell prohibits the continuation of ADA and bicycle access from the new road to the path on TL 3400 and 3200. The applicant has proposed that the pathway be installed below the proposed

future parking lot of Parcel B. Public comment has raised concerns that by locating the trail out of public sight, it creates a safety hazard for the general public. The applicant shall construct TSP Project S28 as a public off-street pedestrian/bicycle accessway for the portion on TL 3200 and 3400 per OCMC 16.12.032 standards. The applicant shall construct their portion of TSP Project S28 within Parcel C (shared use path) and as a 7-10 foot paved off-street ADA compliant pedestrian/bicycle accessway with lighting and landscaping as regulated by the code for the portion on Parcel B per OCMC 16.12.032 standards. S28 shall be designed to minimize grade change within the geologic hazards overlay zone to reduce areas graded or stripped of vegetation or covered with structures or impermeable surfaces to a maximum of 4,000 sf. The applicant may choose to delay the construction of the Parcel B portion of the path to the DDP whereby the path may be able to be constructed at grade adjacent to the proposed parking lot, potentially making it exempt from the Geologic Hazard code. The construction of S28 within TL 3400 and TL 3200 shall be completed prior to occupancy of Parcel D. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

A. Entry points shall align with pedestrian crossing points along adjacent streets and with adjacent street intersections.

Finding: Complies as proposed. The layout of the proposed development shows entry points for accessways aligning with pedestrian crossing points along adjacent streets and with adjacent intersections.

B. Accessways shall be free of horizontal obstructions and have a nine foot six inch high vertical clearance to accommodate bicyclists. To safely accommodate both pedestrians and bicycles, accessway right-of-way widths shall be as follows:
1. Accessways shall have a fifteen foot wide right-of-way with a seven foot wide paved surface with a minimum four foot planter strip on either side.
2. If an accessway also provides secondary fire access, the right-of-way width shall be at least twenty- four feet wide with a sixteen foot paved surface between four foot planter strips on either side.

Finding: Complies with Condition. The applicant has proposed a 15-foot-wide public access easement on the shared-use path on TL 3400 and 3200. The City takes no exception to that. The proposed path appears to be 6-feet-wide. The Shared-use Path S28 (accessway) shall be a paved 7-foot-wide path within TL 3400 and 3200 where it deviates from the proposed street. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

C. Accessways shall be direct with at least one end point of the accessway always visible from any point along the accessway. On-street parking shall be prohibited within fifteen feet of the intersection of the accessway with public streets to preserve safe sight distance and promote safety.

Finding: Applicable. The layout of the proposed development shows accessways that may be without proper visibility. This will be further reviewed as part of the design permitting process.

D. To enhance pedestrian and bicycle safety, accessways shall be lighted with pedestrian-scale lighting. Accessway lighting shall be to a minimum level of one-half-foot-candles, a one and one-half foot-candle average, and a maximum to minimum ratio of seven-to-one and shall be oriented not to shine upon adjacent properties. Street lighting shall be provided at both entrances.

Finding: Complies with Condition. The layout of the proposed development shall provide a lighting plan showing that the shared-use path accessway on TL 3400 and 3200 are lit to the standards of 16.12.032.D. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

E. Accessways shall comply with Americans with Disabilities Act (ADA).

Finding: Complies with Condition. The applicant has proposed a stairwell as part of the shared-use path S28 to connect pedestrians and bicyclists from the street side portion of S28 on TL500 down to existing grade on TL 3400 and 3200. The stairwell does not meet ADA standards and prohibits bicyclists and people with ADA needs to safely traverse the shared-use path. This portion of S28 that deviates from the expanded sidewalk on TL 500/501 is an off-street pedestrian and bicycle accessway and shall comply with Americans with Disabilities Act (ADA) standards. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

F. The planter strips on either side of the accessway shall be landscaped along adjacent property by installation of the following:
1. Either an evergreen hedge screen of thirty to forty-two inches high or shrubs spaced no more than four feet apart on average; and
2. Ground cover covering one hundred percent of the exposed ground. No bark mulch shall be allowed except under the canopy of shrubs and within two feet of the base of trees; and
3. A two-inch minimum caliper tree for every thirty-five feet along the accessway. Trees may be planted on either side of the accessway, provided they are spaced no more than thirty-five feet apart; and
4. In satisfying the requirements of this section, evergreen plant materials that grow over forty-two inches in height shall be avoided. All plant materials shall be selected from the Oregon City Native Plant List.

Finding: Complies with Condition. The portion of S28 that abuts the street on TL 500/501 is proposed to have landscaping behind sidewalk. The City takes no exception to that proposal. The portion of S28 on TL 3400 and 3200 shall be landscaped per OCMC 16.12.032.F standards. Existing landscaping abutting the accessway may be taken into account for tree requirements. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

G. Accessways shall be designed to prohibit unauthorized motorized traffic. Curbs and removable, lockable bollards are suggested mechanisms to achieve this.

Finding: Applicable. Bollards or other mechanisms to prohibit unauthorized motorized vehicles onto the shared use path are applicable.

H. Accessway surfaces shall be paved with all-weather materials as approved by the City. Pervious materials are encouraged. Accessway surfaces shall be designed to drain stormwater runoff to the side or sides of the accessway. Minimum cross slope shall be two percent.

Finding: Complies with Condition. The shared-use path S28 shall be paved with all-weather materials (e.g. asphalt, concrete, etc.) as approved by the City Engineer. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

I. In parks, greenways or other natural resource areas, accessways may be approved with a five-foot wide gravel path with wooden, brick or concrete edgings.

Finding: Not Applicable. The layout of the proposed development shows pedestrian and bicycle accessways with no impact to parks, greenways, or natural resource areas.

J. The decision maker may approve an alternative accessway design due to existing site constraints through the modification process set forth in OCMC 16.12.013.

Finding: Not Applicable. No modification from OCMC 16.12.032 has been proposed or requested for pedestrian and bicycle accessways.

K. Ownership, liability and maintenance of accessways. To ensure that all pedestrian/bicycle accessways will be adequately maintained over time, the City Engineer shall require one of the following:
1. Dedicate the accessways to the public as public right-of-way prior to the final approval of the development; or
2. The developer incorporates the accessway into a recorded easement or tract that specifically requires the property owner and future property owners to provide for the ownership, liability and maintenance of the accessway.

Finding: Complies with Condition. The applicant shall provide a covenant over the pedestrian and bicycle accessways and be responsible for the future maintenance and liability. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

16.12.033 - Mobility standards.
Development shall demonstrate compliance with intersection mobility standards. When evaluating the
performance of the transportation system, the City of Oregon City requires all intersections, except for the facilities identified in subsection E below, to be maintained at or below the following mobility standards during the two-hour peak operating conditions. The first hour has the highest weekday

traffic volumes and the second hour is the next highest hour before or after the first hour. Except as provided otherwise below, this may require the installation of mobility improvements as set forth in the transportation system plan (TSP) or as otherwise identified by the City Engineer.
A. For intersections within the regional center, the following mobility standards apply:
1. During the first hour, a maximum v/c ratio of 1.10 shall be maintained. For signalized intersections, this standard applies to the intersection as a whole. For unsignalized intersections, this standard applies to movements on the major street. There is no performance standard for the minor street approaches.
2. During the second hour, a maximum v/c ratio of 0.99 shall be maintained at signalized intersections. For signalized intersections, this standard applies to the intersection as a whole. For unsignalized intersections, this standard applies to movements on the major street. There is no performance standard for the minor street approaches.
3. Intersections located on the regional center boundary shall be considered within the regional center.
B. For intersections outside of the regional center but designated on the arterial and throughway network, as defined in the regional transportation plan, the following mobility standards apply:
1. During the first hour, a maximum v/c ratio of 0.99 shall be maintained. For signalized intersections, this standard applies to the intersection as a whole. For unsignalized intersections, this standard applies to movements on the major street. There is no performance standard for the minor street approaches.
2. During the second hour, a maximum v/c ratio of 0.99 shall be maintained at signalized intersections. For signalized intersections, this standard applies to the intersection as a whole. For unsignalized intersections, this standard applies to movements on the major street. There is no performance standard for the minor street approaches.
C. For intersections outside the boundaries of the regional center and not designated on the arterial and throughway network, as defined in the regional transportation plan, the following mobility standards apply:
1. For signalized intersections:
a. During the first hour, LOS "D" or better will be required for the intersection as a whole and no approach operating at worse than LOS "E" and a v/c ratio not higher than 1.0 for the sum of the critical movements.
b. During the second hour, LOS "D" or better will be required for the intersection as a whole and no approach operating at worse than LOS "E" and a v/c ratio not higher than 1.0 for the sum of the critical movements.
2. For unsignalized intersections outside of the boundaries of the regional center:
a. For unsignalized intersections, during the peak hour, all movements serving more than twenty vehicles shall be maintained at LOS "E" or better. LOS "F" will be tolerated at movements serving no more than twenty vehicles during the peak hour.
D. For the intersection of OR 213 and Beavercreek Road, the following mobility standards apply:
1. During the first, second and third hours, a maximum v/c ratio of 1.00 shall be maintained. Calculation of the maximum v/c ratio will be based on an average annual weekday peak hour.
E. Until the City adopts new performance measures that identify alternative mobility targets, the City shall exempt proposed development that is permitted, either conditionally, outright, or through detailed development master plan approval, from compliance with the above-referenced mobility standards for the following state-owned facilities:
I-205/OR 99E Interchange.

State intersections located within or on the regional center boundaries.
1. In the case of conceptual development approval for a master plan that impacts the above references intersections:
a. The form of mitigation will be determined at the time of the detailed development plan review for subsequent phases utilizing the code in place at the time the detailed development plan is submitted; and
b. Only those trips approved by a detailed development plan review are vested.
2. Development which does not comply with the mobility standards for the intersections identified in OCMC 16.12.033 shall provide for the improvements identified in the transportation system plan (TSP) in an effort to improve intersection mobility as necessary to offset the impact caused by development. Where required by other provisions of the code, the applicant shall provide a traffic impact study that includes an assessment of the development's impact on the intersections identified in this exemption and shall construct the intersection improvements listed in the TSP or required by the code.

Finding: Complies with Condition. The City's transportation consultant has reviewed the applicant's TIA for this development. They have provided to following findings based on the site's master plan TIA:

- Based on the most recent five years of available crash data (2019 to 2023), critical crash rate calculations, and ODOT SPIS lists, the OR-213/Beavercreek Road intersection was flagged for safety concerns. The TIA notes that since 2023, safety improvements such as signal modifications and improved signage have been completed at this location. As such, no safety mitigations are recommended at this time.
- The development is expected to generate 339 (157 in, 182 out) a.m. peak hour trips, 190 (107 in, 83 out) p.m. peak hour trips, and 2,788 weekday trips. This includes a conservative internal trip capture reduction of 5% in the a.m. peak hour and 25% in the p.m. peak hour, a pass-by rate of 40% for both the a.m. and p.m. peak hours for the Strip Retail (822) land use, and a pass-by rate of 55% for both the a.m. and p.m. peak hours for the Restaurant (934) and Coffee Shop with Drive Through Window (937) land uses.
- Different trip distributions were applied for the commercial and residential land uses.
    - *Commercial Trips (Retail and Fast Food):* Approximately 35% of site trips are expected to travel to/from destinations to the south along Molalla Avenue and Beavercreek Road, and approximately 65% are expected to travel to/from destinations to the north along Molalla Avenue.
    - *Residential Trips:* Approximately 55% of site trips are expected to travel to/from destinations to the south along Molalla Avenue and Beavercreek Road, and approximately 45% are expected to travel to/from destinations to the north along Molalla Avenue.
- Left turn lane warrants were evaluated at future site access intersections. No left turn lane warrants were met.

- All study intersections are expected to meet performance standards under all analysis scenarios.
- A queuing analysis showed queue lengths at the Molalla Avenue/Shared Business Driveway (Safeway) intersection are expected to exceed the available storage for the northbound left turning movement under both background and build conditions in the p.m. peak hour. The 95th percentile queue is expected to exceed the available storage by only one vehicle in the p.m. peak hour only. No mitigation is recommended at this time.

The City's transportation consultant also notes the following:

- The TIA does not address the proposed site plan's compliance with access spacing standards or sight distance standards.
- The TIA does not address the proposed development's pedestrian/bicycle routes to the nearest schools in consideration of safe routes to school.
- The TIA does not discuss the project's internal vehicle, pedestrian, and bicycle circulation.

The items noted above typically take into account the whole property, but they do relate to this DDP as final locations of driveways and accessways may be impacted. The applicant shall provide an updated TIA addressing compliance with access spacing standards or sight distance standards, pedestrian/bicycle routes to the nearest schools, and the project's internal vehicle, pedestrian and bicycle circulation.

Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.

16.12.035 - Driveways.

A. All new development, redevelopment, and capital improvement projects shall meet the minimum driveway spacing standards identified in Table 16.12.035.A. Minor Site Plan and Design Review do not follow these standards unless a request is made to modify the driveway.

Table 16.12.035.A Minimum Driveway Spacing Standards

Street Functional Classification	***Minimum Driveway Spacing Standards***	***Distance***
Major Arterial Streets	*Minimum distance from a street corner to a driveway and between driveways for all uses other than detached single-family dwellings, duplexes, triplexes, quadplexes and townhouses*	*175 ft.*
Minor Arterial Streets	*Minimum distance from a street corner to a driveway and between driveways for all uses other than detached single-family dwellings, duplexes, triplexes, quadplexes and townhouses*	*175 ft.*

Collector Streets	*Minimum distance from a street corner to a driveway and between driveways for all uses other than detached single-family dwellings, duplexes, triplexes, quadplexes and townhouses*	*100 ft.*
Local Streets	*Minimum distance from a street corner to a driveway and between driveways for all uses other than detached single-family dwellings, duplexes, triplexes, quadplexes and townhouses*	*25 ft.*

1. When driveways are shared (combined), the minimum driveway spacing shall be 20 feet.
2. All driveways, except for shared driveways, shall be placed a minimum of 5 feet from the property line.
3. The distance from a street corner to a driveway is measured along the right-of-way from the edge of the intersection (on the same side of the road) right-of-way to the nearest portion of the driveway and the distance between driveways is measured at the nearest portions of the driveway at the right-of-way.

Finding: Complies with Condition. All driveways, new and existing, shall meet the minimum driveway spacing standards identified in Table 16.12.035.A. The modified driveway locations for Parcel A and Parcel B appear to meet the intent of the spacing standards. Approved driveway locations will need included on engineering plans prior to receiving a permit and beginning construction. Final driveway locations for will be evaluated during the design review phase with the applicant's updated TIA. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

B. All detached single-family dwellings, duplexes, triplexes, quadplexes and townhouses shall have driveways which meet the minimum distance from a street corner standards except when the lot size is smaller than the minimum distance required. When minimum distance cannot be met due to lot size or due to the location of an overlay district, the driveway shall be located as far away from the intersection as possible, but no more than 5 feet to the neighboring property line, as approved by the City Engineer.

Finding: Not applicable. The development does not propose detached dwelling units or townhouses.

C. Nonresidential or multi-family residential use driveways that generate high traffic volumes as determined by a traffic analysis shall be treated as intersections and shall adhere to requirements of OCMC 16.12.020.

Finding: Complies as proposed. The development has proposed nonresidential or multi-family residential use driveways that generate high traffic volumes. See conditions under 16.12.033.

D. For any detached single-family dwellings, duplexes, triplexes, quadplexes, and townhouses or property developed with an ADU with multiple frontages, only one driveway is allowed per street frontage classified as a local street and in no case shall more than two driveways (one per frontage), unless otherwise approved by the City Engineer.

Two driveways shall never be granted for any property with only one frontage on a local road for any single-family detached residential property or property that contains an ADU unless required by Clackamas Fire District No. 1.

E. Cluster housing properties may be granted more than one driveway per property and per frontage meeting the spacing standards. Driveways should be combined whenever possible to limit the number of driveways per property.

Middle housing properties with only one building may be allowed one driveway for every two units, provided that spacing standards and/or driveway width requirements are met.

Middle housing properties with more than one structure shall meet the cluster housing standards.

F. Townhouses shall have one driveway approach for every two dwelling units (round up for townhouse structures with an odd number of dwellings).

G. Driveways on collectors or arterials shall be provided in such a way that no backing of a vehicle will occur from the driveway to the collector or arterial.

H. When a property fronts multiple roads, access shall be provided from and limited to the road with the lowest classification in the transportation system plan to minimize points of access to arterials and collectors. Access shall not be provided on arterial or collector roads unless there is no other alternative. At the discretion of the City Engineer, properties fronting a collector or arterial road may be allowed a second driveway, for the creation of a circulation pattern that eliminates reverse maneuvers for vehicles exiting a property if applied for and granted through procedures in OCMC 16.12.013. All lots proposed with a driveway and lot orientation on a collector or minor arterial shall combine driveways into one joint access per two or more lots unless the City Engineer determines that:

1. No driveway access may be allowed since the driveway(s) would cause a significant traffic safety hazard; or

2. Allowing a single driveway access per lot will not cause a significant traffic safety hazard.

I. All driveway approaches shall be limited to the dimensions identified in Table 16.12.035.D.

Table 16.12.035.D Driveway Approach Size Standards

Property Use	*Minimum Driveway Approach Width*		*Maximum Driveway Approach Width*
Single-Family Detached and Duplexes	*10 feet*		*24 feet*
Townhouses	*10 feet*		*24 feet*
Triplexes, Quadplex and Cottage Clusters	*10 feet*		*36 feet*
Multi-Family	*18 feet*		*30 feet*
Commercial, Industrial, Office, Institutional, Mixed Use, and/or Nonresidential	*One-Way 12 feet*	*Two-Way 20 feet*	*40 feet*

1. Shared driveways for middle housing structures shall be minimum 18 feet and maximum 36 feet except when section J.4.a applies.

2. Driveway widths shall match the width of the driveway approach where the driveway meets sidewalk or property line but may be widened onsite (for example between the property line and the entrance to a garage). Groups of more than four parking spaces shall be so located and served by

driveways so that their use will not require backing movements or other maneuvering within a street right-of-way other than an alley.

Finding: Complies with Condition. All driveways (curb cuts), new and existing, shall meet the minimum driveway width standards identified in Table 16.12.035.D. Approved driveway widths will need to be included on engineering plans prior to receiving a permit and beginning construction. The applicant has proposed a modification to the driveway standard for Parcel D due to the curvature of the road. The proposed modification to Parcel D complies as proposed. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

J. The City Engineer reserves the right to require a reduction in the number and size of driveway approaches as far as practicable for any of the following purposes:
1. To provide adequate space for on-street parking;
2. To facilitate street tree planting requirements;
3. To assure pedestrian and vehicular safety by limiting vehicular access points; and
4. To assure that adequate sight distance requirements are met.
a. Where the decision maker determines any of these situations exist or may occur due to the approval of a proposed development for non-residential uses or attached or multi-family housing, a shared driveway shall be required and limited to twenty-four feet in width adjacent to the sidewalk or property line.

Finding: Not Applicable. No restrictions are proposed by the City Engineer.

K. For all driveways, the following standards apply.
1. Each new or redeveloped curb cut shall have an approved concrete approach or asphalted street connection where there is no concrete curb and a minimum hard surface for at least ten feet back into the property as measured from the current edge of sidewalk or street pavement to provide for controlling gravel tracking onto the public street. The hard surface may be concrete, asphalt, or other surface approved by the City Engineer.
2. Any driveway approach built within public right-of-way shall be built and permitted per city requirements as approved by the City Engineer.
3. No driveway with a slope of greater than fifteen percent shall be permitted without approval of the City Engineer.

Finding: Complies as proposed. All new driveways a shall have a concrete driveway approach or asphalted street connection with a minimum hard surface for at least ten feet back into the lot as measured from the edge of street pavement. The hard surface shall be concrete, asphalt, or other surface approved by the City Engineer.

L. Exceptions. The City Engineer reserves the right to waive these standards or not allow driveway access, if the driveway(s) would cause a significant traffic safety hazard. Narrower or wider driveway widths may be considered where field conditions preclude use of recommended widths. When larger vehicles and trucks will be the predominant users of a particular driveway, turning templates may be utilized to develop a driveway width that can safely and expeditiously accommodate the prevalent type of ingress and egress traffic.

Finding: Not Applicable. No exemptions are proposed.

16.12.065 - Building site—Grading.
Grading of building sites shall conform to the state of Oregon Structural Specialty Code, Title 18, any
approved grading plan and any approved residential lot grading plan in accordance with the requirements of OCMC 13.12, 15.48, 16.12 and the public works stormwater and grading design standards, and the erosion control requirements of OCMC 17.47.

Finding: Applicable. Please refer to the findings within sections 13.12,15.48, 16.12 & 17.47 of this report.

16.12.085 - Easements.
The following shall govern the location, improvement and layout of easements:
A. Utilities. Utility easements shall be required where necessary as determined by the City Engineer.
Insofar as practicable, easements shall be continuous and aligned from block-to-block within the development and with adjoining subdivisions or partitions.
1. Specific public utility easements for water, sanitary or storm drainage shall be provided based on approved final engineering plans conforming to the requirements found within the applicable design standards.
2. Conveyance of public utility easements for gas, electric, telecommunication, and fiberoptic shall be required where necessary as determined by the City Engineer. The City Engineer will require the easement unless it is found that the utility can be placed in a different location or can be placed in a smaller easement than what is required. The easement shall be located adjacent to all public rights-of-way or public access easements within private property. In the event that the provision of a public utility easement would create a conflict with achieving compliance with another part of the code, the location and width may be adjusted by the City Engineer.
a. The easement shall be 10 feet in the R-10, R-8, R-6, R-5, R-3.5, R-2, GI, and CI zones
b. The easement shall be a minimum of 5 feet in the NC, HC, I, C, MUC-1, MUC-2, MUE, MUD, and WFDD zones.
i. The applicant shall obtain a written determination from all utilities that the minimum 5 foot PUE coupled with use of a minimum of a five-foot area under the public sidewalk or parkway area is sufficient to serve the development. Where the minimum width is deemed inadequate, a modification shall be required.
c. An applicant may seek a modification to the public utility easement dedication requirement using 16.12.013.

Finding: Complies with Condition. The development shall provide a public utility easement (PUE) along all property lines fronting existing or proposed public right-of-way. Zero setback sites may not require a PUE but may have dry utilities between the property line and curb the developer shall make all necessary arrangements with utility companies to ensure underground lines are not placed within the roadway. Approved PUE will need to be included on the final plat prior to recording the plat. The development shall provide a public utility easement for the City's sewer for the sewer connecting Hilltop Avenue to Beavercreek Road. The final location and sizing will be

determined during DDP and Design review based on the City's sewer design standards. A 15-foot-wide public access easement will be required for the portion of the shared use path accessway, S28, that deviates from the public right-of-way. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

B. Unusual Facilities. Easements for unusual facilities such as high voltage electric transmission lines, drainage channels and stormwater detention facilities shall be adequately sized for their intended purpose, including any necessary maintenance roads. These easements shall be shown to scale on the preliminary and final plats or maps. If the easement is for drainage channels, stormwater detention facilities or related purposes, the easement shall comply with the requirements of the public works stormwater and grading design standards.

Finding: Complies as proposed. The applicant acknowledges this requirement and is coordinating with PGE on final layout.

C. Watercourses. Where a development is traversed or bounded by a watercourse, drainageway, channel or stream, a stormwater easement or drainage right-of-way shall be provided which conforms substantially to the line of such watercourse, drainageway, channel or stream and is of a sufficient width to allow construction, maintenance and control for the purpose as required by the responsible agency. For those subdivisions or partitions which are bounded by a stream of established recreational value, setbacks or easements may be required to prevent impacts to the water resource or to accommodate pedestrian or bicycle paths.

Finding: Not Applicable. The application does not affect any watercourses.

D. Access. When easements are used to provide vehicular access to lots within a development, the construction standards, but not necessarily width standards, for the easement shall meet City specifications. The minimum width of the easement shall be 20 feet. The easements shall be improved and recorded by the applicant and inspected by the City Engineer. Access easements may also provide for utility placement.

Finding: Complies as proposed. The vehicular access easements for Lots 700 and 800 are consistent with the Beavercreek Road Access Plan. No physical connections are required at this time. When those properties develop in the future, the driveways will be required then.

E. Resource Protection. Easements or other protective measures may also be required as the Community Development Director deems necessary to ensure compliance with applicable review criteria protecting any unusual significant natural feature or features of historic significance.

Finding: Complies with Condition. The access road connecting through TL 3-2E-05D-00500 may encroach on the Natural Resource Overlay District (NROD). The final impacts of that roadway will be evaluated as part of the technical design review of the road. If the NROD area is disturbed with this project, the applicant shall coordinate with the City's Planning Department on mitigations per the City's standards in OCMC 17.49. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

16.12.090 - Minimum improvements—Procedures.
In addition to other requirements, improvements installed by the applicant either as a requirement of these or other regulations, or at the applicant's option, shall conform to the requirements of this title and be designed to City specifications and standards as set out in the City's facility master plan and Public Works Stormwater and Grading Design Standards. The improvements shall be installed in accordance with the following procedure:
A. Improvement work shall not commence until construction plans have been reviewed and approved by the City Engineer and to the extent that improvements are located in county or state right-of-way, they shall be approved by the responsible authority. To the extent necessary for evaluation of the proposal, the plans may be required before approval of the preliminary plat of a subdivision or partition. Expenses incurred thereby shall be borne by the applicant and paid for prior to final plan review.

Finding: Complies with Condition. The development plans shall comply with all current Oregon City Public Works design standards, specifications, codes, and policies prior to receiving a permit and beginning construction. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

B. Improvements shall be constructed under the inspection and approval of the City Engineer. Expenses incurred thereby shall be borne by the applicant and paid prior to final approval. Where required by the City Engineer or other City decision-maker, the applicant's project engineer also shall inspect construction.

Finding: Complies with Condition. The developer's project engineer shall inspect construction of public improvements and stormwater management facilities at the cost of the applicant. The City will perform inspections in accordance with city policies and standards. See section 16.12.014 of this report regarding inspection fees. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

C. Erosion control or resource protection facilities or measures are required to be installed in accordance with the requirements of OCMC 17.47, 17.49 and the Public Works Erosion and Sediment Control Standards.

Finding: See findings from section 17.47, 17.49 of this report.

D. Underground utilities, waterlines, sanitary sewers and storm drains installed in streets shall be constructed prior to the surfacing of the streets. Stubs for service connections for underground utilities, such as, storm, water and sanitary sewer shall be placed beyond the ten-foot-wide public utility easement within private property as defined in OCMC 16.12.85.A.2.

Finding: Compiles with Condition. Underground utilities, waterlines, sanitary sewers and storm drains proposed to be installed in streets shall be constructed prior to the surfacing of the streets. Stubs for service connections for underground utilities, such as, storm, water and sanitary sewer shall be placed beyond the franchise utility easement within private property. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

E. As-built construction plans and digital copies of as-built drawings shall be filed with the City Engineer upon completion of the improvements.

Finding: Complies with Condition. As-built construction plans and digital copies of as-built drawings shall be filed with the City Engineer within 90 days of completing improvements. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

F. The City Engineer may regulate the hours of construction and access routes for construction equipment to minimize impacts on adjoining residences or neighborhoods.

Finding: Complies with Condition. The applicant shall comply with permitted hours of construction as set forth by the City Engineer for any public improvements (in existing public right-of-way or easements or which will be dedicated in public right-of-way or easements) that will not follow OCMC 9.12.023.D. as stated and written in the pre-construction meeting notes. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

16.12.095 - Minimum improvements—Public facilities and services.
The following minimum improvements shall be required of all applicants for a development, unless the decision-maker determines that any such improvement is not proportional to the impact imposed on the City's public systems and facilities:
A. Transportation System. Applicants and all subsequent lot owners shall be responsible for improving the City's planned level of service on all public streets, including alleys within the development and those portions of public streets adjacent to but only partially within development. Applicants are responsible for designing and providing adequate vehicular, bicycle and pedestrian access to their developments and for accommodating future access to neighboring undeveloped properties that are suitably zoned for future development. Storm drainage facilities shall be installed and connected to off-site natural or man-made drainageways. Upon completion of the street improvement survey, the applicant shall reestablish and protect monuments of the type required by ORS 92.060 in monument boxes with covers at every public street intersection and all points or curvature and points of tangency of their center line, and at such other points as directed by the City Engineer.

Finding: Complies with Condition. The applicant has provided a transportation system that is consistent with the City's street design standards. The City agrees with the applicant's proposed modified cross-section for a collector road to be used for this development. The modified collector is smaller than the standard cross-section for a local road within a mixed-use development but provides safer spaces for both pedestrians and for bicyclists. The City agrees with the proposed three lanes, consistent with a collector road, providing a turning lane for the businesses on the westside of the development. The Applicant's TIA also notes that necking down the street section to a two-lane road is appropriate as the street moves to the east (away from the proposed commercial developments) and then runs parallel to the property's southern boundary. The City takes no exception to this.

By aligning the new street along the southern boundary on TL 3400, the applicant is providing a layout that is consistent with the City's Beavercreek Road Access Plan. The properties immediately south of this development currently are accessible by driveways along Beavercreek Road. The City's Beavercreek Access Plan's goals include eliminating several of the driveway access points from Beavercreek Road to provide a safer and more efficient commute on that major arterial road. The applicant's layout provides a new public street for those properties to connect to in the future with access easements. The City takes no exception to this proposed layout.

The last segment of the new roadway is proposed through a previously determined access easement through the neighboring properties that are not a part of this development's master plan. The applicant has proposed to provide a "half-street" that will include two full travel lanes connecting their property to Beavercreek Road through TL 500/501. They propose an expanded sidewalk section on the east side of that street to provide space for pedestrians and bicyclists. The expanded sidewalk is consistent with the City's TSP shared-use path S28. The applicant has demonstrated that the proposed alignment can handle large freight to traverse TL 500/501 and continue through the proposed development to Molalla Ave. This "half-street" is consistent with the City's Beavercreek Access Plan, specifically the Short-Term Plan identified on Figure 7 of that plan. When neighboring properties redevelop to the west, that portion of the new street will be completed with the typical street section features. The City takes no exception to the proposed "half-street" on TL 500/501.

The applicant has proposed providing sidewalks and bike lanes along both sides of the street within their master plan development area. The street system then continues through TL 500/501 with a shared use path on the east side of the proposed street. The City's TSP identifies a shared-use path through this development connecting Hilltop Avenue to Beavercreek Road. The proposed half-street on TL 500/501 is consistent with the TSP. The applicant has proposed to continue the shared-use path to the north towards Hilltop Ave on TL 3400 and 3200 away from the proposed street system. See conditions under 16.12.032 regarding the portion of the shared-use path on TL 3400 and 3200.

See conditions of approval under OCMC 16.12.015 and 16.12.032 for specific requirements for the transportation system. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

B. Stormwater Drainage System. Applicants shall design and install drainage facilities within a development and shall connect the development's drainage system to the appropriate downstream storm drainage system as a minimum requirement for providing services to the applicant's development. The applicant shall obtain county or state approval when appropriate. Applicants are responsible for extending the appropriate storm drainage system to the development site and for providing for the connection of upgradient properties to that system. The applicant shall design the drainage facilities in accordance with city drainage master plan requirements, OCMC 13.12 and the public works stormwater and grading design standards.

Finding: Complies with Condition. See findings from section 13.12 for the design of stormwater management facilities to serve the development. The Applicant has proposed a combined stormwater pond that treats stormwater from both private properties (Parcels A and B) and from

the runoff draining from the public roadway. The applicant has proposed to make the facility a public facility and place the burden of maintenance on the City. As previously noted the proposed pond is designed to treat the stormwater from the private properties. The applicant's stormwater report identifies approximately 280,000 square feet of private property runoff contributing to the proposed pond. The area of the public roadway being treated by the pond is approximately 70,000 square feet. This pond is primarily a private stormwater treatment facility as only a fifth of the expected flows to the pond will be from a public right-of-way. The maintenance of the pond should be the responsibility of the private properties.
The City will maintain stormwater facilities dedicated to the stormwater runoff from public spaces. This is consistent across the City with regards to commercial properties. Typically commercial developments (i.e. shopping centers, apartment complexes, restaurants, industrial complexes, etc.) all privately maintain their own stormwater systems. The City does maintain combined systems in the case of residential subdivisions (which this development is not). Public stormwater facilities shall only treat stormwater from publicly maintained right-of-way (i.e. public streets). The applicant shall either separate the public stormwater from the private runoff with separate publicly maintained facilities (e.g. streetside planters or other separate facilities) and privately maintain facilities for private stormwater runoff; or the development can provide stormwater management in total for public and private improvements and maintain the facility or facilities privately. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

C. Sanitary Sewer System. The applicant shall design and install a sanitary sewer system to serve all lots or parcels within a development in accordance with the City's sanitary sewer design standards, and shall connect those lots or parcels to the City's sanitary sewer system, except where connection is required to the county sanitary sewer system as approved by the county. Applicants are responsible for extending the City's sanitary sewer system to the development site and through the applicant's property to allow for the future connection of neighboring undeveloped properties that are suitably zoned for future development. The applicant shall obtain all required permits and approvals from all affected jurisdictions prior to final approval and prior to commencement of construction. Design shall be approved by the City Engineer before construction begins.

Finding: Complies with Condition. The applicant proposes to install a new sewer main within the proposed new road that connects Molalla Avenue to Beavercreek Road. The new sewer main will collect sanitary flows from Parcels D, B and A to the City's collection system on Beavercreek Road. The City's Sewer Master Plan has identified a sewer capital project to construct an 8" sanitary sewer from Hilltop Avenue (north of this development) to Beavercreek Road. The applicant's sewer within the proposed street alignment is consistent with the master plan. The applicant proposes to provide a stub north as part of this DDP. The applicant shall construct their portion of the Sewer Master Plan's 8-inch sewer from Beavercreek Road to stub into Parcel B while ensuring it is designed and built to be able to be extended to Hilltop Avenue. The future DDP for Parcel B shall construct their portion of the Sewer Master Plan's 8-inch sewer main towards Hilltop Avenue. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

D. Water System. The applicant shall design and install a water system to serve all lots or parcels within a development in accordance with the City public works water system design standards, and shall connect those lots or parcels to the City's water system. Applicants are responsible for extending the City's water system to the development site and through the applicant's property to allow for the future connection of neighboring undeveloped properties that are suitably zoned for future development.

Finding: Complies with Condition. The applicant has proposed to construct a 12" DI main and create a loop between Molalla Avenue and Beavercreek Road. This is consistent with the City's Water Master Plan. The applicant notes that the development itself does not require a 12" water main but only an 8" Main. The proposed water main shall connect to the City's 30-inch Water Main on Molalla Avenue and the City's 20-inch main on Beavercreek Road. The development shall provide an Access and Water Supply Plan to Clackamas Fire District #1 for review. An approved Access and Water Supply Plan is required prior to issuance of building permits for the development. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

E. Street Trees. Refer to OCMC 12.08, Street Trees.

Finding: See findings from section 12.08.

F. Bench Marks. At least one bench mark shall be located within the subdivision boundaries using datum plane specified by the City Engineer.

Finding: Complies with Condition. The engineering plans shall provide a local benchmark, onsite, using the NAVD88 datum prior to receiving a permit and beginning construction. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

G. Other Utilities. The applicant shall make all necessary arrangements with utility companies or other affected parties for the installation of underground lines and facilities. All new utilities shall be placed underground unless the respective franchise agreements allow otherwise or unless it is physically or technically impossible to comply with applicable standards. Existing electrical lines and other wires, including but not limited to telecommunication, street lighting and fiberoptic, shall be relocated underground.
1. Exemptions to relocation of existing overhead utilities to underground for property development as follows (Only one exemption criteria is required to be exempt from this requirement):
a. No transmission or feeder lines shall be relocated underground unless approved by the City Engineer.
b. Properties with less than one acre of land area shall not be required to relocate existing overhead utilities unless required by the franchise utility.
c. Properties with less than two hundred feet of frontage on any individual roadway shall not be required to relocate existing overhead utilities unless required by the franchise utility.
d. Land divisions with five or fewer subdivided lots shall not be required to relocate existing overhead utilities unless required by the franchise utility.

2. The exemptions in G.1. do not apply if properties within the same block were required to relocate the overhead utilities within the past ten years. In those cases, the existing overhead utilities shall be relocated underground.
3. When any franchise utility (electric, gas, telecommunication, fiberoptic, street lighting or similar utility) is installed along an existing or new roadway, the utility shall be installed within the existing or proposed public utility easement unless it is physically or technically impossible.
4. These requirements do not apply to work by a franchise utility for improvement, repair, alteration or addition to their existing systems.

Finding: Complies with Condition. New franchise utilities shall be placed underground and all existing overhead utilities adjacent to the property frontage shall be relocated underground unless deemed infeasible by the City and franchise utility provider(s) prior to occupancy of the first parcel. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

H. Oversizing of Facilities. All facilities and improvements shall be designed to city standards as set out in the City's facility master plan, public works design standards, or other city ordinances or regulations. Compliance with facility design standards shall be addressed during final engineering. A development may be required to modify or replace existing offsite systems if necessary to provide adequate public facilities. The City may require oversizing of facilities to meet standards in the City's facility master plan or to allow for orderly and efficient development. Where oversizing is required, the applicant may request reimbursement from the City for oversizing based on the City's reimbursement policy and funds available or provide for recovery of costs from intervening properties as they develop.

Finding: Applicable. The City's master plans for water and sewer identify projects within the proposed development site. The applicant has noted that the 12" water main noted in the water master plan is greater than what is needed for this development. Sizing requirements for the water and sewer will be reviewed during the projects technical design review.

I. Erosion Control Plan—Mitigation. The applicant shall be responsible for complying with all applicable provisions of OCMC 17.47 with regard to erosion control.

Finding: See findings from section 17.47 of this report

16.12.100 - Same—Road standards and requirements.
A. The creation of a public street and the resultant separate land parcels shall be in conformance with requirements for subdivisions or partitions and the applicable street design standards of this Chapter. However, the decision-maker may approve the creation of a public street to be established by deed without full compliance with the regulations applicable to subdivisions or partitions where any of the following conditions exist:
1. The establishment of the public street is initiated by the City Commission and is declared essential for the purpose of general traffic circulation and the partitioning of land is an incidental effect rather than the primary objective of the street;

2. The tract in which the street is to be dedicated is within an isolated ownership either not over one acre or of such size and characteristics as to make it impossible to develop building sites for more than three dwelling units.

Finding: Applicable. Please refer to the findings in chapter 16.12.016 within this report for applicable street design standards required for the public street.

B. For any public street created pursuant to subsection A of this section, a copy of a preliminary plan and the proposed deed shall be submitted to the Community Development Director and City Engineer at least ten days prior to any public hearing scheduled for the matter. The plan, deed and any additional information the applicant may submit shall be reviewed by the decision-maker and, if not in conflict with the standards of Title 16 and Title 17, may be approved with appropriate conditions.

Finding: Not Applicable. The applicant has not proposed the creation of a public street to be established by deed without full compliance with the regulations applicable to subdivisions or partitions.

C. The design and construction of public streets shall be per the standards found in this chapter and the most recent version of any City Design and Construction Standards.

Finding: Complies with Condition. The development plans shall comply with all current Oregon City Public Works design standards, specifications, codes, and policies prior to receiving a permit and beginning construction. (Also written in 16.12.010). Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.

16.12.105 - Same—Timing requirements.
A. Prior to applying for final plat approval, the applicant shall either complete construction of all public improvements required as part of the preliminary plat approval or guarantee the construction of those improvements. Whichever option the applicant elects shall be in accordance with OCMC 17.50.140.

Finding: See findings from OCMC 17.50.140 regarding timing of construction of improvements and guarantee for construction of improvements.

B. Construction. The applicant shall construct the public improvements according to approved final engineering plans and all applicable requirements of this Code, and under the supervision of the City Engineer. Under this option, the improvement shall be complete and accepted by the City Engineer prior to final plat approval.

Finding: Complies with Condition. Public improvements and all items from the city provided punch list shall be completed and accepted by the City prior to occupancy of the first parcel. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

16.12.110 -Public improvements—Financial guarantees.

A. To ensure construction of required public improvements, the applicant shall provide the City with a performance guarantee in accordance with OCMC 17.50.140.

Finding: Please see findings from Section17.50.140 of this report.

B. After satisfactory completion of required public improvements and facilities, all public improvements not constructed by the City, shall be maintained and under warranty provided by the property owner or developer constructing the facilities until the City accepts the improvements at the end of the warranty period as prescribed in OCMC 17.50.141.

Finding: Please see findings from Section17.50.141 of this report.

16.12.120 Waiver of Remonstrance
The review authority may require a property owner to sign a waiver of remonstrance against the formation of and participation in a local improvement district where it deems such a waiver necessary to provide needed improvements reasonably related to the impacts created by the proposed development. To ensure compliance with this chapter, the review authority may require an applicant to sign or accept a legal and enforceable covenant, contract, dedication, easement, performance guarantee, or other document, which shall be approved in form by the City Attorney.

Finding: Complies with Condition. The property owner(s) shall sign a Restrictive Covenant Non-Remonstrance Agreement for the purpose of making storm sewer, sanitary sewer, water or street improvements in the future that benefit the property and all fees associated with processing and recording the Non-Remonstrance Agreement shall be paid prior to occupancy of the first parcel. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

16.12.125 Violation—Penalty.
Any act or omission in violation of this chapter shall be deemed a nuisance. Violation of any provision of this chapter is subject to the code enforcement procedures of OCMC 1.16, 1.20 and 1.24.

CHAPTER 17.44 – GEOLOGIC HAZARDS
17.44.010 – Intent and purpose.
A. To ensure that activities in geologic hazard areas are designed based on detailed knowledge of site conditions in order to reduce the risk of private and public losses;
B. To establish standards and requirements for the use of lands within geologic hazard areas;
C. To provide safeguards to prevent undue hazards to property, the environment, and public health, welfare, and safety in connection with use of lands within geologic hazard areas;
D. To mitigate risk associated with geologic hazard areas, not to act as a guarantee that the hazard risk will be eliminated, nor as a guarantee that there is a higher hazard risk at any location. Unless otherwise provided, the geologic hazards regulations are in addition to generally applicable standards provided elsewhere in the Oregon City Municipal Code.

17.44.025 - When required; regulated activities; permit and approval requirements.

No person shall develop land, construct, reconstruct, structurally alter, relocate or enlarge any building or structure for which a land development, sign, or building permit is required on a property that contains an area mapped within the adopted Oregon City Geologic Hazards Overlay Zone without first obtaining permits or approvals as required by this chapter.

The requirements of this chapter are in addition to other provisions of the Oregon City Municipal Code. Where the provisions of this chapter conflict with other provisions of the Oregon City Municipal Code, the provisions that are the more restrictive of regulated development activity shall govern.

Finding: Applicable. The development property contains an area mapped within the adopted Oregon City Geologic Hazards Overlay Zone.

17.44.030 - Procedures.
No building or site development permit or other authorization for development shall be issued until the plans and other documents required by this chapter have been reviewed and found by the review authority to comply with the requirements of this chapter.

A. Where the development is part of an application that otherwise requires a Type III procedure, review shall occur in the manner established in Chapter 17.50 for a consolidated Type III review.

B. Where the development is part of an application that otherwise requires a Type II procedure, review shall occur in the manner established in Chapter 17.50 for a consolidated Type II review.

C. For any other proposed development not otherwise subject to review as part of a development proposal that requires land use review, review shall occur in the manner established in Chapter 17.50 for a Type II procedure.

Finding: Applicable. This application meets Criteria A and C as the development is part of a general land use application. No building or site development permit or other authorization for development shall be issued until the plans and other documents required by OCMC Chapter 17.44 have been approved by the City.

17.44.035 - Exemptions.
The following activities, and persons engaging in same, are EXEMPT from the provisions of this chapter.
A. An excavation which is less than two feet in depth, or which involves less than twenty-five cubic yards of volume;
B. A fill which does not exceed two feet in depth or which includes less than twenty-five cubic yards of volume;
C. A combined cut and fill that does not involve more than twenty-five cubic yards of volume.
D. Installation, new construction, addition or structural alteration of any existing structure of less than five hundred square feet in building footprint that does not involve grading as defined in this chapter;

E. Installation, construction, reconstruction, or replacement of public and private utility lines in the hardscape portion of the city right-of-way, existing utility crossings, existing basalt lined drainage channels, or public easement, not including electric substations;
F. Tree removal on slopes twenty-five percent or greater where canopy area removal is less than twenty-five percent of the portion of the lot which contains twenty-five percent or greater slopes. For the purpose of this chapter, "tree" shall be as defined in OCMC 17.04.1315.
G. The removal or control of noxious vegetation;
H. Emergency actions which must be undertaken immediately to prevent an imminent threat to public health or safety, or prevent imminent danger to public or private property. The person undertaking emergency action shall notify the building official on all regulated activities associated with any building permit or City Engineer/Public Works Director on all others within one working day following the commencement of the emergency activity. If the City Engineer/Public Works Director or building official determine that the action or part of the action taken is beyond the scope of allowed emergency action, enforcement action may be taken.

Finding: Not Applicable. The application does not meet any of the criteria for an exemption to the geologic hazard code 17.44.

17.44.050 - Development - Application Requirements and Review Procedures and Approvals.
Except as provided by subsection C. of this section, an application for a geologic hazards overlay review shall include the following:
A. A geological assessment and geotechnical report that specifically includes, but is not limited to:
1. Comprehensive information and data regarding the nature and distribution of underlying geology, the physical and chemical properties of existing soils and groundwater; an opinion of site geologic stability, and conclusions regarding the effect of geologic conditions on the proposed development. In addition to any field reconnaissance or subsurface investigation performed for the site, the following resources, as a minimum, shall be reviewed to obtain this information and data:
a. The State of Oregon Department of Geology and Mineral Industries (DOGAMI) in Bulletin 99, Geology and Geological Hazards of North Clackamas County, Oregon (1979), or in any subsequent DOGAMI mapping for the Oregon City area;
b. Portland State University study entitled "Environmental Assessment of Newell Creek Canyon, Oregon City, Oregon" (1992);
c. Portland State University study, "Landslides in the Portland, Oregon, Metropolitan Area Resulting from the Storm of February 1996: Inventory Map, Database and Evaluation" (Burns and others, 1998);
d. DOGAMI Open File Report O-06-27, "Map of Landslide Geomorphology of Oregon City, Oregon, and Vicinity Interpreted from LIDAR Imagery and Aerial Photographs" (Madin and Burns, 2006);
e. "Preliminary Geologic Map of the Oregon City Quadrangle, Clackamas County, Oregon" (Madin, in press);

f. Landslide Hazards Land Use Guide for Oregon Communities (October 2019), prepared by the State of Oregon Department of Geology and Mineral Industries (DOGAMI) and the Oregon Department of Land Conservation and Development (DLCD);
g. Landslide hazard and risk study of northwestern Clackamas County, Oregon: Oregon Department of Geology and Mineral Industries, Open-File Report O-13-08, 74 map plates; Burns, W.J., Mickelson, K.A., Jones, C.B., Pickner, S.G., Hughes, K.L., Sleeter, R., 2013.

h. Mapped landslide data shall be from the city's maps as a minimum but may be supplemented with maps from items a through f above.

Finding: Complies as Proposed. The application has provided the information listed in 17.44.050.A.1; however, detailed review of the report will occur as part of the permit review and revisions may be requested.

2. Information and recommendations regarding existing local drainage, proposed permit activity impacts on local drainage, and mitigation to address adverse impacts;

Finding: Complies with Condition. The application has not explicitly provided the information listed in 17.44.050.A.2, but has generally indicated that stormwater will be controlled at the site and referenced detention facilities to be constructed as part of development. The geotechnical report should clearly state recommendations regarding existing local drainage, any impacts on local drainage from the proposed development, and any mitigation required to address adverse impacts. The applicant shall update the report as part of design review. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

3. Comprehensive information about site topography;

Finding: Complies as Proposed. The application has provided sufficient information on the site topography as listed in 17.44.050.A.3 for project; however, detailed review of the report will occur as part of the permit review and revisions may be requested.

4. Opinion as to the adequacy of the proposed development from an engineering standpoint;

Finding: Complies as Proposed. The application has provided all of the information listed in 17.44.050.A.4; however, detailed review of the report will occur as part of the permit review and revisions may be requested.

5. Opinion as to the extent that instability on adjacent properties may adversely affect the project;

Finding: Complies as Proposed. The application has provided all of the information listed in 17.44.050.A.5; however, detailed review of the report will occur as part of the permit review and revisions may be requested.

6. Description of the field investigation and findings, including logs of subsurface conditions and laboratory testing results;

Finding: Complies as Proposed. The application has provided all of the information listed in 17.44.050.A.6; however, detailed review of the report will occur as part of the permit review and revisions may be requested.

7. Conclusions regarding the effect of geologic conditions on the proposed development, tree removal, or grading activity;

Finding: Complies as Proposed. The application has provided all of the information listed in 17.44.050.A.7; however, detailed review of the report will occur as part of the permit review and revisions may be requested.

8. Specific requirements and recommendations for plan modification, corrective grading, and special techniques and systems to facilitate a safe and stable site;

Finding: Complies as Proposed. The application has provided all of the information listed in 17.44.050.A.8; however, detailed review of the report will occur as part of the permit review and revisions may be requested.

9. Recommendations and types of considerations as appropriate for the type of proposed development:
a. General earthwork considerations, including recommendations for temporary and permanent cut and fill slopes and placement of structural fill;
b. Location of residence on lot;
c. Building setbacks from slopes;
d. Erosion control techniques applicable to the site;
e. Surface drainage control to mitigate existing and potential geologic hazards;
f. Subsurface and/or management of groundwater seepage;
g. Foundations;
h. Embedded/retaining walls;
i. Management of surface water and irrigation water; and
j. Impact of the development on the slope stability of the lot and the adjacent properties.
k. Construction phasing and implementation schedule as it relates to foundation excavation, allowance for stockpiles, imported backfill, site subsurface drainage or dewatering, provision for off season site protections;
l. Stormwater management; and
m. Construction methods.

Finding: Complies as Proposed. The applicant has provided the information listed in 17.44.050.A.9 as applicable to this project; however, detailed review of the report will occur as part of the permit review and revisions may be requested.

10. Scaled drawings that describe topography and proposed site work, including:
a. Natural physical features, topography at two or ten-foot contour intervals locations of all test excavations or borings, watercourses both perennial and intermittent, ravines and all existing and man-made structures or features all fully dimensioned, trees six-inch caliper or greater measured four feet from ground level, rock outcroppings and drainage facilities;
b. All of the features and detail required for the site plan above, but reflecting preliminary finished grades and indicating in cubic yards whether and to what extent there will be a net increase or loss of soil.

c. A cross-section diagram, indicating depth, extent and approximate volume of all excavation and fills.

Finding: Complies with Condition. The submitted grading plan and associated drawings show existing and proposed contours for preliminary grading, however, we understand that some revisions are anticipated, and specifically required grading of the path through the Geologic Hazards Overlay Zone. The applicant shall provide final grading plans, including representative cross sections through the path and Geologic Hazards Overlay Zone, as necessary, to demonstrate final excavation and grading to be in compliance with Section 17.44. Final cut and fill volumes from excavation shall be stated as required by 17.44.050.A.10. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

11. For properties greater than one acre and any property that has any portion of its property existing within a mapped landslide, where the activity is not exempted by 17.44.35, a preliminary hydrology report, prepared by a suitably qualified and experienced hydrology expert, addressing the effect upon the watershed in which the proposed development is located; the effect upon the immediate area's stormwater drainage pattern of flow, the impact of the proposed development upon downstream areas and upon wetlands and water resources; and the effect upon the groundwater supply.

Finding: Complies with Condition. The applicant has provided a separate storm drainage analysis report. The geologic assessment and geotechnical report shall address the effect on the site hydrology and provide the information listed in 17.44.050.A.11 as applicable to this project, considering the recommendations and design per the storm drainage analysis report. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

B. Review Procedures and Approvals require the following:
1. Examination to ensure that:
a. Required application requirements are completed;
b. Geologic assessment and geotechnical report procedures and assumptions are generally accepted; and
c. All conclusions and recommendations are supported and reasonable.

Finding: Complies as Proposed. The application has provided all of the information listed in 17.44.050.B.1; however, detailed review of the report will occur as part of the permit review and revisions may be requested.

2. Conclusions and recommendations stated in an approved assessment or report shall then be directly incorporated as permit conditions or provide the basis for conditions of approval for the regulated activity.

Finding: Complies with Condition. The application has provided the required conclusions and recommendations in the submitted reports, which shall be incorporated as conditions of approval per this section. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

3. All geologic assessments and geotechnical reports shall be reviewed by an engineer certified for expertise in geology or geologic engineering and geotechnical engineering, respectively, as determined by the City. The City will prepare a list of prequalified consultants for this purpose. The cost of review by independent review shall be paid by the applicant.

Finding: Complies with Condition. A geotechnical engineer provides consultation services to the City. The geotechnical consultant provide review of all geologic assessments and geotechnical reports for the City. Costs associated with geologic hazard review of the land use application by the City's geotechnical engineer shall be paid by the developer. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

C. The City Engineer may waive one or more requirements of subsections A and B of this section if the City Engineer determines that site conditions, size or type or development of grading requirements do not warrant such detailed information. If one or more requirements are waived, the City Engineer shall, in the staff report or decision, identify the waived provision(s), explain the reasons for the waiver, and state that the waiver may be challenged on appeal and may be denied by a subsequent review authority.

Finding: Not Applicable. The City Engineer has not waived any of the requirements as all requirements apply to this application.

17.44.060 Development Standards.
Notwithstanding any contrary dimensional or density requirements of the underlying zone, the following standards shall apply to the review of any development proposal subject to this chapter. Requirements of this chapter are in addition to other provision of the Oregon City Municipal Code. Where provision of this chapter conflict with other provision of the Oregon City Municipal Code, the provisions that are more restrictive of regulated development activity shall govern.
A. All developments shall be designed to avoid unnecessary disturbance of natural topography, vegetation and soils. To the maximum extent practicable as determined by the review authority, tree and ground cover removal and fill and grading for residential development on individual lots shall be confined to building footprints and driveways, to areas required for utility easements and for slope easements for road construction, and to areas of geotechnical remediation.

Finding: Complies as Proposed. The project will avoid disturbance of natural topography, vegetation, and soils outside of that required for roadway, path, and utility construction proposed for this phase.

B. All grading, drainage improvements, or other land disturbances shall only occur from May 1 to October 31. "Land disturbance" is defined as any movement of earth, placement of earth, or movement of heavy trucks on earth, not including the right-of-way. Erosion control measures shall be installed and functional prior to any disturbances. Erosion control measures shall also be functioning and in a winterized stable condition once all land disturbance work has ceased for the year. The City Engineer may allow grading, drainage improvements or other land disturbances to begin before May 1 (but no earlier than March 16) and end after October 31 (but no later than November 30), based upon weather conditions and the recommendation and direction of the project's geotechnical engineer. The City Engineer may use the expertise of a city contracted geotechnical consultant to make the decision to allow any work before May 1 or after October 31. The City Engineer has full authority to not allow any extension of work before May 1 or after October 31. In no case shall the applicant be allowed to begin work before May 1 or complete work after October 31 if the average monthly rainfall in any individual month between September and April is exceeded.

Finding: Complies with Condition. Grading, drainage improvements or other land disturbances shall be restricted to between May 1 and October 31, unless extended by the City Engineer consistent with 17.44. The developer shall submit a work schedule which has been reviewed and approved by a licensed geotechnical engineer with regard to the viability of completing necessary project goals within the aforementioned time period. Erosion control measures and temporary protective fencing around all trees and vegetation designed for protection shall be installed prior to the commencement of grading or other soil disturbance. Erosion control measures shall be in conformance with OCMC Chapter 17.47. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

C. Designs shall minimize the number and size of cuts and fills.

Finding: Complies with Condition. Cuts and fills are generally minimized to meet site access and grading requirements for the proposed roadway, path, and utility installations. However, final grading plans shall be submitted which demonstrate compliance with this Section. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

D. Cut and fill slopes greater than seven feet in height (as measured vertically) shall be terraced. Faces on a terraced section shall not exceed five feet. Terrace widths shall be a minimum of three feet and shall be vegetated. Total cut and fill slopes shall not exceed a vertical height of fifteen feet. Except in connection with geotechnical remediation plans approved in accordance with the chapter, cuts shall not remove the toe of any slope that contains a known landslide or is greater than twenty-five percent slope. The top of cut or fill slopes not utilizing structural retaining walls shall be located a minimum of one-half the height of the cut slope from the nearest property line.

Finding: Complies with Condition. Cuts, fills, walls, and terraces are not proposed which exceed the thresholds of this section. No grading will occur at the toe of any landslide or on slopes greater than 25 percent. However, final grading plans shall be submitted which demonstrate compliance

with this Section. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

E. Any structural fill shall be designed by a suitably qualified and experienced civil or geotechnical engineer licensed in Oregon in accordance with standard engineering practice. The applicant's engineer shall certify that the fill has been constructed as designed in accordance with the provisions of this chapter. The structural fill design must be provided prior to any fill being placed onsite. The structural fill design must contain the stamp and signature of a professional engineer licensed in the State of Oregon.

Finding: Complies as Proposed. The project geologic assessment and geotechnical report provided design of structural fill by the licensed geotechnical engineer of record.

F. Retaining walls shall be constructed in accordance with the Oregon Structural Specialty Code adopted by the State of Oregon.
1. Retaining walls that are four feet or greater in height, tiered walls with a total height four feet or greater, and walls on slopes steeper than 2:1 must be designed by a professional engineer licensed in the State of Oregon which includes a stamped and signed set of plans.
2. The construction of the wall must be inspected by the professional engineer responsible for the design and must be certified prior to the structure receiving temporary occupancy. The certification must contain the stamp and signature of a professional engineer licensed in the state of Oregon.
3. All retaining walls required to be designed by a professional engineer shall be reviewed by the City, when expertise exists on staff, or by the City's consultant. When reviewed by the City's consultant, the applicant shall reimburse the City for time spent by the City's consultant to review the design.

Finding: Complies with Condition. Retaining walls up to approximately 7 feet are planned. Construction of retaining walls over 4 feet in height and terraced walls which create total cut or fill greater than 4 feet in height shall be certified by a licensed engineer qualified for the design of such walls. The developer shall submit engineered stamped calculations for proposed retaining walls showing compliance with applicable building codes. The developer shall provide sliding, overturning, bearing capacity, and global stability design calculation for any retaining walls over 4 feet in height in accordance with the Oregon Structural Specialty Code. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

G. Roads shall be the minimum width necessary to provide safe vehicle and emergency access, minimize cut and fill and provide positive drainage control. The review authority may grant a variance from the City's required road standards upon findings that the variance would provide safe vehicle and emergency access and is necessary to comply with the purpose and policy of this chapter.

Finding: Complies as Proposed. Proposed roads are designed to meet the City's egress and access requirements. However, detailed review of the project plans will occur as part of the permit review and revisions may be requested.

H. Density shall be determined as follows:
1. Slope
a. For those areas with slopes less than twenty-five percent between grade breaks, the allowed density shall be that permitted by the underlying zoning district, unless further limited by the following code section;
b. For those areas with slopes of twenty-five to thirty-five percent between grade breaks, the density shall not exceed two dwelling units per acre except as otherwise provided in subsection I of this section;
c. For those areas with slopes over thirty-five percent between grade breaks, development shall be prohibited except as otherwise provided in subsection I 4 of this section.
2. Existing landslide (as shown in the Geologic Hazard Overlay Zone)
a. For those areas with historic landslides where the structure or ground disturbance will be located within any portion of the mapped landslide or buffer zone, the density shall not exceed two dwelling units per acre except as otherwise provided in subsection I of this section;

Finding: Complies as Proposed. The site is 1.0 acre and 0.25 acres contains slopes between 25-35%. The application has provided no structure within the steep slopes, only transitional grading; therefore, the application is complaint with the code.

I. For properties with slopes of twenty-five to thirty-five percent between grade breaks or are located within any portion of a mapped landslide and buffer zone:
1. For those portions of the property with slopes of twenty-five to thirty-five percent or located within any portion of a mapped landslide and buffer zone, the maximum residential density shall be limited to two dwelling units per acre; provided, however, that where the entire site is less than one-half acre in size, a single dwelling shall be allowed on a lot or parcel existing as of January 1, 1994 and meeting the minimum lot size requirements of the underlying zone;
2. An individual lot or parcel with slopes between twenty-five and thirty-five percent or located within any portion of a mapped landslide and buffer zone, shall have no more than fifty percent or four thousand square feet of the surface area, whichever is smaller, graded or stripped of vegetation or covered with structures or impermeable surfaces.
3. No cut into a slope of twenty-five to thirty-five percent or located within any portion of a mapped landslide and buffer zone, for the placement of a housing unit shall exceed a maximum vertical height of fifteen feet for the individual lot or parcel.
4. For those portions of the property with slopes over thirty-five percent between grade breaks:
a. Notwithstanding any other city land use regulation, development other than roads, utilities, public facilities and geotechnical remediation shall be prohibited; provided, however, that the review authority may allow development upon such portions of land upon demonstration by an applicant that failure to permit development would deprive the property owner of all economically beneficial use of the property. This determination shall be made considering the entire parcel in question and contiguous parcels in common ownership on or after January 1, 1994, not just the portion where development is otherwise prohibited by this chapter. Where this showing can be made on residentially zoned land, development shall be allowed and limited to one single-family

residence. Any development approved under this chapter shall be subject to compliance with all other applicable city requirements as well as any applicable state, federal or other requirements; b. To the maximum extent practicable as determined by the review authority, the applicant shall avoid locating roads, utilities, and public facilities on or across slopes exceeding thirty-five percent.

Finding: Complies with Condition. The proposed project shows impacts to the mapped geological hazard areas within the development. The proposed stormwater pond and portions of the new roadway are shown to be constructed within the buffer of the mapped landslide. The applicant has proposed to provide a 35 foot buffer from the top of the mapped landslide as shown on the application's plans. The applicant's approach is consistent with previously proposed developments for the property, however the City has updated its Geological Hazard Code in 2021 since those past proposals and this approach is no longer consistent with OCMC 17.44.060.I. Impacts to the mapped landslide area and buffer located to the rear of the properties shall be limited to 4,000 square feet of grading, stripped vegetation, or by coverage in impermeable surfaces per parcel. The proposed stormwater pond and roadway improvements shall be redesigned or relocated outside of the geological hazard area to meet this standard. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

J. The geotechnical engineer of record shall review final grading, drainage, and foundation plans and specifications and confirm in writing that they are in conformance with the recommendations provided in their report.

Finding: Complies with Condition. The geotechnical engineer of record shall review final grading, drainage, and foundation plans and specifications and confirm in writing that they are in conformance with the recommendations provided in their report. As-builts conforming to City standards shall be provided within 90 days of completion of the project. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

K. At the City's discretion, peer review shall be required for the geotechnical evaluation/investigation report submitted for the development and/or lot plans. The peer reviewer shall be selected by the City. The applicant's geotechnical engineer shall respond to written comments provided by the City's peer reviewer prior to issuance of building permit.

Finding: Complies as conditioned. The applicant's geotechnical engineer shall respond to written comments provided by the City's peer reviewer prior to issuance of building permits. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

L. The review authority shall determine whether the proposed methods of rendering a known or potential hazard site safe for construction, including proposed geotechnical remediation methods, are feasible and adequate to prevent landslides or damage to property and safety. The review authority shall consult with the City's geotechnical engineer in making this determination. Costs for such consultation shall be paid by the applicant. The review authority may allow development in a known or potential hazard area as provided in this chapter if specific findings are made that the

specific provisions in the design of the proposed development will prevent landslides or damage. The review authority may impose any conditions, including limits on type or intensity of land use, which it determines are necessary to assure that landslides or property damage will not occur.

Finding: Complies with Condition. The applicant argues that this subsection grants staff discretion to allow development and grading within the mapped landslide buffer because the development will "prevent landslides or damage" and asks that the City exercise its discretion to allow the Parcel B development in this case. This suggests that city staff has authority to grant a variance or otherwise adjust the otherwise applicable development standards, most specifically OCMC 17.44.060(I)(1) and (2).

The language of subsection (L) does not support the interpretation, when considered in context with other provisions of OCMC 17.44.060. First, this provision is largely directed at providing instructions to city staff about how it must review applications. It requires that city staff employ certain methods for reviewing development proposals within hazard areas, subject to review by the City's geotechnical engineer, at the applicant's cost. Once this review occurs, City staff may allow development within the hazard area only "as provided in this chapter" where findings are made that landslide and damage will be prevented. The term "as provided in this chapter" is critical as it says that staff can only approve development that is otherwise authorized in OCMC 17.44. As noted above, development within the mapped landslide buffer is not allowed "in this chapter." Said differently, where the development includes one single family residence, as authorized by OCMC 17.44.060(I)(1), or grading of less than 4,000 sf as authorized by OCMC 17.44.060(I)(2), city staff must, in addition, provide for geotechnical engineer review of the application to ensure the prevention of landslides. If the City Council had intended to allow development without regard to the mapped landslide boundary and buffer through an adjustment, it would have provided as much. For example, OCMC 17.44.060(G) allows the city to "grant a variance from the city's required road standards" upon a finding that "safe vehicle and emergency access" remains. This suggests that where the City intended to permit deviation from an otherwise applicable standard, it has done so expressly.

Finally, one of the objectives achieved by amending this code in 2021 was to create clear and objective standards in compliance with ORS 197A.400. The applicant's proposed interpretation would inject subjectivity into the city's decision-making with respect to housing that state law does not permit. In conclusion, the city sees no supportable interpretation that subsection (L) can be used to authorize development that would otherwise violate other portions of OCMC 16.44.

A prequalified geotechnical engineer provides consultation services to the City. The geotechnical consultant provide review of all geologic assessments and geotechnical reports for the City. Costs associated with geologic hazard review of the land use application by the City's geotechnical engineer shall be paid by the developer. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

17.44.070 - Access to Property.
A. Shared private driveways may be required if the City Engineer or principal planner determines that their use will result in safer location of the driveway and lesser amounts of land coverage than would result if separate private driveways are used.

B. Innovations in driveway design and road construction shall be permitted in order to keep grading and cuts or fills to a minimum and to achieve the purpose and policy of this chapter.
C. Points of access to arterials and collectors shall be minimized.
D. The City Engineer or principal planner shall verify that adequate emergency services can be provided to the site.

Finding: Complies as Proposed. The proposed driveway is designed to be constructed at grade and meets this code.

17.44.080 - Utilities.
All new utilities (storm sewer, sanitary sewer, potable water, and gas), both on-site and off-site, shall be placed underground and under roadbeds where practicable. All other service utilities (including, but not limited to, electric, telephone, telecom, cable, fiberoptic) shall be placed above ground on existing poles if poles exist. If no poles exist, the service lines shall be placed underground. Every effort shall be made to minimize the impact of utility construction. Underground utilities require the geologic hazards permitting and review prescribed herein when applicable.

Finding: Complies with Condition. All new service utilities, both on-site and off-site, shall be placed underground and under roadbeds where practicable. The placement of existing utilities underground within areas of geologic hazard shall be reviewed and approved by the City. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

17.44.090 - Stormwater Drainage.
The applicant shall submit a permanent and complete stormwater control plan. The program shall include, but not be limited to the following items as appropriate: Curbs, gutters, inlets, catch basins, detention facilities and stabilized outfalls. Detention facilities shall be designed to city standards as set out in the City's drainage master plan and design standards. The review authority may impose conditions to ensure that waters are drained from the development so as to limit degradation of water quality consistent with Oregon City's Title III section of the Oregon City Municipal Code Chapter 17.49 and the Oregon City Stormwater and Grading Design Standards or other adopted standards subsequently adopted by the City Commission. The review authority may also impose conditions to limit the volume, velocity, or flow rate of water such that it does not negatively impact the underlying drainageway cross section. Drainage design shall be approved by the City Engineer before construction, including grading or other soil disturbance, has begun.

A geotechnical report must include analysis and solutions for infiltration facilities located in areas where these facilities could impact nearby slopes of greater than ten percent. Infiltration shall be minimized as practicable for any site located within a geologic hazard overlay. Infiltration is not allowed for any site located in areas greater than twenty-five percent.

The project's civil or geotechnical engineer shall inspect any stormwater management feature and must certify that the stormwater management feature was constructed per plan and with the recommendations of the geotechnical engineer prior to receiving temporary occupancy. The

certification must contain the stamp and signature of a professional engineer licensed in the state of Oregon.

Finding: Complies with Condition. See findings from 13.12 regarding requirements for the development to meet the Oregon City Stormwater and Grading Design Standards. The developer's geotechnical consultant shall review the drainage design for the project so that it does not negatively impact the underlying drainageway cross section and certify that the design is consistent with the conclusions and recommendations stated in their geologic assessment and geotechnical report. The project's civil or geotechnical engineer shall inspect any stormwater management feature and must certify that the stormwater management feature was constructed per plan and with the recommendations of the geotechnical engineer prior to receiving occupancy. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval**.

17.44.100 - Construction Standards.
During construction on land subject to this chapter, the following standards shall be implemented by the developer:
A. All development activity shall minimize vegetation removal and soil disturbance and shall provide positive erosion prevention measures in conformance with OCMC Chapter 17.47 – Erosion and Sediment Control.

Finding: Complies as proposed. The applicant proposes to minimize vegetation removal and soil disturbance. Detailed review of construction plans will occur as part of the permit review and revisions may be requested to ensure this standard is met.

B. No grading, clearing or excavation of any land shall be initiated prior to approval of the grading plan, except that the City Engineer shall authorize the site access, brush to be cleared and the location of the test pit digging prior to approval of such plan to the extent needed to complete preliminary and final engineering and surveying. The grading plan shall be approved by the City Engineer as part of the City's review under this chapter. The developer shall be responsible for the proper execution of the approved grading plan.

Measures shall be taken to protect against landslides, mudflows, soil slump and erosion. Such measures shall include sediment fences, straw bales, erosion blankets, temporary sedimentation ponds, interceptor dikes and swales, undisturbed buffers, grooving and stair stepping, check dams, etc. The applicant shall comply with the measures described in the Oregon City Public Works Standards for Erosion and Sedimentation Control (Ordinance No. 99-1013). Erosion control measures shall be in place at all times during construction to the maximum extent practicable.

Finding: Complies with Condition. See 15.48 regarding city requirements for grading. A city issued erosion and sediment control permit shall be obtained prior to commencement of any earth disturbing activities. Erosion and sediment control plans shall be submitted for review and approval by the City prior to issuance of an erosion and sediment control permit. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval**

C. All disturbed vegetation shall be replanted with suitable vegetation upon completion of the grading of the steep slope area.

Finding: Complies with Condition. The applicant shall provide a landscape plan that shows vegetative mitigation of all disturbed areas. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

D. Existing vegetative cover shall be maintained to the maximum extent practicable. No grading, compaction or change in ground elevation, soil hydrology and/or site drainage shall be permitted within the drip line of trees designated for protection, unless approved by the City.

Finding: Complies with Condition. Existing vegetative cover shall be maintained to the maximum extent practicable within the geological hazard areas. The applicant shall install appropriate barriers or protective fencing during construction to ensure existing vegetation is not disturbed. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

E. Existing perennial and intermittent watercourses shall not be disturbed unless specifically authorized by the review authority. This includes physical impacts to the stream course as well as siltation and erosion impacts. The City, at its discretion, is not required to but may request the examination and assessment by other State agencies to determine if impacts are acceptable.

Finding: Complies as Proposed. No watercourses exist within the site proposed in the application. This application has construction over a culvertized drainage system that drains into the NROD.

F. All soil erosion and sediment control measures shall be maintained during construction and for one year after development is completed, or until soils are stabilized by revegetation or other measures to the satisfaction of the City Engineer. Such maintenance shall be the responsibility of the developer. If erosion or sediment control measures are not being properly maintained or are not functioning properly due to faulty installation or neglect, the City may order work to be stopped.

Finding: Complies with Condition. Erosion control measures shall be in conformance with OCMC Chapter 17.47. (also written in findings from 17.44.060.B) **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

G. All newly created lots, either by subdivision or partition, shall contain building envelopes with a slope of 35% or less.

Finding: Complies as Proposed. No proposed lots have building envelopes with slopes of 35% or greater.

H. The applicant's geotechnical engineer shall provide special inspection during construction to confirm that the subsurface conditions and assumptions made as part of their geotechnical evaluation/investigation are appropriate. This will allow for timely design changes if site conditions

are encountered that are different from those anticipated. Inspection is required on a daily basis for any day that earth disturbance is occurring or after any rainfall event of one-half inch or greater.

Finding: Complies with Condition. The developer shall retain the services of a licensed geotechnical engineer to conduct inspections prior to and during construction activities which involve removal or addition of vegetation, building structures, retaining walls or earth. The geotechnical engineer shall provide reports to confirm that standards from Section 17.44.100 are met. The geotechnical engineer of record shall observe all excavations and geologic conditions exposed during construction and document that the conditions are consistent with the conditions assumed in the geotechnical hazard evaluation. If the conditions are different than assumed in the preliminary report, the effect of the new observations shall be evaluated and mitigation provided as required. Additional geologic hazards review may be required at the City's discretion. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

I. Prior to issuing an occupancy permit, the geotechnical engineer shall prepare a summary letter stating that the soils- and foundation-related project elements were accomplished in substantial conformance with their recommendations. The summary letter must contain the stamp and signature of a professional engineer licensed in the State of Oregon.

Finding: Complies with Condition. The developer's geotechnical engineer shall certify, during construction, that structural fill used on the site meets the provided design specifications and is placed as designed. The certification shall be in writing and shall be signed and stamped by a licensed engineer in the State of Oregon. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

17.44.110 - Approval of development.
The City Engineer shall review the application and verify, based on the applicant's materials and the land use record, whether the proposed development constitutes a hazard to life, property, natural resources or public facilities. If, in the City Engineer's opinion, a particular development poses such a hazard, the City Engineer shall recommend to the review authority permit conditions designed to reduce or eliminate the hazard. These conditions may include, but are not limited to, prohibitions on construction activities between November 1st and April 30th.

Finding: Applicable. City Engineer has reviewed the application and verified, based on the applicant's materials and the land use record, whether the proposed development constitutes a hazard to life, property, natural resources or public facilities. Permit conditions have been written within this document designed to reduce or eliminate the hazard per the recommendations of the City's geotechnical consultant. A condition of approval prohibits construction activities between November 1st and April 30th.

17.44.120 - Liability.
Approval of an application for development on land subject to this chapter shall not imply any liability on the part of the City for any subsequent damage due to earth slides. Prior to the issuance of a building permit, a waiver of damages and an indemnity and hold harmless agreement shall be required which releases the City from all liability for any damages resulting from the development

approved by the City's decision. The indemnity and hold harmless agreement shall be recorded on the property and run with the property.

Finding: Complies with Condition. The developer shall submit waiver of damages, indemnity and hold harmless agreement completed by all owners of property disturbed by the development. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

17.44.130 - Compliance.
Nothing contained in this chapter shall relieve the developer of the duty to comply with any other provision of law. In the case of a conflict, the more restrictive regulation shall apply.

Finding: Applicable. This is requirement standard across all development.

17.44.140 - Appeal.
The review authority's decision may be appealed in the manner set forth in Chapter 17.50.

CHAPTER 17.47 – EROSION AND SEDIMENT CONTROL

17.47.030- Applicability.
A. This chapter, which may also be referred to as "construction site runoff controls" in this Code, applies to development that may cause discharge of construction site waste materials or the visible or measurable erosion on any property within the city limits of Oregon City.
B. All development that results in 1,000 square feet of new or replaced impervious surface or 1,000 square feet of earth disturbance shall be subject to the construction site runoff controls requirements and the standards found within the Stormwater and Grading Design Standards as referenced in OCMC 13.12.
C. This chapter does not apply to work necessary to protect, repair, maintain or replace existing structures, utility facilities, roadways, driveways, accessory uses and exterior improvements in response to emergencies, provided that after the emergency has passed, adverse impacts are mitigated in accordance with applicable standards.

Finding: Applicable. The application disturbs more than 1,000 square feet of earth; therefore, erosion and sediment control standards shall be followed.

17.47.060 - Permit required.
The applicant must obtain an erosion and sediment control permit prior to, or contemporaneous with, the approval of an application for any building, land use or other City-issued permit that may cause visible or measurable erosion.

Finding: Complies with Condition. A City issued erosion and sediment control permit shall be obtained prior to commencement of any earth disturbing activities. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

17.47.070 - Erosion and sediment control plans.

A. An application for an erosion and sediment control permit shall include an erosion and sediment control plan, which contains methods and interim measures to be used during and following construction to prevent or control construction site wastes and erosion prepared in compliance with City of Oregon City public works standards for erosion and sediment control. These standards are incorporated herein and made a part of this title and are on file in the office of the city recorder.
B. Approval Standards. An erosion and sediment control plan shall be approved only upon making the following findings:
1. The erosion and sediment control plan meets the requirements of the City of Oregon City public works standards for construction site wastes and erosion and sediment control incorporated by reference as part of this chapter;
2. The erosion and sediment control plan indicates that construction site wastes and erosion and sediment control measures will be managed and maintained during and following development. The erosion and sediment control plan indicates that construction site wastes and erosion and sediment control measures will remain in place until disturbed soil areas are permanently stabilized by landscaping, grass, approved mulch or other permanent soil stabilizing measures.
C. The erosion and sediment control plan shall be reviewed in conjunction with the requested development approval. If the development does not require additional review, the manager may approve or deny the permit with notice of the decision to the applicant.
D. The city may inspect the development site to determine compliance with the erosion and sediment control plan and permit.
E. Erosion that occurs on a development site that does not have an erosion and sediment control permit, or that results from a failure to comply with the terms of such a permit, constitutes a violation of this chapter.
F. If the manager finds that the facilities and techniques approved in an erosion and sediment control plan and permit are not sufficient to prevent erosion and the discharge of construction site wastes, the manager shall notify the owner or his/her designated representative. Upon receiving notice, the owner or his/her designated representative shall immediately install interim construction site wastes and erosion and sediment control measures as specified in the City of Oregon City public works standards for erosion and sediment control. Within three days from the date of notice, the owner or his/her designated representative shall submit a revised erosion and sediment control plan to the city. Upon approval of the revised plan and issuance of an amended permit, the owner or his/her designated representative shall immediately implement the revised plan.
G. Approval of an erosion and sediment control plan does not constitute an approval of permanent road or drainage design (e.g., size and location of roads, pipes, restrictors, channels, retention facilities, utilities, etc.).

Finding: Complies with Condition. Erosion and sediment control plans shall be submitted for review and approval by the City prior to issuance of an erosion and sediment control permit. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

17.47.080 - Plan implementation.
An approved erosion control and sediment control plan shall be implemented and maintained as follows:

A. Plan approval, where required, shall be obtained prior to clearing or grading. No grading, clearing or excavation of land requiring a plan shall be undertaken prior to approval of the plan.
B. The erosion and sediment control facilities shall be constructed prior to any clearing and grading activities, and maintained in such a manner as to ensure that sediment laden water does not enter the drainage system or violate applicable water standards.
C. The implementation of an erosion and sediment control plan and the construction, maintenance, replacement, and upgrading of erosion and sediment control facilities is the responsibility of the owner or his/her designated representative until all construction is completed and approved, and vegetation, landscaping or approved finished surfaces is established.
D. The erosion and sediment control facilities herein are the minimum requirements for anticipated site conditions. During the construction period, these construction site waste management controls and erosion and sediment control facilities shall be upgraded as needed for unexpected storm events and to ensure that sediment or pollutant-laden water does not leave the site.
E. Any observation of visible or measurable discharges of construction site wastes or erosion, or an observation of more than a ten-percent increase in downstream channel turbidities, will result in an enforcement action by the city.
F. The owner or his/her designated representative shall implement the measures and construct facilities as provided for and according to the implementation schedule in the approved plan. The manager shall be allowed reasonable access to the development site for inspection purposes.

Finding: Applicable. Plan approval is required be obtained per chapter 16.12. The Oregon City Erosion Control Officer ensures that the development will comply with the City's Erosion and Sediment Control Standards. The Oregon City Erosion Control Officer will access the development site and perform inspections to ensure compliance prior to any clearing and grading activities are permitted. The Oregon City Erosion Control Officer ensures implementation of an erosion and sediment control plan and the construction, maintenance, replacement, and upgrading of erosion and sediment control facilities. The Oregon City Erosion Control Officer may issue a Stop Work Order if the owner or his/her designated representative fails to implement and maintain the approved erosion control and sediment control plan until all construction is completed and approved, and vegetation, landscaping or approved finished surfaces is established.

17.47.090 - Plan performance guarantee and security.
After the plan is approved by the manager and prior to construction or grading, the owner shall provide a financial guarantee. Management of construction site waste as well as erosion and sediment control shall be included in the cost estimate for the primary project, such as land division or site plan, and included in that project's performance guarantee.

Finding: See findings in Section 17.50.140.

CHAPTER 17.29 MUC MIXED USE CORRIDOR DISTRICT

17.29.010 Designated.

The mixed-use corridor (MUC) district is designed to apply along selected sections of transportation corridors such as Molalla Avenue, 7th Street, Beavercreek Road, and along Warner-Milne Road. Land uses are characterized by high-volume establishments such as retail, service, office, multi-family residential, lodging, recreation and meeting facilities, or a similar use as defined by the Community Development Director. A mix of high-density residential, office, and small-scale retail uses are encouraged in this district. Moderate density (MUC-1) and high density (MUC-2) options are available within the MUC zoning district. The area along 7th Street is an example of MUC-1, and the area along Warner-Milne Road is an example of MUC-2.

17.29.020 - Permitted uses—MUC-1 and MUC-2.

A. Banquet, conference facilities and meeting rooms.
B. Bed and breakfast/boarding houses, hotels, motels, and other lodging facilities.
C. Child care centers and/or nursery schools.
D. Indoor entertainment centers and arcades.
E. Health and fitness clubs.
F. Medical and dental clinics, outpatient; infirmary services.
G. Museums, libraries and cultural facilities.
H. Offices, including finance, insurance, real estate and government.
I. Outdoor markets, such as produce stands, craft markets and farmers markets that are operated on the weekends and after six p.m. during the weekday.
J. Postal services.
K. Parks, playgrounds, playfields and community or neighborhood centers.
L. Repair shops, for radio and television, office equipment, bicycles, electronic equipment, shoes and small appliances and equipment.
M. Multi-family residential, triplexes and quadplexes.
N. One or two dwelling units in conjunction with a nonresidential use, provided that the residential use occupies no more than fifty percent of the total square footage of the development.
O. Restaurants, eating and drinking establishments without a drive-through.
P. Services, including personal, professional, educational and financial services; laundry and dry-cleaning.
Q. Retail trade, including grocery, hardware and gift shops, bakeries, delicatessens, florists, pharmacies, specialty stores, marijuana, and similar, provided the maximum footprint for a standalone building with a single store or multiple buildings with the same business does not exceed sixty thousand square feet.
R. Seasonal sales.
S. Residential care facilities, assisted living facilities; nursing homes and group homes for over fifteen patients licensed by the state.
T. Studios and galleries, including dance, art, photography, music and other arts.

U. Utilities: Basic and linear facilities, such as water, sewer, power, telephone, cable, electrical and natural gas lines, not including major facilities such as sewage and water treatment plants, pump stations, water tanks, telephone exchanges and cell towers.
V. Veterinary clinics or pet hospitals, pet day care.
W. Home occupations.
X. Research and development activities.
Y. Temporary real estate offices in model dwellings located on and limited to sales of real estate on a single piece of platted property upon which new residential buildings are being constructed.
Z. Transportation facilities.
AA. Live/work dwellings.
BB. Accessory dwelling unit in conjunction with a legally established non-conforming single-family dwelling.
CC. Duplex.
DD. After-hours public parking.

Finding: Permitted. The applicant proposed new streets, paths, and associated utilities, allowed in OCMC 17.29.020.U.

CHAPTER 17.49 NATURAL RESOURCES OVERLAY DISTRICT

17.49.010 Purpose.
The natural resource overlay district designation provides a framework for protection of Metro Titles 3 and 13 lands, and Statewide Planning Goal 5 resources within Oregon City. The natural resource overlay district (NROD) implements the Oregon City Comprehensive Plan Natural Resource Goals and Policies, as well as Federal Clean Water Act requirements for shading of streams and reduction of water temperatures, and the recommendations of the Metro ESEE Analysis. It is intended to resolve conflicts between development and conservation of habitat, stream corridors, wetlands, and floodplains identified in the city's maps. The NROD contributes to the following functional values:
A. Protect and restore streams and riparian areas for their ecologic functions and as an open space amenity for the community.
B. Protect floodplains and wetlands, and restore them for improved hydrology, flood protection, aquifer recharge, and habitat functions.
C. Protect upland habitats and enhance connections between upland and riparian habitat.
D. Maintain and enhance water quality and control erosion and sedimentation through the revegetation of disturbed sites and by placing limits on construction, impervious surfaces, and pollutant discharges.
E. Conserve scenic, recreational, and educational values of significant natural resources.
The NROD ecological functions listed above are planned for integration with existing neighborhoods, new residential and commercial developments. The long-term goal of the NROD is to restore and enhance stream corridors, wetlands, and forests to more natural vegetated conditions, recognizing that existing homes and other existing uses will continue in the district. This chapter does not regulate the development within the identified water resource. Separate permits from the Division of State Lands and the Army Corp of Engineers may be required for work within a stream or wetland.

17.49.040 - NROD permit and review process.
An NROD permit is required for those uses regulated under OCMC 17.49.090, Uses Allowed under Prescribed Conditions. An NROD permit shall be processed under the Type II development permit procedure unless an adjustment of standards pursuant to OCMC 17.49.200 is requested or the application is being processed in conjunction with a concurrent application or action requiring a Type III or Type IV development permit.

Finding: Complies. The applicant is proposing to construct a new city street, which is a *Use Allowed under Prescribed Conditions*

17.49.050 - Emergencies.
The provisions of this chapter do not apply to work necessary to protect, repair, maintain, or replace existing structures, utility facilities, roadways, driveways, accessory uses and exterior improvements in response to emergencies. After the emergency has passed, any disturbed native vegetation areas shall be replanted with similar vegetation found in the Oregon City Native Plant List pursuant to the mitigation standards of OCMC 17.49.180. For purposes of this section emergency shall mean any man-made or natural event or circumstance causing or threatening loss of life, injury to person or property, and includes, but is not limited to fire, explosion, flood, severe weather, drought, earthquake, volcanic activity, spills or releases of oil or hazardous material, contamination, utility or transportation disruptions, and disease.

Finding: Not Applicable. This proposal does not include an emergency.

17.49.060 - Consistency and relationship to other regulations.
A. Where the provisions of the NROD are less restrictive or conflict with comparable provisions of the OCMC, other City requirements, regional, state or federal law, the provisions that provides the greater protection of the resource shall govern.

Finding: Complies. Staff has provided mitigation and implementation conditions related to this chapter, and other conditions that provide the greater protection of the resource shall govern.

B. Compliance with Federal and State Requirements.
1. If the proposed development requires the approval of any other governmental agency, such as the Division of State Lands or the U.S. Army Corps of Engineers, the applicant shall make an application for such approval prior to or simultaneously with the submittal of its development application to the City. The planning division shall coordinate City approvals with those of other agencies to the extent necessary and feasible. Any permit issued by the City pursuant to this chapter shall not become valid until other agency approvals have been obtained or those agencies indicate that such approvals are not required.

Finding: Complies with the Condition. The applicant shall ensure that all required state and federal permits have been approved before disturbance activities are commenced onsite .

2. The requirements of this chapter apply only to areas within the NROD and to locally significant wetlands that may be added to the boundary during the course of development review pursuant to

OCMC 17.49.035. If, in the course of a development review, evidence suggests that a property outside the NROD may contain a wetland or other protected water resource, the provisions of this chapter shall not be applied to that development review. However, the omission shall not excuse the applicant from satisfying any state and federal wetland requirements which are otherwise applicable. Those requirements apply in addition to, and apart from the requirements of the City's comprehensive plan and this code.

Finding: Complies. No additional wetlands or streams were identified as part of this delineation.

17.49.070 - Prohibited uses.
The following development and activities are not allowed within the NROD:
A. Any new gardens, lawns, structures, development, other than those allowed outright (exempted) by the NROD or that is part of a regulated use that is approved under prescribed conditions. Note: Gardens and lawns within the NROD that existed prior to the time the overlay district was applied to a subject property are allowed to continue but cannot expand further into the overlay district.
B. New lots that would have their buildable areas for new development within the NROD are prohibited.
C. The dumping of materials of any kind is prohibited except for placement of fill as provided in subsection D. below. The outside storage of materials of any kind is prohibited unless they existed before the overlay district was applied to a subject property. Uncontained areas of hazardous materials as defined by the Oregon Department of Environmental Quality (ORS 466.005) are also prohibited.
D. Grading, the placement of fill in amounts greater than ten cubic yards, or any other activity that results in the removal of more than ten percent of the existing native vegetation on any lot within the NROD is prohibited, unless part of an approved development activity.

Finding: Complies. No prohibited uses are proposed with this project**.** The NROD area will be restored and revegetated, and any impacts associated with the new development will be mitigated in accordance with this chapter.

17.49.080 - Uses allowed outright (exempted).
The following uses are allowed within the NROD and do not require the issuance of an NROD permit:
A. Stream, wetland, riparian, and upland restoration or enhancement projects as authorized by the City.
B. Farming practices as defined in ORS 215.203 and farm uses, excluding buildings and structures, as defined in ORS 215.203.
C. Utility service using a single utility pole.
D. Boundary and topographic surveys leaving no cut scars greater than three inches in diameter on live parts of native plants listed in the Oregon City Native Plant List.
E. Soil tests, borings, test pits, monitor well installations, and other minor excavations necessary for
geotechnical, geological or environmental investigation, provided that disturbed areas are restored to pre-existing conditions as approved by the Community Development Director.

F. Trails meeting all of the following:

1. Construction shall take place between May 1 and October 30 with hand held equipment;
2. Widths shall not exceed forty-eight inches and trail grade shall not exceed twenty percent;
3. Construction shall leave no scars greater than three inches in diameter on live parts of native plants;
4. Located no closer than twenty-five feet to a wetland or the top of banks of a perennial stream, or no closer than ten feet of an intermittent stream;
5. No impervious surfaces; and
6. No native trees greater than one-inch in diameter may be removed or cut, unless replaced with an equal number of native trees of at least two-inch diameter and planted within ten feet of the trail.

G. Land divisions provided they meet the following standards, and indicate the following on the final plat:
1. Lots shall have their building sites (or buildable areas) entirely located at least five feet from the NROD boundary shown on the City's adopted NROD map. For the purpose of this subparagraph, "building site" means an area of at least three thousand five hundred square feet with minimum dimensions of forty feet wide by forty feet deep;
2. All public and private utilities (including water lines, sewer lines or drain fields, and stormwater disposal facilities) are located outside the NROD;
3. Impervious streets, driveways and parking areas shall be located at least ten feet from the NROD; and
4. The NROD portions of all lots are protected by:
a. A conservation easement; or
b. A lot or tract created and dedicated solely for unimproved open space or conservation purposes.

H. Site plan and design review applications where all new construction is located outside of the NROD boundary shown on the City's adopted NROD map, and the NROD area is protected by a conservation easement approved in form by the City.
I. Routine repair and maintenance of existing structures, roadways, driveways and utilities.
J. Replacement, additions, alterations and rehabilitation of existing structures, roadways, utilities, etc., where the ground level impervious surface area is not increased.
K. Measures approved by the City of Oregon City to remove or abate nuisances or hazardous conditions.
L. Tree Removal. The Community Development Director may permit the removal of any tree determined to be a dead, hazardous, or diseased tree as defined in OCMC 17.04. Any tree that is removed in accordance with this subsection L shall be replaced with a new tree of at least one-half-inch caliper or at least six-foot overall height. An exception to this requirement may be granted if the applicant demonstrates that a replacement tree has already been planted in anticipation of tree removal, or if the existing site conditions otherwise preclude tree replacement (due to existing dense canopy coverage or other ecological reasons).
The replacement tree(s) shall be located in the general vicinity of the removed tree(s), somewhere within NROD on the property. The replacement tree(s) shall be identified on the Oregon City Native Plant List or other locally adopted plant list (e.g. Metro or Portland). The property owner shall ensure that the replacement tree(s) survives at least two years beyond the date of its planting.

M. Planting of native vegetation and the removal of non-native, invasive vegetation (as identified on the Oregon City Native Plant List or other locally adopted plant list (e.g. Metro or Portland), or as

recommended by an environmental professional with experience and academic credentials in one or more natural resource areas such as ecology, arboriculture, horticulture, wildlife biology, botany, hydrology or forestry), and removal of refuse and fill, provided that:
1. All work is done using hand-held equipment;
2. No existing native vegetation is disturbed or removed; and
3. All work occurs outside of wetlands and the top-of-bank of streams.
N. Activities in which no more than one hundred square feet of ground surface is disturbed outside of the bank-full stage of water bodies and where the disturbed area is restored to the pre-construction conditions, notwithstanding that disturbed areas that are predominantly covered with invasive species shall be required to remove the invasive species from the disturbance area and plant trees and native plants pursuant to this chapter.

O. New fences meeting all of the following:
1. No taller than three and a half feet and of split rail or similar open design;
2. Two feet width on both sides of fence shall be planted or seeded with native grasses, shrubs, herbs, or trees to cover any bare ground;
3. Six inches of clearance from ground level;
4. Fence posts shall be placed outside the top-of-bank of streams and outside of delineated wetlands.
P. Gardens, fences and lawns within the NROD that existed prior to the time the overlay district was applied to a subject property are allowed to be maintained but cannot expand further into the overlay district.

Finding: Complies with Conditions. The proposed work is a combination of exempted (plantings) and prescribed uses (streets). Therefore, the proposed project will require the issuance of an NROD permit consistent with these provisions.

17.49.090 - Uses allowed under prescribed conditions.
The following uses within the NROD are subject to the applicable standards listed in OCMC 17.49.100 through 17.49.190 pursuant to a Type II process:
A. Alteration to existing structures within the NROD when not exempted by OCMC 17.49.080, subject to OCMC 17.49.130.
B. A single-family detached residential unit or duplex on a highly constrained vacant lot of record that has less than three thousand square feet of buildable area, with minimum dimensions of fifty feet by fifty feet, remaining outside the NROD portion of the property, subject to the maximum disturbance allowance prescribed in OCMC 17.49.120.A.
C. A land division that would create a new lot for an existing residence currently within the NROD, subject to OCMC 17.49.160.
D. Land divisions when not exempted by OCMC 17.49.080, subject to the applicable standards of OCMC 17.49.160.
E. Trails/pedestrian paths when not exempted by OCMC 17.49.080, subject to OCMC 17.49.170 (for trails) or OCMC 17.49.150 (for paved pedestrian paths).
F. New roadways, bridges/creek crossings, utilities or alterations to such facilities when not exempted by OCMC 17.49.080.
G. Roads, bridges/creek crossings subject to OCMC 17.49.150.
H. Utility lines subject to OCMC 17.49.140.

I. Stormwater detention or pre-treatment facilities subject to OCMC 17.49.155.
J. Institutional, industrial or commercial development on a vacant lot of record situated in an area designated for such use that has more than seventy-five percent of its area covered by the NROD, subject to OCMC 17.49.120.B.
K. City, county and state capital improvement projects, including sanitary sewer, water and stormwater facilities, water stations, and parks and recreation projects.
L. Non-hazardous tree removal that is not exempted pursuant to OCMC 17.49.080.K.
M. Fences that do not meet the standards for exemption pursuant to OCMC 17.49.080.O.4.

Finding: Complies with Conditions. The proposed work is a combination of exempted (plantings) and prescribed uses (streets). Therefore, the proposed project will require the issuance of an NROD permit. Consistent with these provisions. All impacts to the NROD that are allowed under prescribed conditions are mitigated in accordance with this chapter.

17.49.100 - General development standards.
The following standards apply to all uses allowed under prescribed conditions within the NROD with the
exception of rights-of-way (subject to OCMC 17.49.150), trails (subject to OCMC 17.49.170), utility lines (subject to OCMC 17.49.140), land divisions (subject to OCMC 17.49.160), and mitigation projects (subject to OCMC 17.49.180 or 17.49.190):
A. Native trees shall be preserved unless they are located within ten feet of any proposed structures or within five feet of new driveways, or if deemed not wind-safe by a certified arborist. Trees listed on the Oregon City Nuisance Plant List or Prohibited Plant List are exempt from this standard and may be removed. A protective covenant shall be required for any native trees that remain;
B. The Community Development Director may allow the landscaping requirements of the base zone, other than landscaping required for parking lots, to be met by preserving, restoring and permanently protecting habitat on development sites in the natural resource overlay district;
C. All vegetation planted in the NROD shall be native and listed on the Oregon City Native Plant List or other locally adopted plant list (e.g. Metro or Portland), or as recommended by an environmental professional with experience and academic credentials in one or more natural resource areas such as ecology, arboriculture, horticulture, wildlife biology, botany, hydrology or forestry);
D. Grading is subject to installation of erosion control measures required by the City;
E. The minimum front, street, or garage setbacks of the base zone may be reduced to any distance between the base zone minimum and zero in order to minimize the disturbance area within the NROD portion of the lot;
F. Any maximum required setback in any zone, such as for multi-family, commercial or institutional development, may be increased to any distance between the maximum and the distance necessary to minimize the disturbance area within the NROD portion of the lot;
G. Fences in compliance with OCMC 17.49.080.N;
H. Exterior lighting shall be placed or shielded so that they do not shine directly into resource areas;
I. If development will occur within the one hundred-year floodplain, the standards of OCMC 17.42 shall be met; and
J. Mitigation of impacts to the regulated buffer is required, subject to OCMC 17.49.180 or 17.49.190.

Finding: Complies with Conditions. The project proposes to construct a public street and associated utilities, retaining wall (with fence on top for safety), and a guard rail within the NROD buffer as shown on the enclosed DDP plan sheets, and more specifically Sht DDP-C1.3, which will require NROD permit approval. Construction activity impacting the wetland or water resource is not proposed. The development standards of OCMC 17.49.150 govern the development of the proposed street improvements.

The applicant provided the following response to the section:

Nonetheless, the following discussion addresses the above concerns so the project can comply with as many of the requirements in this section as possible. The proposed masterplan development does not rely on NROD mitigation for meeting the project's landscape requirements. The project proposes mitigation vegetation both in the temporary impacts area shown on Sht DDP-C1.3 and the larger mitigation area within the Geologic Hazard setback. Erosion control measures are proposed to protect the NROD resource as should on DDP-C0.1. These erosion control measures will be finalized with the final design and construction plan preparation following GDP/DDP approval. Minimum/maximum setbacks are not applicable with the proposed roadway improvements. The proposed fence on top of the retaining wall is considered a safety fence and is not proposed to be split-rail as indicated in OCMC 17.49.080.O. Street lighting is located on the west side of the proposed road to minimize lighting impacts to the NROD resource while still providing adequate light levels for the street and accompanying sidewalk. If final design indicates shields are necessary to avoid directly shining into the resource area they can be provided if doing so still enables the project to meet required street and pedestrian light levels. Development will not occur within the 100-yr floodplain of this tributary. While the ravine containing the NROD resource does not include a mapped 100-yr floodplain, the lowest level of the proposed retaining wall lies 11'-12' above the resource and the ravine capacity far exceeds the capacity of the storm pipe discharging into the ravine. Mitigation to the NROD buffer is as proposed on the 2012 NROD memo, as modified on Sht DDP-C1.3 to reflect an updated buffer location/impact, and as described in our responses to this chapter.

17.49.110 - Width of vegetated corridor.
A. Calculation of Vegetated Corridor Width within City Limits. The NROD consists of a vegetated corridor measured from the top of bank or edge of a protected habitat or water feature. The minimum required width is the amount of buffer required on each side of a stream, or on all sides of a feature if non-linear. The width of the vegetated corridor necessary to adequately protect the habitat or water feature is specified in Table 17.49.110.
Table 17.49.110

Protected Water Feature Type (see definitions)	***Slope Adjacent to Protected Water Feature***	***Starting Point for Measurements from Water Feature***	***Width of Vegetated Corridor (see Note 1)***
Anadromous fish-bearing streams	*Any slope*	*• Edge of bankfull flow*	*200 feet*
Intermittent streams with slopes less than 25	*< 25 percent*	*• Edge of bankfull flow*	*15 feet*

percent and which drain less than 100 acres			
All other protected water features	*< 25 percent*	*•Edge of bankfull flow • Delineated edge of Title 3 wetland*	*50 feet*
	≥25 percent for 150 feet or more (see Note 2)		*200 feet*
	≥25 percent for less than 150 feet (see Note 2)		*Distance from starting point of measurement to top of ravine (break in ≥25 percent slope) (See Note 3) plus 50 feet.*

Notes:
1. Required width (measured horizontally) of vegetated corridor unless reduced pursuant to the provisions of OCMC 17.49.120.
2. Vegetated corridors in excess of fifty feet apply on steep slopes only in the uphill direction from the protected water feature.
3. Where the protected water feature is confined by a ravine or gully, the top of the ravine is the break in the ≥25 percent slope.

Finding: Complies with Condition. Based on the 2012 NROD report, anadromous fish are not present in the immediate downstream drainage. The existing stream channel is not considered intermittent. The existing slope adjacent to the protected wetland/water resource varies in slope, with the vast majority of the adjacent slope ≥25 percent for less than 150 feet. The width of the vegetated corridor (NROD Buffer) is governed by Note #3 in Table 17.49.110, which requires a 50-ft buffer outside of the top of the ravine. This is shown on Sht DDP-C1.3**.** While the submitted 2012 delineation is sufficient for a land-use-level review, the applicant shall submit an updated delineation confirming the location of the resource and the subsequent buffer area to be used as base data for the final mitigation plan.

B. Habitat Areas within City Parks. For habitat and water features identified by Metro as regionally Nortsignificant which are located within city parks, the NROD Boundary shall correspond to the Metro Regionally Significant Habitat Map.

Finding: Not applicable. The existing NROD impact area is not located within a city park**.**

C. Habitat Areas outside City limit/within UGB. For habitat and water features identified by Metro as regionally significant which are located outside of the City limits as of the date of adoption of the ordinance codified in this chapter, the minimum corridor width from any non-anadromous fish bearing stream or wetland shall be fifty feet.

Finding: Complies. The existing NROD impact area is located within the city limits.

17.49.120 - Maximum disturbance allowance for highly constrained lots of record.
In addition to the General Development Standards of OCMC 17.49.100, the following standards apply to a vacant lot of record that is highly constrained by the NROD, per OCMC 17.49.090.B and 17.49.090.F:
A. Standard for Residential Development. In the NROD where the underlying zone district is zoned Residential (R-10, R-8, R-6, R-5, R-3.5): The maximum disturbance area allowed for new residential development within the NROD area of the lot is three thousand square feet.

Finding: Not applicable. The proposed NROD disturbance is not located within the above-referenced residential zones.

B. Standard for all developments not located in R-10, R-8, R-6, R-5, and R-3.5. For all other underlying zone districts, the maximum disturbance area allowed for a vacant, constrained lot of record development within the NROD is that square footage which when added to the square footage of the lot lying outside the NROD portion equals twenty-five percent of the total lot area.
1. Lots that are entirely covered by the NROD will be allowed to develop twenty-five percent of their area.
2. This can be determined by:
a. Multiplying the total square footage of the lot by .25; or
b. Subtracting from that amount the square footage of the lot that is located outside the NROD.
The result is the maximum square footage of disturbance to be allowed in the NROD portion of the lot. If the result is < or = to 0, no disturbance is permitted and the building shall be located outside of the boundary.
C. In all areas, the disturbance area of a vacant, highly constrained lot of record within the NROD shall be set back at least fifty feet from the top of bank on Abernethy Creek, Newell Creek, or Livesay Creek or twenty-five feet from the top of bank of any tributary of the aforementioned creeks, other water body or from the delineated edge of a wetland located within the NROD area.
D. If the highly constrained lot of record cannot comply with the above standards, a maximum 1,500 square foot disturbance within the NROD area may be allowed.

Finding: Not Applicable. While the remainder of TL 500 is vacant, it does not qualify as being highly constrained per OCMC 17.49.090.B or F. Accordingly, this section does not apply.

17.49.130 - Existing development standards.
In addition to the General Development Standards of OCMC 17.49.100, the following standards apply to alterations and additions to existing development within the NROD, except for trails, rights of way, utility lines, land divisions and mitigation projects. As of June 1, 2010, applicants for alterations and additions to existing development that are not exempt pursuant to OCMC 17.49.080.J. shall submit a Type II or Type III application pursuant to this section.
Mitigation is required, subject to OCMC 17.49.180 or 17.49.190.

Finding: Complies. TL 500 has been altered over time by various gravel maintenance drives and equipment storage. That prior activity has impacted a portion of the NROD buffer/vegetated corridor. The currently proposed Masterplan development represents a formal impact to the

NROD buffer by virtue of the proposed masterplan improvements and is being processed as a Type II application.

17.49.140 - Standards for utility lines.
The following standards apply to new utilities, private connections to existing or new utility lines, and upgrades of existing utility lines within the NROD:
A. The disturbance area for private connections to utility lines shall be no greater than ten feet wide;
B. The disturbance area for the upgrade of existing utility lines shall be no greater than fifteen feet wide;
C. New utility lines shall be within the right-of-way, unless reviewed under subsection D.
D. New utility lines that cross above or underneath a drainage way, wetland, stream, or ravine within the NROD but outside of a right-of-way shall be processed as a Type III permit pursuant to OCMC 17.49.200, Adjustment from Standards.
E. No fill or excavation is allowed within the ordinary high water mark of a stream without the approval of the Division of State Lands and/or the U.S. Army Corps of Engineers;
F. The Division of State Lands must approve any work that requires excavation or fill in a wetland;
G. Native trees more than ten inches in diameter shall not be removed unless it is shown that there are no feasible alternatives; and
H. Each six to ten-inch diameter native tree cut shall be replaced at a ratio of three trees for each one removed. Each eleven-inch or greater diameter native tree shall be replaced at a ratio of five trees for each removed. The replacement trees shall be a minimum one-half inch diameter and selected from the Oregon City Native Plant List. All trees shall be planted within the NROD on the subject property. Where a utility line is approximately parallel with the stream channel, at least half of the replacement trees shall be planted between the utility line and the stream channel.
I. Mitigation is required, subject to OCMC 17.49.180 or 17.49.190.
Finding: Complies. The project proposes both street and utility improvements, which are governed by OCMC 17.49.150. New utilities are located within the proposed right-of-way.
The project does not propose to remove any native trees within the NROD buffer area. The project does not propose cuts or fills within the ordinary high-water mark of the existing channel, nor does it propose to cross or go underneath a drainage way.

The project proposes mitigation for roadway and utility impacts to the NROD buffer through a combination of plantings within the temporary impact area shown on DDP-C1.3 and the remainder of the mitigation plantings occurring within the proposed 35' Geologic Hazard setback area on the east side of Parcel B. Please see our responses to OCMC 17.49.180 & 17.49.190. The proposed roadway impact is limited to the NROD buffer area as shown on DDP-C1.3, and not to the wetland or water resource.

17.49.150 - Standards for vehicular or pedestrian paths and roads.
The following standards apply to public rights-of-way and private roads within the NROD, including roads, bridges/stream crossings, driveways and pedestrian paths with impervious surfaces:
A. Stream crossings shall be limited to the minimum number and width necessary to ensure safe and convenient pedestrian, bicycle and vehicle connectivity, and shall cross the stream at an angle as close to perpendicular to the stream channel as practicable. Bridges shall be used instead of culverts wherever practicable.

B. Where the right-of-way or private road crosses a stream the crossing shall be by bridge or a bottomless culvert;
C. No fill or excavation shall occur within the ordinary high water mark of a stream without the approval of the Division of State Lands and/or the U.S. Army Corps of Engineers;
D. If the Oregon Department of State Lands (DSL) has jurisdiction over any work that requires excavation or fill in a wetland, required permits or authorization shall be obtained from DSL prior to release of a grading permit;
E. Any work that will take place within the banks of a stream shall be conducted between June 1 and August 31, or shall be approved by the Oregon Department of Fish and Wildlife; and
F. Mitigation is required, subject to OCMC 17.49.180 or 17.49.190.

Finding: Complies with Conditions. The proposed roadway impact is limited to the NROD buffer area as shown on DDP-C1.3, and not to the wetland or water resource. No stream impact is proposed, and if there is any impact to the stream during final design, the applicant shall ensure, as conditioned, that the above approval criteria are met.

The project proposes mitigation for roadway and utility impacts to the NROD buffer through a combination of plantings within the temporary impact area shown on DDP-C1.3 and the remainder of the mitigation plantings occurring within the proposed 35' Geologic Hazard setback area on the east side of Parcel B. Refer to additional findings in OCMC 17.49.180 & 17.49.190. The proposed roadway impact is limited to the NROD buffer area as shown on DDP-C1.3, and not to the wetland or water resource.

17.49.155 - Standards for stormwater facilities.
Approved facilities that infiltrate stormwater on-site in accordance with public works low-impact development standards, including but not limited to; vegetated swales, rain gardens, vegetated filter strips, and vegetated infiltration basins, and their associated piping, may be placed within the NROD boundary pursuant to the following standards:
A. The forest canopy within the driplines of existing trees shall not be disturbed.
B. Only vegetation from the Oregon City Native Plant List shall be planted within these facilities.
C. Mitigation is required, subject to OCMC 17.49.180 or 17.49.190.
D. The stormwater facility may encroach up to one-half the distance of the NROD corridor.
E. The stormwater facility shall not impact more than one thousand square feet of the NROD. Impacts greater than one thousand square feet shall be processed as a Type III application.
F. The Community Development Director may allow landscaping requirements of the base zone, other than landscaping required for parking lots, to be met by preserving, restoring and permanently protecting habitat on development sites within the natural resource overlay district.
G. The design of the stormwater facility shall be subject to OCMC 13.12.

Finding: Complies. The project does not propose installing stormwater facilities as described in this criterion. The project's piped stormwater connection point to the existing storm line is located within the proposed public road alignment, but no surface stormwater treatment facility is proposed within the NROD boundary or required buffer.

17.49.160 - Standards for land divisions.

Other than those land divisions exempted by OCMC 17.49.070.G., new residential lots created within the NROD shall conform to the following standards:
A. For a lot for an existing residence currently within the NROD. This type of lot is allowed within the NROD for a residence that existed before the NROD was applied to a subject property. A new lot for an existing house may be created through a partition or subdivision process when all of the following are met:
1. There is an existing house on the site that is entirely within the NROD area; and
2. The existing house will remain; and
3. The new lot is no larger than required to contain the house, minimum required side setbacks, garage, driveway and a twenty-foot deep rear yard, with the remaining NROD area beyond that point protected by a conservation easement, or by dedicating a conservation tract or public open space.
B. Protection and ownership of NROD areas in land divisions:
1. New partitions shall delineate the NROD area either as a separate tract or conservation easement that meets the requirements of subsection 2. of this section.
2. Prior to final plat approval, ownership and maintenance of the NROD area shall be identified to distinguish it from the buildable areas of the development site. The NROD area may be identified as any one of the following:
a. A tract of private open space held by the homeowners association;
b. For residential land divisions, a tract of private open space held by a homeowner's association subject to an easement conveying stormwater and surface water management rights to the City and preventing the owner of the tract from activities and uses inconsistent with the purpose of this document;
c. Public open space where the tract has been dedicated to the City or other governmental unit;
d. Conservation easement area pursuant to OCMC 17.49.180.G and approved in form by the Community Development Director;
e. Any other ownership proposed by the owner and approved by the Community Development Director; or
f. NROD tracts shall be exempt from minimum frontage requirements, dimensional standards of the zoning designation, street frontage requirements, or flag lot standards pursuant to OCMC 16.08.053.

Finding: Not applicable. This proposal does not include a land division.

17.49.170 - Standards for trails.
All trails that are not exempt pursuant to OCMC 17.49.80.F shall be processed through a Type II or Type III process pursuant to this chapter; and shall provide mitigation, subject to OCMC 17.49.180 or 17.49.190.

Finding: Not applicable. This proposal does not include a trail within the NROD buffer.

17.49.180 - Mitigation standards.
The following standards (or the alternative standards of OCMC 17.49.190) apply to required mitigation:
A. Mitigation shall occur at a two-to-one ratio of mitigation area to proposed NROD disturbance area. Mitigation of the removal or encroachment of a wetland or stream shall not be part of this

chapter and will be reviewed by the Division of State Lands or the Army Corp of Engineers during a separate review process.

Finding: Complies with Condition.

As shown on Sht DDP-C1.3 impacts to the NROD buffer are as follow:

- Temporary Impacts: 790 sf
- Permanent Impacts: 3,346 sf
- Existing Impacts: 2,040 sf

The existing impact is excluded from mitigation since it's a pre-existing encroachment into the NROD buffer. As noted in the 2012 NROD report, the applicant does not have access to the remainder of TL 500 for any mitigation other than the temporary mitigation area. This continues to be the case with this application. The 2012 NROD report proposed a 3:1 mitigation ratio, with mitigation to occur within the 35-ft Geologic Hazard setback. This project proposes to maintain that 3:1 mitigation area due to the mitigation area being detached from the NROD resource as identified in the 2012 report. With a 3,346-sf permanent impact, proposed mitigation at a 3:1 ratio results in a mitigation area of 10,038 sf.

B. Mitigation shall occur on the site where the disturbance occurs, pursuant to the following:
1. The mitigation required for disturbance associated with a right-of-way or utility in the right-of way shall be located as close to the impact area as possible within the NROD;
2. If not possible to locate mitigation on the same site, the mitigation shall occur first on the same stream tributary, secondly in the Abernethy, Newell or Livesay Creek or a tributary thereof, or thirdly as close to the impact area as possible within the NROD; and
3. An easement that allows access to the mitigation site for monitoring and maintenance shall be provided as part of the mitigation plan.

Finding: Complies with Condition. As identified in the 2012 NROD report, the area of NROD encroachment cannot be adequately offset adjacent to the waterway resource within the TL 500 waterway ravine. TL 500 is still highly constrained by steep slopes, and the expansion and enhancement of the existing NROD buffer area on TL 500 will further constrain access to TL 500, making it more difficult to develop in the future. The 2012 NROD report goes on to say that regardless of current proposed roadway improvements, any future development proposed on TL 500 will have to address existing and proposed NROD encroachment with a mitigation plan. Adding to the NROD area on TL 500 via this project's proposed mitigation further encumbers any future site development options.

Prior to the release of construction permits, the applicant shall provide an updated delineation with the final design of the new street at the Beavercreek Intersection, indicating the final calculation of NROD buffer impact and the location, size, and number of plantings as required by OCMC 17.49.180 and OCMC 17.49.190 for the mitigation area along the eastern edge of Parcel B or as amended, consistent with this section, If there are conflicts with the shared use path. The new public street shall be designed in compliance with 17.49.150 - Standards for vehicular or pedestrian paths and roads. (P).

C. Mitigation shall occur within the NROD area of a site unless it is demonstrated that this is not feasible because of a lack of available and appropriate area. In such cases, the proposed mitigation area shall be contiguous to the existing NROD area so the NROD boundary can be easily extended in the future to include the new resource site.

Finding: Complies with Condition. Prior to the release of construction permits, the applicant shall provide an updated delineation with the final design of the new street at the Beavercreek Intersection, indicating the final calculation of NROD buffer impact and the location, size, and number of plantings as required by OCMC 17.49.180 and OCMC 17.49.190 for the mitigation area along the eastern edge of Parcel B or as amended, consistent with this section, If there are conflicts with the shared use path. The new public street shall be designed in compliance with 17.49.150 - Standards for vehicular or pedestrian paths and roads. (P).

D. Invasive and nuisance vegetation shall be removed within the mitigation area;

Finding: Complies with Condition. Invasive species and nuisance vegetation will be removed in the NROD mitigation area.

E. Required Mitigation Planting. An applicant shall meet Mitigation Planting Option 1 or 2 below, whichever option results in more tree plantings, except that where the disturbance area is one acre or more, Mitigation Option 2 shall be required. All trees, shrubs and ground cover shall be selected from the Oregon City Native Plant List.
NOTE: Applications on sites where no trees are present or which are predominantly covered with invasive species shall be required to mitigate the site, remove the invasive species and plant trees and native plants pursuant to Option 2.
1. Mitigation Planting Option 1.
a. Planting Quantity. This option requires mitigation planting based on the number and size of trees that are removed from the site pursuant to Table 17.49.180E.1.a.
Table 17.49.180E.1.a.—Required Planting

Size of Tree to be Removed (DBH)	***Number of Trees and Shrubs to be Replanted***
6 to 12"	*2 trees and 3 shrubs*
13 to 18"	*3 trees and 6 shrubs*
19 to 24"	*5 trees and 12 shrubs*
25 to 30"	*7 trees and 18 shrubs*
Over 30"	*10 trees and 30 shrubs*

Finding: Complies. The proposed NROD impacts do not remove existing trees. Accordingly, Mitigation Planting Option 2 will be utilized.

b. Plant Size. Replacement trees shall be at least one-half inch in caliper on average, measured at six inches above the ground level for field grown trees or above the soil line for container grown trees. Oak, madrone, ash or alder may be one gallon size. Conifers shall be a minimum of six feet in height. Shrubs shall be at least one-gallon container size or the equivalent in ball and burlap and shall be at least twelve inches in height at the time of planting. All other species shall be a minimum of four-inch pots;
c. Plant Spacing. Except for the outer edges of mitigation areas, trees and shrubs shall be planted in a non-linear fashion. Plant spacing for new species shall be measured from the driplines of existing trees when present. Trees shall be planted on average between eight and twelve feet on center, and shrubs shall be planted on average between four and five feet on center, or clustered in single species groups of no more than four plants, with each cluster planted on average between eight and ten feet on center.
d. Mulching and Irrigation. Mulch new plantings a minimum of three inches in depth and eighteen inches in diameter. Water new plantings one inch per week from June 30th to September 15th, for the three years following planting.
e. Plant Species. Shrubs shall consist of at least two different species. If ten trees or more are planted, no more than one-half of the trees may be of the same genus. Conifers shall be replaced with conifers. Bare ground shall be planted or seeded with native grasses and ground cover species.
Finding: Not Applicable. The proposed NROD impacts do not remove existing trees. Accordingly, Mitigation Planting Option 2 will be utilized.

2. Mitigation Planting Option 2.
a. Planting Quantity. In this option, the mitigation requirement is calculated based on the size of the disturbance area within the NROD. Native trees and shrubs are required to be planted at a rate of five trees and twenty-five shrubs per every five hundred square feet of disturbance area (calculated by dividing the number of square feet of disturbance area by five hundred, and then multiplying that result times five trees and twenty-five shrubs, and rounding all fractions to the nearest whole number of trees and shrubs; for example, if there will be three hundred thirty square feet of disturbance area, then three hundred thirty divided by five hundred equals .66, and .66 times five equals 3.3, so three trees shall be planted, and .66 times twenty-five equals 16.5, so seventeen shrubs shall be planted). Bare ground shall be planted or seeded with native grasses or herbs. Non-native sterile wheat grass may also be planted or seeded, in equal or lesser proportion to the native grasses or herbs.

Finding: Complies with Conditions. To mitigate the impacts for the permanent impacts (3,346 sf) a total of 33 trees and 167 shrubs will be planted within the 10,038 sf area in the Geologic Hazard Area. Within the temporary impact area (790 sf) a total of 7 trees and 39 shrubs will be planted. As identified in the 2012 NROD report, the Enhancement/Mitigation Area will be seeded with the seed mix provided in Table 1. Plantings at the Enhancement/Mitigation Area will be completed using container plant size and plant spacing identified in Table 2 and 3. The total number of plants have been updated below for the current encroachment areas.

Plant List for Enhancement/NROD Mitigation Area (3346 sf)				
Common Name	**Scientific Name**	**Plant Form/Size[1]**	**Plant Spacing (ft on center)**	**Total Number of Plants**
NROD ENHANCEMENT				

Trees				
Big-leaf maple	*Acer macrophyllum*	1 gal/24”	10 ft. O.C.	11
Bitter cherry	*Prunus emarginata*	1 gal/24”	10 ft. O.C.	11
Douglas fir	*Pseudotsuga menziesii*	1 gal/24”	10 ft. O.C.	11
			Subtotal	**33**
Shrubs				
Nookta rose	*Rosa nutkana*	1 gal/18”	Clusters of 3-4 plants; 8 ft O.C.	34
Mock orange	*Philadelphus lewisii*	1 gal/18”	Clusters of 3-4 plants; 8 ft O.C.	25
Red-flowering currant	*Ribes sanguineum*	1 gal/18”	Clusters of 3-4 plants; 8 ft O.C.	25
Snowberry	*Symphoricarpos albus*	1 gal/18”	Clusters of 3-4 plants; 8 ft O.C.	29
Kinnikinnick	*Arctostaphylos uva-ursi*	1 gal/18”	Clusters of 3-4 plants; 8 ft O.C.	25
Tall Oregon grape	*Mahonia aquifolium*	1 gal/18”	Clusters of 3-4 plants; 8 ft O.C.	29
			Subtotal	**167**
			Total	**200**

[1]Recommended plant form and size. Suitable replacement may be used based on availability.

Plant List for Temporary Impacts/ In Place Mitigation Area (790 sf)				
Common Name	**Scientific Name**	**Plant Form/Size**	**Plant Spacing (ft on center)**	**Total Number of Plants**
NROD ENHANCEMENT				
Trees				
Big-leaf maple	*Acer macrophyllum*	1 gal/24”	10 ft. O.C.	3
Douglas fir	*Pseudotsuga menziesii*	1 gal/24”	10 ft. O.C.	4
			Subtotal	**7**
Shrubs				
Oceanspray	*Holodiscus discolor*	1 gal/18”	8 ft O.C.	9
Red-flowering currant	*Ribes sanguineum*	1 gal/18”	Clusters of 3-4 plants; 8 ft O.C.	9
Snowberry	*Symphoricarpos albus*	1 gal/18”	Clusters of 3-4 plants; 8 ft O.C.	11
Tall Oregon grape	*Mahonia aquifolium*	1 gal/18”	Clusters of 3-4 plants; 8 ft O.C.	10
			Subtotal	**39**
			Total	**46**

[1]Recommended plant form and size. Suitable replacement may be used based on availability.

b. Plant Size. Plantings may vary in size dependent on whether they are live cuttings, bare root stock or container stock, however, no initial plantings may be shorter than twelve inches in height.
c. Plant Spacing. Trees shall be planted at average intervals of seven feet on center. Shrubs may be planted in single-species groups of no more than four plants, with clusters planted on average between eight and ten feet on center.

d. Mulching and Irrigation shall be applied in the amounts necessary to ensure eighty percent survival at the end of the required five-year monitoring period.

Finding: Complies. Mulching and irrigation will be placed on the final construction plans.

e. Plant Diversity. Shrubs shall consist of at least three different species. If twenty trees or more are planted, no more than one-third of the trees may be of the same genus.

Finding: Complies. The ratio of plantings for each species in the Enhancement/NROD Mitigation Area from the 2012 NROD report was adjusted to ensure no genus of trees accounted for more than one-third of the trees.

F. An alternative planting plan using native plants may be approved in order to create a new wetland area, if it is part of a wetlands mitigation plan that has been approved by the DSL or the U.S. Army Corps of Engineers (USACE) in conjunction with a wetland joint removal/fill permit application.

Finding: Not Applicable. An alternative planting plan is not proposed for the creation of new wetlands.

G. Monitoring and Maintenance. The mitigation plan shall provide for a five-year monitoring and maintenance plan with annual reports in a form approved by the Community Development Director. Monitoring of the mitigation site is the on-going responsibility of the property owner, assign, or designee, who shall submit said annual report to the planning division, documenting plant survival rates of shrubs and trees on the mitigation site. Photographs shall accompany the report that indicate the progress of the mitigation. A minimum of eighty percent survival of trees and shrubs of those species planted is required at the end of the five-year maintenance and monitoring period. Any invasive species shall be removed and plants that die shall be replaced in kind to meet the eighty percent survival requirement. Bare spots and areas of invasive vegetation larger than ten square feet that remain at the end the five-year monitoring period shall be replanted or reseeded with native grasses and/or ground cover species.

Finding: Complies with Condition. A *Monitoring and Maintenance plan that adheres to the above section will be required prior to the project's final.*

H. Covenant or Conservation Easement. The applicant shall record a restrictive covenant or conservation easement, in a form provided by the City, requiring the owners and assigns of properties subject to this section to comply with the applicable mitigation requirements of this section. Said covenant shall run with the land and permit the City to complete mitigation work in the event of default by the responsible party. Costs borne by the City for such mitigation shall be borne by the owner.

Finding: Complies with Condition. The applicant shall record a restrictive covenant or conservation easement, in a form provided by the City, requiring the owners and assigns of properties subject to this section to comply with the applicable mitigation requirements of OCMC 17.49. Said covenant shall run with the land and permit the City to complete mitigation work in the

event of default by the party responsible. Costs borne by the City for such mitigation shall be borne by the owner.

I. Financial Guarantee. A financial guarantee for establishment of the mitigation area, in a form approved by the City, shall be submitted before development within the NROD disturbance area commences. The City will release the guarantee at the end of the five-year monitoring period, or before, upon its determination that the mitigation plan has been satisfactorily implemented pursuant to this section.

Finding: Complies with Condition. A financial guarantee for the establishment of the mitigation area, in a form approved by the City, shall be submitted before development within the NROD disturbance area commences. The City will release the guarantee at the end of the five-year monitoring period, or before, upon its determination that the mitigation plan has been satisfactorily implemented. (P)

17.49.200 - Adjustment from standards.
If a regulated NROD use cannot meet one or more of the applicable NROD standards then an adjustment may be issued if all of the following criteria are met. Compliance with these criteria shall be demonstrated by the applicant in a written report prepared by an environmental professional with experience and academic credentials in one or more natural resource areas such as ecology, wildlife biology, botany, hydrology or forestry. At the applicant's expense, the City may require the report to be reviewed by an environmental consultant. Such requests shall be processed under the Type III development permit procedure. The applicant shall demonstrate:
A. There are no feasible alternatives for the proposed use or activity to be located outside the NROD area or to be located inside the NROD area and to be designed in a way that will meet all of the applicable NROD development standards;
B. The proposal has fewer adverse impacts on significant resources and resource functions found in the local NROD area than actions that would meet the applicable environmental development standards;
C. The proposed use or activity proposes the minimum intrusion into the NROD area that is necessary to meet development objectives;
D. Fish and wildlife passage will not be impeded;
E. With the exception of the standard(s) subject to the adjustment request, all other applicable NROD standards can be met; and
F. The applicant has proposed adequate mitigation to offset the impact of the adjustment.

Finding: Not Applicable. The applicant is not proposing an addition to the standards.

17.49.210 - Type II development permit application.
Unless otherwise directed by the NROD standards, proposed development within the NROD shall be processed as a Type II development permit application. All applications shall include the items required for a complete application by OCMC 17.49.220—17.49.230, and 17.50.080 as well as a

discussion of how the proposal meets all of the applicable NROD development standards in OCMC 17.49.100—17.49.170.

Finding: Complies. This proposal qualifies for a Type II review.

17.49.230 - Mitigation plan report.
A mitigation plan report that accompanies the above mitigation site plan is also required. The report shall be prepared by an environmental professional with experience and academic credentials in one or more natural resource areas such as ecology, wildlife biology, botany, hydrology or forestry. The mitigation plan report shall, at a minimum, discuss:
A. Written responses to each applicable mitigation standard in OCMC 17.49.180 or 17.49.190 indicating how the proposed development complies with the mitigation standards;
B. The resources and functional values to be restored, created, or enhanced through the mitigation plan;
C. Documentation of coordination with appropriate local, regional, state and federal regulatory/resource agencies such as the Oregon Department of State Lands (DSL) and the United States Army Corps of Engineers (USACE);
D. Construction timetables;
E. Monitoring and maintenance practices pursuant to OCMC 17.49.230.F and a contingency plan for undertaking remedial actions that might be needed to correct unsuccessful mitigation actions during the first five years of the mitigation area establishment.

Finding: Complies. The 2012 NROD report, together with the 2025 supplemental information contained in these responses, includes the above information.

17.49.240 - Density transfer.
The NROD allocates urban densities to the non-NROD portions of properties located partially within the NROD, generally resulting in a substantial increase in net development potential. For lots of record that are located within the NROD, density transfer is allowed, subject to the following provisions:
Finding: Not Applicable. Density transfers are not needed for the proposed application, nor are they proposed

17.49.250 - Verification of NROD boundary.
The NROD boundary may have to be verified occasionally to determine the true location of a resource and its functional values on a site. This may be through a site specific environmental survey or a simple site visit in those cases where existing information demonstrates that the NROD significance rating does not apply to a site-specific area. Applications for development on a site located in the NROD area may request a determination that the subject site is not in an NROD area and therefore is not subject to the standards of OCMC 17.49.100. Verifications shall be processed as either a Type I or Type II process.
Finding: Not applicable. The application does not request verification as part of this process. An update delinquency will occur as conditioned to ensure no changes have occurred since 2012.

CHAPTER 17.50 – ADMINISTRATION AND PROCEDURES

17.50.010 Purpose.
This chapter provides the procedures by which Oregon City reviews and decides upon applications for all
permits relating to the use of land authorized by ORS 92, 197 and 227. These permits include all form of land divisions, land use, limited land use and expedited land division and legislative enactments and amendments to the Oregon City Comprehensive Plan and Titles 16 and 17 of this code. Pursuant to ORS 227.175, any applicant may elect to consolidate applications for two or more related permits needed for a single development project. Any grading activity associated with development shall be subject to preliminary review as part of the review process for the underlying development. It is the express policy of the City of Oregon City that development review not be segmented into discrete parts in a manner that precludes a comprehensive review of the entire development and its cumulative impacts.

17.50.050 – Pre-application conference.
A. Pre-application Conference. Prior to a Type II – IV or Legislative application, excluding Historic Review, being deemed complete, the applicant shall schedule and attend a pre-application conference with City staff to discuss the proposal, unless waived by the Community Development Director. The purpose of the pre-application conference is to provide an opportunity for staff to provide the applicant with information on the likely impacts, limitations, requirements, approval standards, fees and other information that may affect the proposal.
1. To schedule a pre-application conference, the applicant shall contact the Planning Division, submit the required materials, and pay the appropriate conference fee.
2. At a minimum, an applicant should submit a short narrative describing the proposal and a proposed site plan, drawn to a scale acceptable to the City, which identifies the proposed land uses, traffic circulation, and public rights-of-way and all other required plans.
3. The Planning Division shall provide the applicant(s) with the identity and contact persons for all affected neighborhood associations as well as a written summary of the pre-application conference.

Finding: Complies as Proposed. The applicant held a pre-application conference (PA 25-16) for this proposal on April 22, 2025

17.50.055 - Neighborhood association meeting.
Neighborhood Association Meeting. The purpose of the meeting with the recognized neighborhood association is to inform the affected neighborhood association about the proposed development and to receive the preliminary responses and suggestions from the neighborhood association and the member residents.
A. Applicants applying for annexations, zone change, comprehensive plan amendments, conditional use, Planning Commission variances, subdivision, or site plan and design review (excluding minor site plan and design review), general development master plans or detailed development plans applications shall schedule and attend a meeting with the City-recognized neighborhood association in whose territory the application is proposed no earlier than one year prior to the date of application. Although not required for other projects than those identified above, a meeting with the neighborhood association is highly recommended.

B. The applicant shall request via email or regular mail a request to meet with the neighborhood association chair where the proposed development is located. The notice shall describe the proposed project. A copy of this notice shall also be provided to the chair of the citizen involvement committee.
C. A meeting shall be scheduled within thirty days of the date that the notice is sent. A meeting may be scheduled later than thirty days if by mutual agreement of the applicant and the neighborhood association. If the neighborhood association does not want to, or cannot meet within thirty days, the applicant shall host a meeting inviting the neighborhood association, citizen involvement committee, and all property owners within three hundred feet to attend. This meeting shall not begin before six p.m. on a weekday or may be held on a weekend and shall occur within the neighborhood association boundaries or at a city facility.
D. If the neighborhood association is not currently recognized by the City, is inactive, or does not exist, the applicant shall request a meeting with the citizen involvement committee.
E. To show compliance with this section, the applicant shall submit a copy of the email or mail notice to the neighborhood association and CIC chair, a sign-in sheet of meeting attendees, and a summary of issues discussed at the meeting. If the applicant held a separately noticed meeting, the applicant shall submit a copy of the meeting flyer, postcard or other correspondence used, and a summary of issues discussed at the meeting and submittal of these materials shall be required for a complete application.

Finding: Complies as Proposed. The applicant met with the Hillendale Neighborhood Association on October 7, 2025

17.50.070 Completeness review and one hundred twenty-day rule.
A. Upon submission, the Community Development Director shall date stamp the application form and verify that all of the appropriate application review fee(s) have been submitted. Upon receipt of all review fees and an application form, the Community Development Director will then review the application and all information submitted with it and evaluate whether the application is complete enough to process. Within thirty days of receipt of the application and all applicable review fees, the Community Development Director shall complete this initial review and issue to the applicant a written statement indicating whether the application is complete enough to process, and if not, what information shall be submitted to make the application complete.
B. The applicant has one hundred eighty days from the date the application was made to submit the missing information or the application shall be rejected and the unused portion of the application fee returned to the applicant. If the applicant submits the requested information within the one hundred eighty-day period, the Community Development Director shall again verify whether the application, as augmented, is complete. Each such review and verification shall follow the procedure in subsection A of this section.
The application will be deemed complete for the purpose of this section upon receipt by the Community Development Director of:
1. All the missing information;
2. Some of the missing information and written notice from the applicant that no other information will be provided; or
3. Written notice from the applicant that none of the missing information will be provided.
C. Once the Community Development Director determines the application is complete enough to process, or the applicant refuses to submit any more information, the City shall declare the

application complete. Pursuant to ORS 227.178, the City will reach a final decision on an application within one hundred twenty calendar days from the date that the application is determined to be or deemed complete unless the applicant agrees to suspend the one hundred twenty-calendar-day timeline or unless state law provides otherwise. The one hundred twenty-day period, however, does not apply in the following situations:
1. Any hearing continuance or other process delay requested by the applicant shall be deemed an extension or waiver, as appropriate, of the one hundred twenty-day period.
2. Any delay in the decision-making process necessitated because the applicant provided an incomplete set of mailing labels for the record property owners within three hundred feet of the subject property shall extend the one hundred twenty-day period for the amount of time required to correct the notice defect.
3. The one hundred twenty-day period does not apply to any application for a permit that is not wholly within the City's authority and control.

4. The one hundred twenty-day period does not apply to any application for an amendment to the City's comprehensive plan or land use regulations nor to any application for a permit, the approval of which depends upon a plan amendment.
D. A one hundred day-period applies in place of the one hundred twenty-day period for affordable housing projects where:
1. The project includes five or more residential units, including assisted living facilities or group homes;
2. At least fifty percent of the residential units will be sold or rented to households with incomes equal to or less than sixty percent of the median family income for Clackamas County or for the state, whichever is greater; and
3. Development is subject to a covenant restricting the owner and successive owner from selling or renting any of the affordable units as housing that is not affordable for a period of sixty years from the date of the certificate of occupancy.
E. The one hundred twenty-day period specified in OCMC 17.50.070.C or D may be extended for a specified period of time at the written request of the applicant. The total of all extensions may not exceed two hundred forty-five calendar days.
F. The approval standards that control the City's review and decision on a complete application are those which were in effect on the date the application was first submitted.

Finding: Complies. The application was deemed complete on December 18, 2025. The 120-day decision date for this application is April 7, 2025, and was extended by the applicant to May 17, 2026

17.50.080 Complete application—Required information.
Unless stated elsewhere in OCMC 16 or 17, a complete application includes all the materials listed in this
subsection. The Community Development Director may waive the submission of any of these materials if not deemed to be applicable to the specific review sought. Likewise, within thirty days of when the application is first submitted, the Community Development Director may require additional information, beyond that listed in this subsection or elsewhere in Titles 12, 14, 15, 16, or 17, such as a traffic study or other report prepared by an appropriate expert. In any event, the applicant is responsible for the completeness and accuracy of the application and all of the

supporting documentation, and the City will not deem the application complete until all information required by the Community Development Director is submitted. At a minimum, the applicant shall submit the following:
A. One copy of a completed application form that includes the following information:
1. An accurate address and tax map and location of all properties that are the subject of the application;
2. Name, address, telephone number and authorization signature of all record property owners or contract owners, and the name, address and telephone number of the applicant, if different from the property owner(s);
B. A complete list of the permit approvals sought by the applicant;
C. A complete and detailed narrative description of the proposed development;
D. A discussion of the approval criteria for all permits required for approval of the development proposal that explains how the criteria are or can be met or are not applicable, and any other information indicated by staff at the pre-application conference as being required;
E. One copy of all architectural drawings and site plans shall be submitted for Type II—IV applications.
One paper copy of all application materials shall be submitted for Type I applications;
F. For all Type II—IV applications, the following is required:
1. An electronic copy of all materials.
2. Mailing labels or associated fee for notice to all parties entitled under OCMC 17.50.090 to receive mailed notice of the application. The applicant shall use the names and addresses of property owners within the notice area indicated on the most recent property tax rolls.
3. Documentation indicating there are no liens favoring the City on the subject site.
4. A receipt from the county assessor's office indicating that all taxes for the lot or parcels involved are paid in full for the preceding tax year.
5. A current preliminary title report or trio for the subject property(ies);
G. All required application fees;
H. Annexation agreements, traffic or technical studies (if applicable);
I. Additional documentation, as needed and identified by the Community Development Director.

Finding: Complies The application was deemed complete on December 18, 2025.

17.50.090 - Public notices.
All public notices issued by the City announcing applications or public hearings of quasi-judicial or legislative actions, shall comply with the requirements of this section.
A. Notice of Type II Applications. Once the Community Development Director has deemed a Type II application complete, the City shall prepare and send notice of the application, by first class mail, to all record owners of property within three hundred feet of the subject property and to any city-recognized neighborhood association whose territory includes the subject property. The applicant shall provide or the City shall prepare for a fee an accurate and complete set of mailing labels for these property owners and for posting the subject property with the City-prepared notice in accordance with OCMC 17.50.100. The City's Type II notice shall include the following information:
1. Street address or other easily understood location of the subject property and city-assigned planning file number;
2. A description of the applicant's proposal, along with citations of the approval criteria that the City will use to evaluate the proposal;

3. A statement that any interested party may submit to the City written comments on the application during a fourteen-day comment period prior to the City's deciding the application, along with instructions on where to send the comments and the deadline of the fourteen-day comment period;
4. A statement that any issue which is intended to provide a basis for an appeal shall be raised in writing during the fourteen-day comment period with sufficient specificity to enable the City to respond to the issue;
5. A statement that the application and all supporting materials may be inspected, and copied at cost, at City Hall during normal business hours;
6. The name and telephone number of the planning staff person assigned to the application or is otherwise available to answer questions about the application;
7. The notice shall state that a city-recognized neighborhood association requesting an appeal fee waiver pursuant to OCMC 17.50.290.C must officially approve the request through a vote of its general membership or board at a duly announced meeting prior to the filing of an appeal.

Finding: Complies. A public notice was sent to all properties within 300 feet of the site and signs were placed on the property within 20 days of the scheduled hearing. Copies of the public notice and affidavit of sign posting are in the record.

B. Notice of Public Hearing on a Type III or IV Quasi-Judicial Application. Notice for all public hearings concerning a quasi-judicial application shall conform to the requirements of this subsection. At least twenty days prior to the hearing, the City shall prepare and send, by first class mail, notice of the hearing to all record owners of property within three hundred feet of the subject property and to any city-recognized neighborhood association whose territory includes the subject property. The City shall also publish the notice on the City website within the City at least twenty days prior to the hearing. Pursuant to OCMC 17.50.080.H, the applicant is responsible for providing an accurate and complete set of mailing labels for these property owners and for posting the subject property with the City-prepared notice in accordance with OCMC 17.50.100. Notice of the application hearing shall include the following information:
1. The time, date and location of the public hearing;
2. Street address or other easily understood location of the subject property and city-assigned planning file number;
3. A description of the applicant's proposal, along with a list of citations of the approval criteria that the City will use to evaluate the proposal;
4. A statement that any interested party may testify at the hearing or submit written comments on the proposal at or prior to the hearing and that a staff report will be prepared and made available to the public at least seven days prior to the hearing;
5. A statement that any issue which is intended to provide a basis for an appeal to the City Commission shall be raised before the close of the public record. Issues must be raised and accompanied by statements or evidence sufficient to afford the City and all parties to respond to the issue;
6. The notice shall state that a city-recognized neighborhood association requesting an appeal fee waiver pursuant to OCMC 17.50.290.C must officially approve the request through a vote of its general membership or board at a duly announced meeting prior to the filing of an appeal;

7. A statement that the application and all supporting materials and evidence submitted in support of the application may be inspected at no charge and that copies may be obtained at reasonable cost at the planning division offices during normal business hours; and
8. The name and telephone number of the planning staff person responsible for the application or is otherwise available to answer questions about the application.

17.50.100 - Notice posting requirements.
Where this chapter requires notice of a pending or proposed permit application or hearing to be posted on the subject property, the requirements of this section shall apply.
A. City Guidance and the Applicant's Responsibility. The City shall supply all of the notices which the applicant is required to post on the subject property and shall specify the dates the notices are to be posted and the earliest date on which they may be removed. The City shall also provide a statement to be signed and returned by the applicant certifying that the notice(s) were posted at the correct time and that if there is any delay in the City's land use process caused by the applicant's failure to correctly post the subject property for the required period of time and in the correct location, the applicant agrees to extend the applicable decision-making time limit in a timely manner.
B. Number and Location. The applicant shall place the notices on each frontage of the subject property. If the property's frontage exceeds six hundred feet, the applicant shall post one copy of the notice for each six hundred feet or fraction thereof. Notices do not have to be posted adjacent to alleys or unconstructed right-of-way. Notices shall be posted within ten feet of the street and shall be visible to pedestrians and motorists. Notices shall not be posted within the public right-of-way or on trees. The applicant shall remove all signs within ten days following the event announced in the notice.
Finding: Complies A public notice was sent to all properties within 300 feet of the site and signs were placed on the property within 20 days of the scheduled hearing. Copies of the public notice and affidavit of sign posting are in the record.

17.50.140 – Financial guarantees.
When conditions of permit approval require a permitee to construct certain public improvements, the City shall require the permitee to provide financial guarantee for construction of the certain public improvements. Financial guarantees shall be governed by this section.
A. Form of Guarantee. Guarantees shall be in a form approved by the City attorney. Approvable forms of guarantee include irrevocable standby letters of credit to the benefit of the City issued by a recognized lending institution, certified checks, dedicated bank accounts or allocations of construction loans held in reserve by the lending institution for the benefit of the City. The form of guarantee shall be specified by the City engineer and, prior to execution and acceptance by the City shall be reviewed and approved by the City attorney. The guarantee shall be filed with the City engineer.
B. Performance Guarantees. A permittee shall be required to provide a performance guarantee as follows.
1. After Final Approved Design by the City. The City may request the permittee to submit a performance guarantee for construction of certain public improvements. A permitee may request the option of submitting a performance guarantee when prepared for temporary/final occupancy. The guarantee shall be one hundred twenty percent of the estimated cost of constructing the public

improvements as submitted by the permittee's engineer. The engineer's estimated costs shall be supported by a verified engineering estimate and approved by the City engineer.
2. Before Complete Design Approval and Established Engineered Cost Estimate. The City may request a permittee to submit a performance guarantee for construction of certain public improvements. A permitee may request the option of submitting a performance guarantee before public improvements are designed and completed. The guarantee shall be one hundred fifty percent of the estimated cost of constructing the public improvements as submitted by the permittee's engineer and approved by the City engineer. The engineer's estimated costs shall be supported by a verified engineering estimate and approved by the City engineer.
C. Release of Guarantee. The guarantee shall remain in effect until the improvement is actually constructed and accepted by the City. Once the City has inspected and accepted the improvement, the City shall release the guarantee to the permittee. If the improvement is not completed to the City's satisfaction within the time limits specified in the permit approval, the City engineer may, at their discretion, draw upon the guarantee and use the proceeds to construct or complete construction of the improvement and for any related administrative and legal costs incurred by the City in completing the construction, including any costs incurred in attempting to have the permittee complete the improvement. Once constructed and approved by the City, any remaining funds shall be refunded to the permittee. The City shall not allow a permittee to defer construction of improvements by using a performance guarantee, unless the permittee agrees to construct those improvements upon written notification by the City, or at some other mutually agreed-to time. If the permittee fails to commence construction of the required improvements within six months of being instructed to do so, the City may, without further notice, undertake the construction of the improvements and draw upon the permittee's performance guarantee to pay those costs.
D. Fee-in-lieu. When conditions of approval or the City engineer allows a permittee to provide a fee-in-lieu of actual construction of public improvements, the fee shall be one hundred fifty percent of the estimated cost of constructing the public improvements as submitted by the permittee's engineer and approved by the City engineer. The percentage required is to ensure adequate funds for the future work involved in design, bid, contracting, and construction management and contract closeout. The engineer's estimated costs shall be supported by a verified engineering estimate and approved by the City engineer. The fee-in-lieu shall be submitted as cash, certified check, or other negotiable instrument acceptable by the City attorney.

Finding: Complies with Condition. A Performance Guarantee which is equal to 120% of the estimated cost for construction of public improvements as shown in City approved construction plans shall be provided prior to receiving a permit and beginning construction. The estimated costs shall be supported by a verified engineering estimate and approved by the City engineer. The guarantee shall be in a form identified in Code 17.50.140.A of the Oregon City Municipal Code. The guarantee shall remain in effect until the construction of all required improvements are completed and accepted by the City. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

17.50.141 – Public improvements – Warranty
All public improvements not constructed by the City, shall be maintained and under warranty provided by the property owner or developer constructing the facilities until the City accepts the improvements at the end of the warranty period. The warranty is to be used at the discretion of the

City engineer or designee to correct deficiencies in materials or maintenance of constructed public infrastructure, or to address any failure of engineering design.
A. Duration of Warranty. Responsibility for maintenance of public improvements shall remain with the property owner or developer for a warranty period of two years.
B. Financial Guarantee. Approvable forms of guarantee include irrevocable standby letters of credit to the benefit of the City issued by a recognized lending institution, bond, certified checks, dedicated bank accounts or allocations of construction loans held in reserve by the lending institution for the benefit of the City. The form of guarantee shall be specified by the City engineer and, prior to execution and acceptance by the City shall be reviewed and approved by the City attorney. The guarantee shall be filed with the City engineer.
C. Amount of Warranty. The amount of the warranty shall be equal to fifteen percent of the estimated cost of construction of all public improvements (including those improvements that will become owned and maintained by the City at the end of the two-year maintenance period), and shall be supported by a verified engineering estimate and approved by the City engineer. Upon expiration of the warranty period and acceptance by the City as described below, the City shall be responsible for maintenance of those improvements.
D. Transfer of Maintenance. The City will perform an inspection of all public improvements approximately forty-five days before the two-year warranty period expires. The public improvements shall be found to be in a clean, functional condition by the City engineer before acceptance of maintenance responsibility by the City. Transfer of maintenance of public improvements shall occur when the City accepts the improvements at the end of the two-year warranty period.

Finding: Complies with Condition. Maintenance Guarantee equal to fifteen percent of the estimated cost for construction of public improvements as shown in City approved construction plans shall be provided prior to occupancy of the first parcel. The estimated costs shall be supported by a verified engineering estimate approved by the City Engineer. The guarantee shall be in a form identified in Code 17.50.140.A of the Oregon City Municipal Code. The maintenance guarantee shall warrant to the City of Oregon City that construction of public improvements will remain, for a period of twenty-four (24) months from the date of acceptance, free from defects in materials and workmanship. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**
CHAPTER 17.65 MASTER PLANS AND PLANNED UNIT DEVELOPMENT17.65.010 Purpose and intent.
It is the intent of this chapter to foster the growth of major institutions, phased residential, commercial or mixed-use development, and other large-scale development, while identifying and mitigating the impacts of such growth on surrounding properties and public infrastructure. The City recognizes the valuable housing options, services and/or employment opportunities that these developments bring to Oregon City residents. The master plan or planned unit development process is intended to facilitate an efficient and flexible review process for major developments, support innovative and creative land development, and to provide long-term assurance to plan for and execute developments in a phased manner. To facilitate this, the master plan process is structured to allow an applicant to address larger development issues, such as adequacy of infrastructure and transportation capacity, and reserve capacity of the infrastructure and transportation system before expenditure of final design costs. The master plan or planned unit development process is further intended to promote efficiency in land development, maintenance,

street systems and utility networks while providing site layouts that integrate usable and attractive open spaces, site circulation, and the general wellbeing of site users. For the purposes of this chapter planned unit developments are considered the same as master plans.

17.65.040 - Procedure.
Detailed Development Plan. An application for a detailed development plan, is processed through a Type II procedure, as long as it is in conformance with the approved general development plan. Amendments to an approved detailed development plan shall be processed pursuant to OCMC 17.65.080. Once a development has an approved detailed development plan, OCMC **17.62**, Site Plan and Design Review is not required.
D. Concurrent Review. An applicant may concurrently apply for a general development plan and a detailed development plan. Such a concurrent application is reviewed through the highest procedure that applies to any element of the combined application.
Finding: Complies. The applicant has concurrently applied for a general development plan and a detailed development plan

17.65.060 - Detailed development plan.
A. Submittal Requirements.
1. A transportation impact study documenting the on- and off-site transportation impacts, as specified in OCMC 17.65.050.B.1.h.i. If such an analysis was submitted as part of the general development plan process, the scope of the report may be limited to any changes which have occurred during the interim and any information listed below which was not a part of the initial study.
The on-site portion of the analysis shall include the location, dimensions and names of all proposed streets, alleys, other public ways, sidewalks, bike routes and bikeways, pedestrian/bicycle access ways and other pedestrian and bicycle ways, transit streets and facilities, neighborhood activity centers, and easements on and within two hundred fifty feet of the boundaries of the site. The map shall identify existing subdivisions and development and un-subdivided or unpartitioned land ownerships adjacent to the proposed development site and show how existing streets, alleys, sidewalks, bike routes, pedestrian/bicycle access ways and utilities within two hundred fifty feet may be extended to and/or through the proposed development.
2. The location within the development and in the adjoining streets of existing and proposed sewers, water mains, culverts, drain pipes, underground electric, cable television and telephone distribution lines, gas lines, and the location of existing aerial electric, telephone and television cable lines, if any, to be relocated within the development.
3. For portions of the project that would otherwise be subject to site plan and design review, a site plan or plans, to scale, containing the required information identified in OCMC 17.62.040.
4. For residential portions of the project not otherwise subject to site plan and design review, a site plan or plans, to scale, showing the proposed land uses and densities, building locations, lot patterns, circulation patterns, and open space locations and uses.
5. Any other information the Community Development Director deems necessary to show that the proposed development will comply with all of the applicable Chapter 17 requirements.
B. Approval Criteria. The Community Development Director shall approve an application for detailed development plan approval only upon findings that:

1. All development standards and impact mitigation meet the requirements of the approved general development plan, including conditions of approval.
2. Any other applicable zoning regulations that are not addressed in the general development plan are met, unless an adjustment to those regulations has been applied for and is approved. The approval standards applicable to adjustments required as part of a master plan or planned unit development are contained in OCMC 17.65.070.
3. The detailed development plan conforms with the base zone standards, applicable residential design standards, and applicable standards contained in Chapters 17.62, 17.52, 16.12, and 16.08 unless adjusted as provided in OCMC 17.65.070

Finding: Complies as Conditioned. The applicant has concurrently applied for a general development plan and a detailed development plan. For more details regarding public services and facilities required for this DDP, please see findings from 16.12.095.

RECOMMENDATION:
Based on the analysis and findings as described above, Staff concludes that the proposed development located at 1367 Molalla Ave Oregon City, Oregon 97045, identified as Clackamas County Map 3-2E-06DB Tax 3-2E-05DB TL 3200, 3201, 3300, & 3400, 500, 501, 602, can meet the requirements as described in the Oregon City Municipal Code by complying with the Conditions of Approval provided in this report. Therefore, the Community Development Director recommends approval with conditions, based upon the findings and exhibits contained in this staff report.

EXHIBITS:

1. Applicant's Submittal
    a. Detailed Development Plan Narrative
    b. Master Plan Parcel Site Plan
    c. GDP and DDP Plans
    d. Storm Drainage Analysis
    e. Appendix A-0 (Geotech, TIA, Wetland Delineation and Mitigation Plan, Tree Survey, etc.)
    f. Revised Transportation Impact Analysis – March 2026
2. March 12, 2026 Letter from Reah Flisakowski, PE, and Hallie Turk EI, RSP1, DKS Associates
3. Public Comment
    a. Rocky Younger

Masterplan – Detailed Development Plan

GLUA-25-00025-1367 Molalla Ave
CU-25-00001, MAS-25-00001, PARK-25-NROD-25-00012, MAS-25-00002

for

Oregon City Commercial Masterplan
1367 Molalla Ave, Oregon City, OR

Prepared For:

Cypress Acquisitions
8144 Walnut Hill Lane, Suite 1200
Dallas, TX 75231

Prepared By:

Langan Engineering and Environmental Services, LLC
10135 SE Sunnyside Road, Suite 200
Clackamas, OR 97015

Scott G. Franklin
Professional Engineer License No.15979PE

Tessa Mens
Professional Engineer License No. 107649PE

March 3, 2026
749002701

LANGAN

OREGON CITY COMMERCIAL MASTERPLAN
GENERAL DEVELOPMENT PLAN AND DETAILED DEVELOPMENT PLAN
PROJECT NARRATIVE

APPLICANT: Cypress Acquisitions, LLC
8144 Walnut Hill Lane, Suite 1200
Dallas, TX 75231

OWNER:

TL 3200, 3201, 3300, & 3400:	Walmart Inc. 2608 SE J St. Bentonville, AR 72716-5510
TL 500, 501:	Rocky Younger PO Box 1337 Oregon City, OR 97045
TL 602:	Les Schwab 20900 Cooley Rd Bend, OR 97701

REQUEST: Type III
Masterplan General Development Plan Approval
Conditional Use Approval for Drive-Through Use
Maximum Parking Adjustment

Type II
Masterplan Detailed Development Plan Approval
Natural Resource Overlay District (NROD) Approval
Geologic Hazard Overlay
Modification to Certain Public Improvements and Design Standards

LOCATION: 1367 Molalla Ave
Oregon City, OR 97045

BACKGROUND:

<u>Current Land-Use Action</u>

Pre-Application Conference:	April 22, 2025 (Appendix A)
Masterplan Application submittal:	June 27, 2025
Incomplete Notice:	July 24, 2025 (Appendix B)
Neighborhood Meeting:	October 7, 2025 (Appendix C)
Masterplan Resubmittal:	November 14, 2025 – Revised March 2, 2026 (Appendix D)
Project Plans:	November 14, 2025 – Revised March 2, 2026 (Appendix E)

Existing Conditions

The subject property is comprised of an assemblage of properties in the main development area which includes TL 3200, 3201, 3300, & 3400, Map 3 2E 05DB (On-Site) and a proposed public road through TL 500 & 501, Map 3 2E 05D (Off-site) that connects the on-site properties to Beavercreek Rd

The on-site properties are currently vacant and include a mixture of grasslands, scrub brush and scattered groves of trees, with more concentrated tree canopy along the north and south edges and in the southeast corner. The east side of the on-site properties extends into Newell Creek Canyon, is heavily forested, and lies within a geologic hazard area.

Past uses on TL 3200, 3201 and 3300 include a former wrecking yard whose operations started in 1953 and continued until late 2001 when the wrecking yard operations ceased. Environmental studies on these properties indicated low concentrations of petroleum hydrocarbons and/or metals in near surface and shallow soils, and that groundwater underlying the former wrecking yard was not impacted with contaminants of concern.

TL 3400 previously included a gas station and tavern in the vicinity of its southwest corner which has been removed. Environmental remediation occurred at the former gas station site and ODEQ issued a "No Further Action" letter indicating that ODEQ should be notified prior to installation of any groundwater supply wells and any construction or excavation in or around the former gas station pocket of contamination.

The on-site properties generally slope to the south with a portion of the west end of the site sloping to the southwest. The east end of the property includes a steep slope extending into Newell Creek Canyon and is heavily forested.

Proposed Project

The project proposes to develop the on-site properties into a mixed-use development via the Oregon City Masterplan process. Three parcels are proposed in addition to a public street extending from the existing signal at Molalla Ave through the on-site properties and through TL 500/501 to the existing signal at Beavercreek Rd. Uses on the parcels include an approximately 14,600 sf retail building on Parcel A that includes shops and a Quick Service Restaurant at the north end of the building, an approximately 208-unit multi-family residential component on Parcel B, and a Quick Service Restaurant on Parcel D. Parcel C is proposed as a public road through the site. The Quick Service Restaurants (Parcels A & D) include drive-through facilities, which require Conditional Use Approval. Parcels A and D will also seek an adjustment to the maximum parking ratio.

The project seeks Type III Masterplan General Development Plan approval and Type II Detailed Development Plan approval for the proposed public roadway and utility improvements through both the on- and off-site areas, and rough grading of the entire on-site area.

Overall phasing on the Masterplan includes the proposed public roadway and utility improvements as well as on-site rough grading in Phase 1. The remaining parcels are proposed as separate phases, though their development will be market-driven and could be developed separately or simultaneously with each other.

Municipal Code Standards and Requirements: The following sections of the Oregon City Municipal Code are applicable to this land use approval:

Chapter 12.04 Streets Sidewalks and Public Spaces (incl by reference in other sections)
Chapter 12.08 Public And Street Trees
Chapter 13.12 Stormwater Management
Chapter 15.48 Grading, Filling And Excavating
Chapter 16.08 Land Division Process and Standards (incl by reference in other sections)
Chapter 16.12 Min Public Imprvmnts and Design Stds For Develpmnt (incl by reference in other sections)
Chapter 16.20 Property Line Adjustments and Abandonment Process and Standards
Chapter 17.29 MUC Mixed Use Corridor District
Chapter 17.41 Tree Protection, Preservation, Removal And Replanting Standards
Chapter 17.44 Geologic Hazards
Chapter 17.49 Natural Resources Overlay District
Chapter 17.50 Administration And Procedures
Chapter 17.52 Off-Street Parking And Loading
Chapter 17.54 Supplemental Zoning Regulations And Exceptions
Chapter 17.62 Site Plan And Design Review
Chapter 17.65 Master Plans and Planned Unit Development

Following are detailed code responses to all applicable code criteria for Detailed Development Plan Approval as presented in this application:

DETAILED CODE RESPONSES

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CHAPTER 12.04 STREETS SIDEWALKS AND PUBLIC SPACES

12.04.005 - Jurisdiction and management of the public rights-of-way.

A. The City has jurisdiction and exercises regulatory management over all public rights-of-way within the City under authority of the City Charter and state law by issuing separate public works right-of-way permits or permits as part of issued public infrastructure construction plans. No work in the public right-of-way shall be done without the proper permit. Some public rights-of-way within the city are regulated by the State of Oregon Department of Transportation (ODOT) or Clackamas County and as such, any work in these streets shall conform to their respective permitting requirements.

C. The City has jurisdiction and exercises regulatory management over each public right-of-way whether the City has a fee, easement, or other legal interest in the right-of-way. The City has jurisdiction and regulatory management of each right-of-way whether the legal interest in the right-of-way was obtained by grant, dedication, prescription, reservation, condemnation, annexation, foreclosure or other means.

D. No person may occupy or encroach on a public right-of-way without the permission of the City. The City grants permission to use rights-of-way by franchises, licenses and permits.

E. The exercise of jurisdiction and regulatory management of a public right-of-way by the City is not official acceptance of the right-of-way, and does not obligate the City to maintain or repair any part of the right-of-way.

Applicant's Response:
The applicant acknowledges the city's jurisdictional authority over public rights-of-way.

12.04.025 - Driveways.

Driveways shall be reviewed in accordance with OCMC 16.12.035. Driveway requirements may be modified through the procedures in OCMC 16.12.013.

Applicant's Response:
The applicant acknowledges this criterion. Please see our response to proposed driveway design/configuration in OCMC 16.12.035

12.04.030 - Maintenance and repair.

The owner of land abutting the street where a sidewalk has been constructed shall be responsible for maintaining said sidewalk and abutting curb, if any, in good repair.

Applicant's Response:
The applicant acknowledges the maintenance obligations identified in this section.

12.04.032 - Required sidewalk repair.

A. When the Public Works Director determines that repair of a sidewalk is necessary, written notice shall be provided to the owner of property adjacent to the defective sidewalk.

B. The notice shall require the owner of the property adjacent to the defective sidewalk to complete the repair of the sidewalk within ninety days after the service of notice. The notice shall also state that if the repair is not made by the owner, the City may do the work and the cost of the work shall be assessed against the property adjacent to the sidewalk.

1. All sidewalks hereafter constructed in the City on improved streets shall be constructed to city standards and widths required in the Oregon City Transportation System Plan and OCMC 16.12. Sidewalks and curbs are to be constructed according to plans and specifications provided by the City Engineer.

2. Sidewalks constructed on unimproved streets shall be constructed of concrete according to lines and grades established by the City Engineer. On unimproved streets, curbs do not have to be constructed.

C. The Public Works Director shall cause a copy of the notice to be served personally upon the owner of the property adjacent to the defective sidewalk, or the notice may be served by registered or certified mail, return receipt requested. If after diligent search the owner is not discovered, the Public Works Director shall cause a copy of the notice to be posted in a conspicuous place on the property, and such posting shall have the same effect as service of notice by mail or by personal service upon the owner of the property.

D. The person serving the notice shall file with the City recorder a statement stating the time, place and manner of service or notice.

Applicant's Response:
The applicant acknowledges the repair obligations and processes identified in this section.

12.04.050 - Retaining walls—Required.

Every owner of a lot within the City, abutting upon an improved street, where the surface of the lot or tract of land is above the surface of the improved street and where the soil or earth from the lot, or tract of land is liable to, or does slide or fall into the street or upon the sidewalk, or both, shall build a retaining wall, the outer side of which shall be on the line separating the lot, or tract of land from the improved street, and the wall shall be so constructed as to prevent the soil or earth from the lot or tract of land from falling or sliding into the street or upon the sidewalk, or both, and the owner of any such property shall keep the wall in good repair.

Applicant's Response:
The applicant acknowledges this section. This Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information, including any proposed retaining walls adjacent to public right-of-way will be included with the DDP applications for each parcel.

12.04.100 - Excavations—Restoration of pavement.

Whenever any excavation shall have been made in any pavement or other street improvement on any street or alley in the City for any purpose whatsoever under the permit granted by the engineer, it shall be the duty of the person making the excavation to restore the pavement in accordance with the City of

Oregon City Public Works Pavement Cut Standard in effect at the time a right-of-way permit is granted. The City Commission may adopt and modify the City of Oregon City Public Works Pavement Cut Standards by resolution as necessary to implement the requirements of this chapter.

Applicant's Response:
The applicant acknowledges the repair obligations identified in this section. Any necessary repair or restoration of existing streets will be addressed during the detailed design of the proposed improvements.

12.04.120 - Obstructions—Permit required.

A. Permanent Obstructions. It is unlawful for any person to place, put or maintain any obstruction, other than a temporary obstruction, as defined in subsection B. of this section, in any public street or alley in the City, without obtaining approval for a right-of-way permit from the City Commission by passage of a resolution.

1. The City Engineer shall provide applicants with an application form outlining the minimum submittal requirements.

2. The applicant shall submit at least the following information in the permitting process in order to allow the City Commission to adequately consider whether to allow the placement of an obstruction and whether any conditions may be attached:

a. Site plan showing right-of-way, utilities, driveways as directed by staff;

b. Sight distance per OCMC 10.32, Traffic Sight Obstructions;

c. Traffic control plan including parking per Manual on Uniform Traffic Control Devices (MUTCD);

d. Alternative routes if necessary;

e. Minimizing obstruction area; and

f. Hold harmless/maintenance agreement.

3. If the City Commission adopts a resolution allowing the placement of a permanent obstruction in the right-of-way, the City Engineer shall issue a right-of-way permit with any conditions deemed necessary by the City Commission.

B. Temporary Obstructions.

1. A "temporary obstruction" is defined as an object placed in a public street, road or alley for a period of not more than sixty consecutive days. A "temporary obstruction" includes, but is not limited to, moving containers and debris dumpsters.

2. The City Engineer, or designee, is authorized to grant a permit for a temporary obstruction.

3. The City Engineer shall provide applicants with an application form outlining the minimum submittal requirements.

4. The applicant shall submit, and the City Engineer, or designee, shall consider, at least the following items in the permitting process. Additional information may be required in the discretion of the City Engineer:

a. Site plan showing right-of-way, utilities, driveways as directed by staff;

b. Sight distance per OCMC 10.32, Traffic Sight Obstructions;

c. Traffic control plan including parking per Manual on Uniform Traffic Control Devices (MUTCD);
d. Alternative routes if necessary;
e. Minimizing obstruction area; and
f. Hold harmless/maintenance agreement.

5. In determining whether to issue a right-of-way permit to allow a temporary obstruction, the City Engineer may issue such a permit only after finding that the following criteria have been satisfied:
a. The obstruction will not unreasonably impair the safety of people using the right-of-way and nearby residents;
b. The obstruction will not unreasonably hinder the efficiency of traffic affected by the obstruction;
c. No alternative locations are available that would not require use of the public right-of-way; and
d. Any other factor that the City Engineer deems relevant.

6. The permittee shall post a weatherproof copy of the temporary obstruction permit in plain view from the right-of-way.

C. Fees. The fee for obtaining a right-of-way permit for either a permanent obstruction or a temporary obstruction shall be set by resolution of the City Commission.

Applicant's Response:
The applicant acknowledges the permanent and temporary obstruction provisions of this section.

12.04.150 - Street and alley vacations—Cost.
At the time of filing a petition for vacation of a street, alley or any part thereof, a fee as established by City Commission resolution shall be paid to the City. The City Commission, upon hearing such petition, may grant the same in whole or in part, or may deny the same in whole or in part, or may grant the same with such reservations as would appear to be for the public interest, including reservations pertaining to the maintenance and use of underground public utilities in the portion vacated.

Applicant's Response:
The proposed development does not anticipate the need to vacate streets or alleys.

12.04.170 - Street design—Purpose and general provisions.
All development shall be in conformance with the city's public facility master plans, public works policies, standard drawings and engineering specifications. All streets shall be reviewed and approved by the city engineer prior to construction. All streets and driveway connections to another jurisdiction's facility or right-of-way must be reviewed by the appropriate jurisdiction as a condition of the preliminary plat or site planning and when required by law or intergovernmental agreement shall be approved by the appropriate jurisdiction.

Applicant's Response:
The applicant acknowledges the street design standards identified in this section.

12.04.270 - Standard construction specifications.

The workmanship and materials for any work performed under permits issued per this chapter shall be in accordance with the current edition of the "Oregon Standard Specifications for Construction" as prepared by the Oregon Department of Transportation (ODOT) and the Oregon Chapter of American Public Works Association (APWA) and as modified and adopted by the City in accordance with this ordinance, in effect at the time of application. The exception to this requirement is where this chapter and the Public Works Street Standard Drawings provide other design details, in which case the requirements of this chapter and the Public Works Street Standard Drawings shall control. In the case of work within ODOT or Clackamas County rights-of-way, work shall be in conformance with their respective construction standards.

Applicant's Response:
The applicant acknowledges the standard construction specifications identified in this section.

CHAPTER 12.08 PUBLIC AND STREET TREES

12.08.010 - Purpose.

The purpose of this chapter is to:

A. Develop tree-lined streets to protect the living quality and beautify the city;

B. Establish physical separation between pedestrians and vehicular traffic;

C. Create opportunities for solar shading;

D. Improve air and water quality; and

E. Increase the community tree canopy and resource.

Applicant's Response:
The applicant acknowledges the purpose of this chapter.

12.08.015 Street tree selection, planting and maintenance requirements.
All development shall provide street trees adjacent to all street frontages. Species and locations of trees shall be selected based upon vision clearance requirements, but shall in all cases be selected from the Oregon City Street Tree List, an approved street tree list for a jurisdiction in the Metropolitan region, or be approved by a certified arborist unless otherwise approved pursuant to this section. If a setback sidewalk has already been constructed or the public works department determines that the forthcoming street design shall include a setback sidewalk, then all street trees shall be installed with a planting strip or within tree wells. If existing street design includes a curb-tight sidewalk, then all street trees shall be placed according to OCMC 12.08.035.C.

A. One street tree shall be planted for every thirty-five feet of property frontage. The tree spacing shall be evenly distributed throughout the total development frontage to meet the clearance distances required in subsection B below. The community development director may approve an alternative street tree plan, or accept fee-in-lieu of planting pursuant to OCMC 12.08.035, if site or other constraints prevent meeting the required total number of tree plantings.

B. The following clearance distances shall be maintained when planting trees:

1. Fifteen feet from streetlights;

2. Five feet from fire hydrants;

3. Twenty feet from intersections;

4. Five feet from all public utilities (i.e. sewer, storm and water lines, utility meters, etc.).

C. All street trees planted in conjunction with development shall be a minimum of two inches in caliper at six inches above the root crown and installed to city specifications. Larger caliper size trees may be approved if recommended by a certified arborist or registered landscape architect.

D. All established trees shall be pruned tight to the trunk to a height that provides adequate clearance for street cleaning equipment and ensures ADA complaint clearance for pedestrians.

E. All trees planted within the right-of-way shall be planted with root barriers at least eighteen inches in depth adjacent to the sidewalk and curb to ensure proper root growth and reduce potential damage to sidewalks, curbs and gutters.

F. All trees planted beneath powerlines shall be selected based on what is appropriate for the location. In addition, the tree species shall be approved by the associated franchise powerline utility company.

G. Tree species, spacing and selection for stormwater facilities in the public right-of-way and in storm water facilities shall conform to requirements of OCMC 13.12 and the adopted stormwater and grading design standards and be approved by the city engineer.

H. Any public or street trees planted within the natural resource overlay district shall conform to the applicable requirements of OCMC 17.49, Natural Resources Overlay District (NROD).

Applicant's Response:
The applicant acknowledges the criterion in this section. Please see the proposed street trees shown on the landscape plan, Sht DDP-C1.1.

12.08.025 General tree maintenance
Abutting property owners shall be responsible for the maintenance and replacement of street trees and planting strips. Topping of trees is prohibited, unless under recommendation of a certified arborist. Trees shall be trimmed appropriately. Maintenance shall include watering during dry periods, trimming of established trees to remove dead branches and dangerous limbs and to maintain a minimum eight-foot clearance above all sidewalks, ten-foot clearance in clear vision areas pursuant to OCMC 10.32, and fourteen-foot clearance above the street. Planter strips shall be kept clear of weeds, obstructing vegetation and trash.

Applicant's Response:
The applicant acknowledges the criterion in this section.

12.08.030 Public property tree maintenance.
The city shall have the right to plant, prune, maintain and remove trees, plants and shrubs in all public rights-of-way and public grounds, as may be necessary to ensure public safety or to preserve and enhance the symmetry or other desirable characteristics of such public areas. The public works department and parks and recreation department may recommend to the community development director the removal of any tree or part thereof which is in an unsafe condition or may be injurious to above or below-ground public utilities, structures or other public improvements. Removed trees shall be replaced in accordance with this chapter or the mitigation requirements of the OCMC 17.49, Natural Resources Overlay District (NROD), if the tree to be removed is within the NROD.

Applicant's Response:
The applicant acknowledges the criterion in this section.

12.08.035 Tree removal and replacement.
Existing street trees, trees in the right-of-way, and trees on public property shall be retained and protected during development unless removal is specified as part of a land use approval or in

conjunction with a public capital improvement project, in accordance with OCMC 17.41. Tree removal shall be mitigated by the following:

A. A dead, diseased, or hazardous street tree, as determined by a certified arborist and approved by the city manager or designee, may be removed if replaced with one new tree for each dead, diseased, or hazardous tree that is removed.

   1. Hazardous trees which have raised the adjacent sidewalk in a manner which does not comply with the Americans with Disabilities Act may be removed and replaced without a report from a certified arborist, as defined in OCMC 17.04.082.

   2. All replacement street trees under this section shall have a minimum one and one-half inch caliper trunk measured six inches above the root crown.

B. Removed trees that are not determined to be dead, diseased, or hazardous shall be replaced in accordance with Table 12.08.035. All replaced street trees shall have a minimum one and one-half inch caliper trunk measured six inches above the root crown.

Table 12.08.035

Replacement Schedule for Trees Determined to be Dead, Diseased or Hazardous by a Certified Arborist		Replacement Schedule for Trees Not Determined to be Dead, Diseased or Hazardous by a Certified Arborist	
Diameter of tree to be Removed (Inches of diameter at 4-ft. height)	Number of Replacement Trees to be Planted	Diameter of tree to be Removed (Inches of diameter at 4-ft. height)	Number of Replacement Trees to be Planted
Any Diameter	1 Tree	Less than 6"	1 Tree
		6" to 12"	2 Trees
		13" to 18"	3 Trees
		19" to 24"	4 Trees
		25" to 30"	5 Trees
		31" and over	8 Trees

C. Removed trees shall be replaced by approved tree species:

   1. Within the right-of-way abutting the same frontage; and

   2. Subject to the requirements under OCMC 12.08.015.

D. If an applicant can demonstrate to the satisfaction of the city manager or designee that a sufficient location to replant tree(s) according to subsection C is not available, the city manager or designee may allow:

1. Installation of replacement tree(s) in one of the following alternative locations:

a. Within the right-of-way abutting another property, with abutting property owner approval; or

b. On public property, with city manager or designee approval; or

c. Within ten feet of the right-of-way in the abutting private yard; or

2. As a last resort, a fee in lieu of replacing the tree(s), subject to the following:

a. The applicant must demonstrate, to the satisfaction of the city manager or designee, that none of the alternative replanting options in section D.1 is sufficient for replanting.

b. Is to be placed into a city fund dedicated to obtaining trees, planting trees, and/or tree education in Oregon City.

E. Exceptions:

1. Trees that are listed as invasive non-native, nuisance, prohibited, or noxious vegetation species as defined in OCMC 17.04.605, may be removed without replacement or fee in lieu of replacement.

2. Trees in planter strips three feet or less in width may be removed without replacement or fee in lieu of replacement.

Applicant's Response:
Street trees do not currently exist along the property's Molalla Ave frontage or within the Beavercreek Rd street connection. The 2013 Arborist Report prepared by Walter H. Knapp & Associates, LLC identified overall site tree mitigation based on OCMC 17.41. however, OCMC 12.08.035 governs tree mitigation for public roadways. An update tot eh Arborist Report will be provided together with the project detailed construction plans.

12.08.045 Gifts, fee-in-lieu of planting, and funding.
The city of Oregon City may accept gifts, which are specifically designated for the purpose of planting or maintaining trees within the city. The community development director may allow a fee-in-lieu of planting the tree(s) to be placed into a city fund dedicated to planting trees in Oregon City. The community development director may determine the type, caliper and species of the trees purchased with the fund. The cost of each tree may be adjusted annually based upon current market prices for materials and labor as calculated by the community development director. A separate fund shall be established and maintained for revenues and expenditures created by activities specified in this chapter. The natural resources committee shall have authority on behalf of the city to seek grants and alternative funding for tree projects. Funds from such grant awards shall be administered by the city pursuant to this section.

Applicant's Response:

The applicant acknowledges the criterion in this section.

12.08.050 Violation—Penalty.

The violation of any provision of this chapter shall constitute a civil infraction, subject to code enforcement procedures of OCMC 1.16 and/or OCMC 1.20.

Applicant's Response:

The applicant acknowledges the criterion in this section.

CHAPTER 13.12 STORMWATER MANAGEMENT

13.12.050 - Applicability and exemptions.

This chapter establishes performance standards for stormwater conveyance, quantity and quality. Additional performance standards for erosion prevention and sediment control are established in OCMC 17.47.

A. Stormwater Conveyance. The stormwater conveyance requirements of this chapter shall apply to all stormwater systems constructed with any development activity, except as follows:

1. The conveyance facilities are located entirely on one privately owned parcel;

2. The conveyance facilities are privately maintained; and

3. The conveyance facilities receive no stormwater runoff from outside the parcel's property limits.

Those facilities exempted from the stormwater conveyance requirements by the above subsection will remain subject to the requirements of the Oregon Uniform Plumbing Code. Those exempted facilities shall be reviewed by the Building Official.

Applicant's Response:
The applicant acknowledges the applicability of this chapter.

B. Water Quality and Flow Control. The water quality and flow control requirements of this chapter shall apply to the following proposed uses or developments, unless exempted under subsection C:

1. Activities located wholly or partially within water quality resource areas pursuant to OCMC 17.49 that will result in the creation of more than five hundred square feet of impervious surface within the NROD or will disturb more than one thousand square feet of existing impervious surface within the NROD as part of a commercial or industrial redevelopment project. These square footage measurements will be considered cumulative for any given five-year period; or

2. Activities that create or replace more than five thousand square feet of impervious surface, cumulated over any given five-year period.

Applicant's Response:
The applicant acknowledges the applicability of this section.

C. Exemptions. The following exemptions to subsection B of this section apply:

1. An exemption to the flow control requirements of this chapter will be granted when the development site discharges to the Willamette River, Clackamas River or Abernethy Creek; and either lies within the one hundred-year floodplain or is up to ten feet above the design flood elevation as defined in OCMC 17.42, provided that the following conditions are met:

a. The project site is drained by a conveyance system that is comprised entirely of manmade elements (e.g. pipes, ditches, culverts outfalls, outfall protection, etc.) and extends to the ordinary high water line of the exempt receiving water; and

b. The conveyance system between the project site and the exempt receiving water has sufficient hydraulic capacity and erosion stabilization measures to convey discharges from the proposed conditions of the project site and the existing conditions from non-project areas from which runoff is collected.

2. Projects in the following categories are generally exempt from the water quality and flow control requirements:

a. Stream enhancement or restoration projects approved by the City.

b. Farming practices as defined by ORS 30.960 and farm use as defined in ORS 214.000; except that buildings associated with farm practices and farm use are subject to the requirements of this chapter.

c. Actions by a public utility or any other governmental agency to remove or alleviate an emergency condition.

d. Road and parking area preservation/maintenance projects such as pothole and square cut patching, surface sealing, replacing or overlaying of existing asphalt or concrete pavement, provided the preservation/maintenance activity does not expand the existing area of impervious coverage above the thresholds in subsection B of this section.

e. Pedestrian and bicycle improvements (sidewalks, trails, pathways, and bicycle paths/lands) where no other impervious surfaces are created or replaced, built to direct stormwater runoff to adjacent vegetated areas.

f. Underground utility projects that replace the ground surface with in-kind material or materials with similar runoff characteristics.

g. Maintenance or repair of existing utilities.

Applicant's Response:
The applicant understands that the proposed development is not exempt from the requirements of this chapter and must adhere to applicable provisions of this chapter.

D. Uses Requiring Additional Management Practices. In addition to any other applicable requirements of this chapter, the following uses are subject to additional management practices, as defined in the Public Works Stormwater and Grading Design Standards:

1. Bulk petroleum storage facilities;

2. Above ground storage of liquid materials;

3. Solid waste storage areas, containers, and trash compactors for commercial, industrial, or multi-family uses;

4. Exterior storage of bulk construction materials;

5. Material transfer areas and loading docks;

6. Equipment and/or vehicle washing facilities;

7. Development on land with suspected or known contamination;

8. Covered vehicle parking for commercial or industrial uses;

9. Industrial or commercial uses locating in high traffic areas, defined as average daily count trip of two thousand five hundred or more trips per day; and

10. Land uses subject to DEQ 1200-Z Industrial Stormwater Permit Requirements.

Applicant's Response:
The applicant acknowledges the applicability of this section. Solid waste storage areas associated with Parcel A, B, and D uses will be addressed with their respective Detailed Development Plan and construction plan submittals. Portions of the main on-site subject properties include historic uses that resulted in environmental contamination (former wrecking yard on TL 3200, 3201, & 3300 and former gas station on TL 3400 near Molalla Ave). Environmental cleanup associated with these prior uses will

be addressed with preparation of detailed construction plans for the proposed rough grading of the site. Environmental cleanup will be made in compliance with Oregon Department of Environmental Quality requirements.

13.12.080 - Submittal requirements.
A. Applications subject to stormwater conveyance, water quality, and/or flow control requirements of this chapter shall prepare engineered drainage plans, drainage reports, and design flow calculation reports in compliance with the submittal requirements of the Public Works Stormwater and Grading Design Standards.

B. Each project site, which may be composed of one or more contiguous parcels of land, shall have a separate valid city approved plan and report before proceeding with construction.

Applicant's Response:
The applicant acknowledges the submittal requirements of this section. A final Stormwater Management Report will accompany the construction plan submittal for the proposed DDP improvements. The proposed stormwater management facility in the vicinity of the southeast corner of Parcel B is designed to treat Parcel A, B, and the proposed public street. When Parcels A and B submit their respective DDP and construction permit applications, they will need to provide documentation showing compliance with the assumptions and calculations in the Masterplan Stormwater Management Report. Parcel D will need to provide their own stormwater management facility that by-passes the main public stormwater facility serving the proposed road and Parcels A and B.

13.12.090 - Approval criteria for engineered drainage plans and drainage report.
An engineered drainage plan and/or drainage report shall be approved only upon making the following findings:
A. The plan and report demonstrate how the proposed development and stormwater facilities will accomplish the purpose statements of this chapter.

B. The plan and report meet the requirements of the Public Works Stormwater and Grading Design Standards adopted by resolution under OCMC 13.12.020.

C. The storm drainage design within the proposed development includes provisions to adequately control runoff from all public and private streets and roof, footing, and area drains and ensures future extension of the current drainage system.

D. Streambank erosion protection is provided where stormwater, directly or indirectly, discharges to open channels or streams.

E. Specific operation and maintenance measures are proposed that ensure that the proposed stormwater quantity control facilities will be properly operated and maintained.

Applicant's Response:
The Preliminary Stormwater Management Report for the proposed General Development Plan and Detailed Development Plan applications is included in Appendix F. This report shows water quality treatment and stormwater detention are provided with calculations based on the Clackamas County Water and Environment Services BMP Sizing Tool. A Final Report will accompany the construction plan submittal and will be review by Public works prior to issuance of construction permits.

13.12.100 - Alternative materials, alternative design and methods of construction.
The provisions of this chapter are not intended to prevent the use of any material, alternate design or method of construction not specifically prescribed by this chapter or the Public Works Stormwater and Grading Design Standards, provided any alternate has been approved and its use authorized by the City Engineer. The City Engineer may approve any such alternate, provided that the City Engineer finds that the proposed design is satisfactory and complies with the intent of this chapter and that the material, method, or work offered is, for the purpose intended, at least the equivalent of that prescribed by this chapter in effectiveness, suitability, strength, durability and safety. The City Engineer shall require that sufficient evidence or proof be submitted to substantiate any claims that may be made regarding its use. The details of any action granting approval of an alternate shall be recorded and entered in the City files.

Applicant's Response:
Alternative materials, design, or construction methods are not expected; however, final design and construction plan preparation will follow the masterplan land-use review process. In the event alternative materials, design or construction methods are proposed, the applicant (or each of the individual parcels) will follow the city's process for approving same.

13.12.110 - Transfer of engineering responsibility.
Project drainage plans shall always have a project engineer. If the project engineer is changed during the course of the work, the City shall be notified in writing and the work shall be stopped until the replacement engineer has agreed to accept the responsibilities of the project engineer. The new project engineer shall provide written notice of accepting project responsibility to the City within seventy-two hours of accepting the position as project engineer.

Applicant's Response:
The applicant acknowledges the applicability of this section.

13.12.120 - Standard construction specifications.
The workmanship and materials shall be in accordance with the current edition of the "Standard Specifications for Public Works Construction," as prepared by the Oregon Chapter of American Public Works Association (APWA) and as modified and adopted by the City, in effect at the time of application. The exception to this requirement is where this chapter and the Public Works Stormwater and Grading Design Standards provide other design details, in which case the requirements of this chapter and the Public Works Stormwater and Grading Design Standards shall be complied with.

Applicant's Response:
The applicant acknowledges the applicability of this section.

13.12.140 - Maintenance of public stormwater facilities.

A. A stormwater facility that receives stormwater runoff from a public right-of-way shall be a public facility. Upon expiration of the warranty period and acceptance by the City as described below, the City shall be responsible for maintenance of those public stormwater facilities. Access for maintenance of the stormwater facilities shall be provided to the City through the granting of a stormwater easement or other means acceptable to the City.

Applicant's Response:
The applicant acknowledges the applicability of this section.

B. Responsibility for maintenance of stormwater facilities including all landscaping, irrigation systems, structures and appurtenances shall remain with the property owner/developer for two years (known as the warranty period). The owner/developer shall provide the City a separate two-year landscaping maintenance surety bond for one hundred ten percent of the landscaping cost. Transfer of maintenance of stormwater conveyance systems shall occur when the City accepts the stormwater conveyance system.

Applicant's Response:
The applicant acknowledges the applicability of this section.

C. The City will perform an inspection of the development's entire publicly maintained stormwater system approximately forty-five days before the two-year warranty period expires. The stormwater system shall be found to be in a clean, functional condition by the City engineer before acceptance of maintenance responsibility by the City.

Applicant's Response:
The applicant acknowledges the applicability of this section.

13.12.145 - Maintenance of private stormwater facilities.

A. An applicant shall submit an operation and maintenance plan for each proposed stormwater facilities, unless exempted in the Public Works Stormwater and Grading Design Standards. The information in the operation and maintenance plan shall satisfy the requirements of the Public Works Stormwater and Grading Design Standards.

B. Private owners are required to inspect and maintain stormwater facilities on their property in accordance with an approved operation and maintenance plan. A maintenance log is required to document facility inspections and specific maintenance activities. The log shall be available to City inspection staff upon request.

C. Failure to operate or maintain a stormwater facility according to the operation and maintenance plan may result in an enforcement action under Section 13.12.150.

Applicant's Response:
The proposed stormwater management facility serves Parcels A, B, and the proposed public street. This facility is a public facility. Parcel D will provide their own private stormwater management

facility within Parcel D and will be required to comply with the criterion in this section. The proposed Masterplan DDP Preliminary Grading and Drainage Plan, Sht DDP-C2.0 shows a separate storm bypass line stubbed to Parcel D that connects to the proposed storm line downstream of the public stormwater management facility.

13.12.170 - Permits from other jurisdictions.

A. The Oregon State Department of Environmental Quality (DEQ) currently issues NPDES 1200-C permits for projects that cover areas of one acre or greater. No permit shall be issued for projects of this size (or any other size as modified by DEQ) without a copy of said DEQ permit being on file with Oregon City. DEQ is responsible for policing its own permits; however, if City personnel observe conditions that are believed to be in violation of any such permit, and cannot get corrections made, the City will bring such conditions to the attention of the appropriate DEQ representatives.

Applicant's Response:
The applicant acknowledges the applicability of this section. Application for NPDES 1200-C permit approval will be part of the projects detailed construction plan preparation.

B. Projects may require Oregon State Division of State Lands (DSL) and/or United States Army Corps of Engineers (USACE) permits. If such permits are required, no permission to construct will be granted until such a time as a copy of such permit is on file with the City or notice is received from those agencies that a permit is not required. DSL/USACE is responsible for enforcing its own permits; however, if City personnel observe conditions that are believed to be in violation of any such permit, and cannot get corrections made, the City will bring such conditions to the attention of the appropriate DSL/USACE representatives.

Applicant's Response:
The proposed project does not impact any wetlands or Waters of the State and no ODSL or Corps of Engineers permits are expected.

C. Projects may require Oregon State Department of Fish and Wildlife (ODFW) permits. When ODFW permits are required, no work will be authorized until the receipt of a copy of the ODFW permit. ODFW is responsible for policing its own permits; however, if City personnel observe conditions that are believed to be in violation of any such permit, and cannot get corrections made, the City will bring such conditions to the attention of the appropriate ODFW representatives.

Applicant's Response:
The proposed project does not include any activity needing ODFW permits.

CHAPTER 15.48 GRADING, FILLING AND EXCAVATING

15.48.030 Applicability—Grading permit required.

A. A city-issued grading permit shall be required before the commencement of any of the following filling or grading activities:

1. Grading activities in excess of ten cubic yards of earth;

2. Grading activities which may result in the diversion of existing drainage courses, both natural and man-made, from their natural point of entry or exit from the grading site;

3. Grading and paving activities resulting in the creation of impervious surfaces greater than two thousand square feet or more in area;

4. Any excavation beyond the limits of a basement or footing excavation, having an unsupported soil height greater than five feet after the completion of such a structure; or

5. Grading activities involving the clearing or disturbance of one-half acres (twenty-one thousand seven hundred eighty square feet) or more of land.

Applicant's Response:
The applicant acknowledges the applicability of this chapter.

15.48.040 - Grading permit exemptions.

The following filling and grading activities shall not require the issuance of a grading permit:

A. Excavation for utilities, or for wells or tunnels allowed under separate permit by other governmental agencies;

B. An excavation below finished grade for basements and footings of a building, retaining wall or other structure authorized by a valid building permit. The placement of any fill material removed from such an excavation requires a grading permit if:

1. It exceeds fifty cubic yards,

2. More than ten cubic yards are removed from the site, or

3. The fill is placed on the site to a depth greater than one foot;

C. Farming practices as defined in ORS 30.930 and farm uses as defined in ORS 215.203, except that buildings associated with farm practices and farm uses are subject to the requirements of this chapter;

D. Excavation for cemetery graves;

E. Sandbagging, diking, ditching, filling or similar work when done to protect life or property during an emergency;

F. Repaving of existing paved surfaces that does not alter existing drainage patterns;

G. Maintenance work on public roads performed under the direction of the city, Clackamas County or Oregon State Department of Transportation personnel.

Applicant's Response:
The applicant acknowledges the need for a grading permit and is not seeking an exemption for proposed Detailed Development Plan rough grading operations.

15.48.090 Submittal requirements.

An engineered grading plan or an abbreviated grading plan shall be prepared in compliance with the submittal requirements of the Public Works Stormwater and Grading Design Standards whenever a city approved grading permit is required. In addition, a geotechnical engineering report and/or residential lot grading plan may be required pursuant to the criteria listed below.

A. Abbreviated Grading Plan. The city shall allow the applicant to submit an abbreviated grading plan in compliance with the submittal requirements of the Public Works Stormwater and Grading Design Standards if the following criteria are met:

1. No portion of the proposed site is within the flood management area overlay district pursuant to Chapter 17.42, the unstable soils and hillside constraints overlay district pursuant to Chapter 17.44, or a water quality resource area pursuant to Chapter 17.49; and

2. The proposed filling or grading activity does not involve more than fifty cubic yards of earth.

B. Engineered Grading Plan. The city shall require an engineered grading plan in compliance with the submittal requirements of the Public Works Stormwater and Grading Design Standards to be prepared by a professional engineer if the proposed activities do not qualify for abbreviated grading plan.

C. Geotechnical Engineering Report. The city shall require a geotechnical engineering report in compliance with the minimum report requirements of the Public Works Stormwater and Grading Design Standards to be prepared by a professional engineer who specializes in geotechnical work when any of the following site conditions may exist in the development area:

1. When any publicly maintained facility (structure, street, pond, utility, park, etc.) will be supported by any engineered fill;

2. When an embankment for a stormwater pond is created by the placement of fill;

3. When, by excavation, the soils remaining in place are greater than three feet high and less than twenty feet wide.

D .Residential Lot Grading Plan. The city shall require a residential lot grading plan in compliance with the minimum report requirements of the Public Works Stormwater and Grading Design Standards to be prepared by a professional engineer for all land divisions creating new residential building lots or where a public improvement project is required to provide access to an existing residential lot.

Applicant's Response:

Please see the Detailed Development Plan Shts DDP-C0.1 through C3.0 for planning level plans that will form the basis of formal construction plans for the proposed grading permit. Final construction Permit plans will utilize these preliminary plans as a basis for our detailed construction plan submittal following the project's Masterplan GDP/DDP decision.

Please see the geotechnical report prepared by Terracon, dated September 22, 2022, in Appendix G. Cypress Equities has acquired the geotechnical report from a previous development application by the Wolff Company LLC and has coordinated with Terracon for a formal update to accompany the proposed construction plans for proposed DDP rough grading. Based on Cypress' coordination with

Terracon, the recommendations for Cypress will be the same as with Wolff (which were the same as previous development attempts on the project). The report includes a description of site conditions, prior geotechnical reports, engineering geology update, seismic considerations, slope stability, geotechnical overview, earthworks, shallow foundations, floor slabs, lateral earth pressures, soldier pile walls, and pavements.

Key recommendations of the geotechnical report include a 35-foot geologic hazard setback from the top of the steep slope as well as specific retaining wall recommendations addressing slope stability vs historical landslides. The geologic hazard setback is included on the proposed GDP and DDP plans. The retaining walls mentioned in the report will be a part of the DDP and construction plans for Parcel B following the current GDP/DDP application.

CHAPTER 16.08 LAND DIVISIONS PROCESS AND STANDARDS

16.08.010 Purpose and general provisions.

A. Applicability. This chapter controls the process and approval standards applicable to land divisions including:

1. Partitions, defined as a single division of land into two or three lots,
2. Subdivisions, defined as a single division of land into four or more lots,
3. Master plans and planned unit developments,
4. Expedited land divisions, and/or
5. Middle housing land divisions.

B. Approval of a land division shall be granted only upon determination by the city that all applicable requirements of this title, ORS Chapter 92, the applicable zoning designation, applicable overlay districts, and OCMC 12.08, 13.12, 15.48, 16.12, 17.41, and 17.50 of the Oregon City Municipal Code are met or can be met with conditions of approval.

C. Minor partitions and subdivisions shall generally follow a Type II process and master plans/planned unit developments shall be processed as a Type III process pursuant to OCMC 17.50. However, if an applicant opts to process a subdivision as an expedited land division or middle housing land division, the city shall follow the decision-making process provided by state law and apply the applicable approval standards set forth in this code and elsewhere.

D. Purpose. The purpose of this chapter is to provide a speedy review and decision-making process with relatively clear and objective criteria indicating little discretion, with little opportunity to deviate from the city's dimensional standards. If an applicant wishes greater flexibility in lot pattern or layout, phasing of development, or relief from dimensional or public improvement standards, the appropriate procedure would be a master plan/planned unit development pursuant to OCMC 17.65 or an additional application for a variance(s) pursuant to OCMC 17.60.

E. Process Overview. Land division review process requires a two-step process: preliminary and final plats. The preliminary plat, reviewed through a Type II process, provides all of the essential information about the proposal, including layout, number and pattern of lots, location of all existing structures and improvements, significant natural features, development schedule and any other required information. The final plat shall be processed as identified in OCMC 16.08.100.

Applicant's Response:

The project proposes a Property Line Adjustment, which is governed by OCMC 16.20. OCMC 16.08 is not applicable to the proposed project. Please see our responses to OCMC 16.20. The main subject property consists of three legal lots. One of the parcels (likely Parcel B) can include the proposed public street and dedicate the proposed public street by deed. The applicant understands the Property Line Adjustment will occur as a separate Type I application and can be completed prior to DDP submittal of Parcels A, B, and D.

CHAPTER 16.12 MINIMUM PUBLIC IMPROVEMENTS AND DESIGN STANDARDS FOR DEVELOPMENT

16.12.010 - Purpose and general provisions.

All development shall be in conformance with the policies and design standards established by this chapter and with applicable standards in the City's public facility master plans and City design standards and specifications. In reviewing applications for development, the City Engineer shall take into consideration any approved development and the remaining development potential of adjacent properties. All street, water, sanitary sewer, storm drainage and utility plans associated with any development shall be reviewed and approved by the City Engineer prior to construction. All streets, driveways or storm drainage connections to another jurisdiction's facility or right-of-way shall be reviewed by the appropriate jurisdiction as a condition of the preliminary plat and when required by law or intergovernmental agreement shall be approved by the appropriate jurisdiction.

Applicant's Response:
The applicant acknowledges the purpose and general provisions of this chapter.

16.12.011 - Applicability.

A. Compliance with this chapter is required for all development including land divisions, site plan and design review, master plan, detailed development plan and conditional use applications and all public improvements. Minor Site Plan and Design Review applications shall not be subject to this chapter unless improvements are proposed within the right-of-way, or as otherwise provided in this chapter.

B. Compliance with this chapter is also required for new construction or additions which exceed fifty percent of the existing square footage of all 3-4 plexes, single and two-family dwellings living space. Garages, carports, sheds, and porches may not be included in the calculation if these spaces are not living spaces. Accessory dwelling units are not subject to compliance with this chapter. All applicable 3-4 plexes, single and two -family dwellings shall provide any necessary dedications, easements or agreements as identified in the transportation system plan and this chapter, subject to constitutional limitations. In addition, the street frontage shall be improved to include the following priorities for improvements:

1. *Improve street pavement, construct curbs, gutters, sidewalks and planter strips; and*
2. *Plant street trees.*

The cost of compliance with the standards identified in 16.12.011.B.1 and 16.12.011.B.2 is calculated based on the square footage valuation from the State of Oregon Building Codes Division and limited to ten percent of the total construction costs. The value of the alterations and improvements is based on the total construction costs for a complete project rather than costs of various project component parts subject to individual building permits. The entire proposed construction project cost includes engineering and consulting fees and construction costs. It does not include permit fees, recording fees, or any work associated with drafting or recording dedications or easements.

Applicant's Response:
The applicant acknowledges the applicability of this chapter.

16.12.012 - Jurisdiction and management of the public rights-of-way.

The City has jurisdiction and exercises regulatory management over all public rights-of-way as defined and outlined within 12.04 of the Oregon City Municipal Code.

Applicant's Response:
The applicant acknowledges the applicability of this section.

16.12.013 - Modifications.
The applicant may request and the review body may consider modification of the standards in this chapter resulting from constitutional limitations restricting the City's ability to require the dedication of property or for any other reason, based upon the criteria listed below and other criteria identified in the standard to be modified. All modifications, except for adjustments approved by the City Engineer for tree preservation purposes pursuant to 16.12.013.A, shall be processed through a Type II Land Use application and may require additional evidence from a transportation engineer or others to verify compliance. Compliance with the following criteria is required:

Applicant's Response:
The project seeks the following street design modifications:

Street Modification #1 - Allow elimination of on-street parking for proposed streets.

A. The modification meets the intent of the standard;

Applicant's Response:
The intent of on-street parking is to provide additional parking for adjacent uses. With this proposed masterplan, each parcel provides adequate parking within their respective parcels and additional on-street parking is not necessary within the site. The site is geometrically limited in its configuration with a relatively narrow north-south dimension. As such, finding uses that will fit within each parcel while still providing the development density to justify the development expense has been challenging. On-street parking widens the roadway by eight feet on each side of the road for a total of sixteen feet. However, for the east-west section along the south side of Parcel D, the impact is a sixteen-foot reduction in north-south dimension because the entire parking width impact would be taken from Parcel D and not shared with another parcel and would reduce the total unit count to the point where multi-family development of Parcel B is not financially viable given the expense of remaining public infrastructure costs. An eight-foot reduction in the north-south direction for Parcel A results in the loss of an entire row of parking and precludes the proposed tenant's interest in the site. Based on our communication with Public Works, we understand Public Works is not supportive of on-street parking for this section of roadway.

On-street parking for the Beavercreek Access through TL 500 from the southeast corner of the site down to the existing Beavercreek Rd signal is not proposed, nor is it recommended. The available right-of-way across TL 500 was established by agreement between the two underlying property owners and the Cypress does not have the ability to alter that alignment. Parking along the

Beavercreek Access through TL 500 would be located away from direct view by either Beavercreek Rd or Molalla Ave and could serve as an opportunity for derelict vehicle abandonment or transient encampment, which presents a potential public safety concern. Based on our communication with Public Works, we understand Public Works is not supportive of on-street parking for this section of roadway.

B. The modification provides safe and efficient movement of pedestrians, motor vehicles, bicyclists and freight;

Applicant's Response:
The response to this modification criterion is similar to Modification #1 but focuses on specific modes of transportation. Impacts of on-street parking relative to vehicular movement of the project's proposed street system involve similar arguments as Modification #1 and are made by reference in this response. On-street parking could have a negative effect on bike and pedestrian movements crossing the proposed street, since parked cars – especially on curves – can hide pedestrians or bicyclists crossing the street at unmarked locations. Avoiding on-street parking reduces the potential vehicle/bike/ped crossing conflict.

C. The modification is consistent with an adopted transportation or utility plan; and

Applicant's Response:
The Transportation System Plan does not identify a collector street through this site or through TL 500. Public Works indicated the proposed street could be a local street in their pre-application conference notes and later changed this to a requirement that the proposed street be a collector street. The applicant objects to this determination but has been able to accommodate the geometry associated with a collector street, subject to these modification requests.

Elimination of on-street parking does not negatively impact the Beavercreek Access Management Plan as access is still proposed for properties south of the subject property, and elimination of on-street parking better accommodates future unknown access locations for these same properties.

Other adopted transportation or utility plans are unaffected by the requested elimination of on-street parking.

D. The modification is complementary with a surrounding street design; or, in the alternative;

Applicant's Response:
The proposed elimination of on-street parking compliments and is compatible with the surrounding street system. The existing large-scale shopping center street design on the west side of the existing Molalla Ave signal consists of a three-lane section for approximately one hundred fifteen (115) feet before encountering a driveway access and does not include on-street parking at all.

The existing large-scale shopping center street design on the south side of the existing Beavercreek Road signal consists of a three-lane section for approximately sixty-four (64) feet before narrowing in width to a two-lane section at the crosswalk within the shopping center and approximately eighty-four (84) feet before encountering a driveway access. This access does not provide any on-street parking. The continuation of this access transitions into a parking lot.

E. If a modification is requested for constitutional reasons, the applicant shall demonstrate the constitutional provision or provisions to be avoided by the modification and propose a modification that complies with the state or federal constitution. The City shall be under no obligation to grant a modification in excess of that which is necessary to meet its constitutional obligations.

Applicant's Response:
The applicant does not seek a modification for constitutional reasons.

<u>Street Modification #2 - Allow reduction in number of travel lanes.</u>
The proposed street includes a center left turn lane from Molalla Ave through Parcels A and D and the west driveway of Parcel B, transitioning to two lanes east of the Parcel D southeasterly driveway. This lane modification request applies to the portion of the proposed road east of the Parcel D southeasterly driveway.

A. The modification meets the intent of the standard;

Applicant's Response:
Collector streets include a center left turn lane to help facilitate turning movements into driveways and side streets without impacting the through-traffic on the collector street. While the applicant believes the proposed street is a local street consistent with Public Works initial pre-application conference feedback, Public Works is considering the proposed street as a collector street, resulting in this request for a modification to the street standards. The two-lane portion of the proposed street east of the Parcel D southeasterly driveway is proposed due to the lack of need for a center left turn lane beyond this point. As identified in the project's Traffic Impact Analysis, Appendix D: Left Turn Lane Warrant, a center left turn lane is not warranted for the remainder of the proposed public street east of the Parcel D southeasterly driveway (please see the TIA our Appendix H. Accordingly, operational standards of the proposed street can be met without a center left turn lane as proposed.

B. The modification provides safe and efficient movement of pedestrians, motor vehicles, bicyclists and freight;

Applicant's Response:
Collector streets include a center left turn lane to help facilitate turning movements into driveways and side streets without impacting the through-traffic on the collector street. While the applicant believes the proposed street is a local street consistent with Public Works initial pre-application conference feedback, Public Works is considering the proposed street as a collector street, resulting in this request for a modification to the street standards. The two-lane portion of

the proposed street east of the Parcel D southeasterly driveway is proposed due to the lack of need for a center left turn lane beyond this point. As identified in the project's Traffic Impact Analysis, Appendix D: Left Turn Lane Warrant, a center left turn lane is not warranted for the remainder of the proposed public street east of the Parcel D southeasterly driveway. Accordingly, operational and safety standards of the proposed street can be met without a center left turn lane as proposed.

C. The modification is consistent with an adopted transportation or utility plan; and

Applicant's Response:
The Transportation System Plan does not identify a collector street through this site or through TL 500. Public Works indicated the proposed street could be a local street in their pre-application conference notes and later changed this to a requirement that the proposed street be a collector street. The applicant objects to this determination but has been able to accommodate the geometry associated with a collector street, subject to these modification requests. As proposed, the proposed public street geometry exceeds that required by the adopted TSP.

The Beavercreek Access Management Plan does not identify a need for a center left turn lane within the plan, and elimination of the above-referenced section of center left turn lane does not conflict with this Plan. If more intensive uses are established in the future for adjacent properties, the street can be widened within their respective properties to satisfy any left turn lane warrants that may be necessary by virtue of a future, more intensive use.

Other adopted transportation or utility plans are unaffected by the requested elimination of a portion of the center left turn lane.

D. The modification is complementary with a surrounding street design; or, in the alternative;

Applicant's Response:
Surrounding streets also do not include a center left turn lane unless side traffic warrants a turn lane. As identified in the project's Traffic Impact Analysis, Appendix D: Left Turn Lane Warrant, a center left turn lane is not warranted for the remainder of the proposed public street east of the Parcel D southeasterly driveway.

E. If a modification is requested for constitutional reasons, the applicant shall demonstrate the constitutional provision or provisions to be avoided by the modification and propose a modification that complies with the state or federal constitution. The City shall be under no obligation to grant a modification in excess of that which is necessary to meet its constitutional obligations.

Applicant's Response:
The applicant does not seek a modification for constitutional reasons.

Street Modification #3 – Sidewalk Location

The proposed street includes a connection from the main subject property south to the existing Beavercreek Rd signal. This street alignment and width has been set by prior agreement between TL 500 and the site's underlying property owner and the applicant does not have the ability to obtain additional right-of-way to accommodate sidewalks on both sides of this street. Based on coordination with Public Works, the project proposes to provide a 10.5' combined sidewalk/bike path on the east side of the road and place street trees behind the sidewalk where space allows instead of in tree grates within the pathway. Some street trees are proposed on the west side of this road where space allows. This modification request seeks approval for this sidewalk location.

A. The modification meets the intent of the standard;

Applicant's Response:
The intent of the standard requiring sidewalks on both sides of the street is to provide pedestrian connectivity for properties on each side of the street. Future development of TL 500 can provide sidewalks on the east side of the proposed street along with future development of that property. The proposed combined sidewalk/bike path on the east side of the street allows both pedestrians and bicyclists to safely travel this corridor and does not preclude additional sidewalk on the east side of the street in the future.

B. The modification provides safe and efficient movement of pedestrians, motor vehicles, bicyclists and freight;

Applicant's Response:
The intent of the standard requiring sidewalks on both sides of the street is to provide pedestrian connectivity for properties on each side of the street. Future development of TL 500 can provide sidewalks on the east side of the proposed street along with future development of that property. The proposed combine sidewalk/bike path on the east side of the street allows both pedestrians and bicyclists to safely travel this corridor and does not preclude additional sidewalk on the east side of the street in the future.

C. The modification is consistent with an adopted transportation or utility plan; and

Applicant's Response:
The proposed sidewalk/bike path on the east side of the street aligns with the Transportation System Plan pedestrian/bicycle pathway project S28 through this area.

D. The modification is complementary with a surrounding street design; or, in the alternative;

Applicant's Response:
Surrounding streets do not all have wide sidewalks as is proposed with the project's DDP package. With the opportunity to provide a future sidewalk on the east side of the street the entire street system will exceed the widths of pedestrian facilities in the vicinity.

E. If a modification is requested for constitutional reasons, the applicant shall demonstrate the constitutional provision or provisions to be avoided by the modification and propose a modification that complies with the state or federal constitution. The City shall be under no obligation to grant a modification in excess of that which is necessary to meet its constitutional obligations.

Applicant's Response:
The applicant does not seek a modification for constitutional reasons.

16.12.015 - Street design—Generally.
Development shall be required to provide existing or future connections to adjacent sites through the use of vehicular and pedestrian access easements where applicable. Development shall provide any necessary dedications, easements or agreements as identified in the Transportation System Plan, Trails Master Plan, and/or Parks and Recreation Master Plan and this chapter, subject to constitutional limitations. The location, width and grade of street shall be considered in relation to: existing and planned streets, topographical conditions, public convenience and safety for all modes of travel, existing and identified future transit routes and pedestrian/bicycle accessways, overlay districts, and the proposed use of land to be served by the streets. The street system shall assure an adequate traffic circulation system with intersection angles, grades, tangents and curves appropriate for the traffic to be carried considering the terrain. To the extent possible, proposed streets shall connect to all existing or approved stub streets that abut the development site. The arrangement of streets shall either:

A. Provide for the continuation or appropriate projection of existing principal streets in the surrounding area and on adjacent parcels or conform to a plan for the area approved or adopted by the City to meet a particular situation where topographical or other conditions make continuance or conformance to existing streets impractical;

B. Where necessary to give access to or permit a satisfactory future development of adjoining land, streets shall be extended to the boundary of the development and the resulting dead-end street (stub) may be approved with a temporary turnaround as approved by the City Engineer. Notification that the street is planned for future extension shall be posted on the stub street until the street is extended and shall inform the public that the dead-end street may be extended in the future. Access control in accordance with OCMC 16.12.017 shall be required to preserve the objectives of street extensions.

C. Adequate right-of-way and improvements to streets, pedestrian ways, bike routes and bikeways, and transit facilities shall be provided and be consistent with the City's Transportation System Plan. Consideration shall be given to the need for street widening and other improvements in the area of the proposed development impacted by traffic generated by the proposed development. This shall include, but not be limited to, improvements to the right-of-way, such as installation of lighting, signalization, turn lanes, median and parking strips, traffic islands, paving, curbs and gutters, sidewalks, bikeways, street drainage facilities and other facilities needed because of anticipated vehicular and pedestrian traffic generation.

Applicant's Response:
The project proposes a new public street connecting Molalla Ave with Beavercreek Rd. The project also proposes a pedestrian pathway within the Geologic Hazard setback area to provide a pedestrian trail system along the top of the bluff above Newell Creek Canyon. This trail extends to the vicinity of the project's northeast corner, where it can be extended by others in the future.

16.12.016 - Street design.
All development regulated by this chapter shall provide street improvements in compliance with the standards in Table 16.12.016 depending on the street classification set forth in the Transportation System Plan and the Comprehensive Plan designation of the adjacent property, unless an alternative plan has been adopted. The table implements the adopted Transportation System Plan and illustrates the maximum design standards. These standards may be reduced with an alternative street design which may be approved based on the modification criteria in OCMC 16.12.013. The steps for reducing the street design are found in the Transportation System Plan.

Applicant's Response:
The Transportation System Plan does not identify a collector street through this site or through TL 500. Public Works indicated the proposed street could be a local street in their pre-application conference notes and later changed this to a requirement that the proposed street be a collector street. The applicant objects to this determination but has been able to accommodate the geometry associated with a collector street, subject to the enclosed modification requests in our response to OCMC 16.12.013.

Table 16.12.016 Street Design
Table 16.12.016 Street Design. To read the table select the road classification as identified in the Transportation System Plan and the Comprehensive Plan designation of the adjacent properties to find the maximum design standards for the road cross section. If the Comprehensive Plan designation for lands on either side of the street differs, the wider right-of-way standard shall apply.

Road Classification	***Comprehensive Plan Designation***	***Right-of-Way Width***	***Pavement Width***	***Public Access***	***Sidewalk***	***Landscape Strip***	***Bike Lane***	***Street Parking***	***Travel Lanes***	***Median***
Major Arterial	*Mixed Use, Commercial or Public/Quasi Public*	*116 ft.*	*94 ft.*	*0.5 ft.*	*10.5 ft. sidewalk including 5 ft. x 5 ft. tree wells*		*6 ft.*	*8 ft.*	*(5) 12 ft. Lanes*	*6 ft.*
	Industrial	*120 ft.*	*88 ft.*	*0.5 ft.*	*5 ft.*	*10.5 ft.*	*6 ft.*	*N/A*	*(5) 14 ft. Lanes*	*6 ft.*
	Residential	*126 ft.*	*94 ft.*	*0.5 ft.*	*5 ft.*	*10.5 ft.*	*6 ft.*	*8 ft.*	*(5) 12 ft. Lanes*	*6 ft.*

Road Classification	***Comprehensive Plan Designation***	***Right-of-Way Width***	***Pavement Width***	***Public Access***	***Sidewalk***	***Landscape Strip***	***Bike Lane***	***Street Parking***	***Travel Lanes***	***Median***
Minor Arterial	*Mixed Use, Commercial or Public/Quasi Public*	*116 ft.*	*94 ft.*	*0.5 ft.*	*10.5 ft. sidewalk including 5 ft. x 5 ft. tree wells*		*6 ft.*	*8 ft.*	*(5) 12 ft. Lanes*	*6 ft.*
	Industrial	*118 ft.*	*86 ft.*	*0.5 ft.*	*5 ft.*	*10.5 ft.*	*6 ft.*	*7 ft.*	*(5) 12 ft. Lanes*	*N/A*
	Residential	*100 ft.*	*68 ft.*	*0.5 ft.*	*5 ft.*	*10.5 ft.*	*6 ft.*	*7 ft.*	*(3) 12 ft. Lanes*	*6 ft.*

Road Classification	***Comprehensive Plan Designation***	***Right-of-Way Width***	***Pavement Width***	***Public Access***	***Sidewalk***	***Landscape Strip***	***Bike Lane***	***Street Parking***	***Travel Lanes***	***Median***
Collector	*Mixed Use, Commercial or Public/Quasi Public*	*86 ft.*	*64 ft.*	*0.5 ft.*	*10.5 ft. sidewalk including 5 ft. x 5 ft. tree wells*		*6 ft.*	*8 ft.*	*(3) 12 ft. Lanes*	*N/A*
	Industrial	*88 ft.*	*62 ft.*	*0.5 ft.*	*5 ft.*	*7.5 ft.*	*6 ft.*	*7 ft.*	*(3) 12 ft. Lanes*	*N/A*
	Residential	*85 ft.*	*59 ft.*	*0.5 ft.*	*5 ft.*	*7.5 ft.*	*6 ft.*	*7 ft.*	*(3) 11 ft. Lanes*	*N/A*

Road Classification	***Comprehensive Plan Designation***	***Right-of-Way Width***	***Pavement Width***	***Public Access***	***Sidewalk***	***Landscape Strip***	***Bike Lane***	***Street Parking***	***Travel Lanes***	***Median***
Collector	*Mixed Use, Commercial or Public/Quasi Public*	*86 ft.*	*64 ft.*	*0.5 ft.*	*10.5 ft. sidewalk including 5 ft. x 5 ft. tree wells*		*6 ft.*	*8 ft.*	*(3) 12 ft. Lanes*	*N/A*

	Industrial	*88 ft.*	*62 ft.*	*0.5 ft.*	*5 ft.*	*7.5 ft.*	*6 ft.*	*7 ft.*	*(3) 12 ft. Lanes*	*N/A*
	Residential	*85 ft.*	*59 ft.*	*0.5 ft.*	*5 ft.*	*7.5 ft.*	*6 ft.*	*7 ft.*	*(3) 11 ft. Lanes*	*N/A*

1. Pavement width includes, bike lane, street parking, travel lanes and median.
2. Public access, sidewalks, landscape strips, bike lanes and on-street parking are required on both sides of the street in all designations. The right-of-way width and pavement widths identified above include the total street section.
3. A 0.5 foot curb is included in landscape strip or sidewalk width.
4. Travel lanes may be through lanes or turn lanes.
5. The 0.5 foot public access provides access to adjacent public improvements.
6. Alleys shall have a minimum right-of-way width of twenty feet and a minimum pavement width of sixteen feet. If alleys are provided, garage access shall be provided from the alley.
7. A raised concrete median or landscape median shall be utilized for roads identified to have access restrictions.

Applicant's Response:
The Transportation System Plan does not identify a collector street through this site or through TL 500. Public Works indicated the proposed street could be a local street in their pre-application conference notes and later changed this to a requirement that the proposed street be a collector street. The applicant objects to this determination but has been able to accommodate the geometry associated with a collector street, subject to the enclosed modification requests in our response to OCMC 16.12.013.

A. Sidewalks. The applicant shall provide for sidewalks on both sides of all public streets, on any private street if so required by the decision-maker, and in any special pedestrian way within the development. Both sidewalks and curbs are to be constructed to City standards and at widths set forth above, and according to plans and specifications provided by the City Engineer. Exceptions to this requirement may be allowed in order to accommodate topography, trees or some similar site constraint. In the case of major or minor arterials, the decision-maker may approve a development without sidewalks where sidewalks are found to be dangerous or otherwise impractical to construct or are not reasonably related to the applicant's development. The decision-maker may require the applicant to provide sidewalks concurrent with the issuance of the initial building permit within the area that is the subject of the development application. Applicants for partitions may be allowed to meet this requirement by providing the City with a financial guarantee per OCMC 16.12.110.

Applicant's Response:
The proposed public street includes sidewalks on both sides of the street except the portion of the street through TL500. Please see our request for Street Modification #3, above.

B. Pedestrian and Bicycle Accessways Routes. If deemed appropriate to extend pedestrian and bicycle routes, existing or planned, the decision-maker may require the installation of separate pedestrian and bicycle facilities.

Applicant's Response:
The proposed street system includes bike lanes on the proposed street within the main subject property and includes a combined pedestrian/bike path on the east side of the proposed public access road from the site to Beavercreek Rd.

C. Street Name Signs and Traffic Control Devices. The applicant shall install street signs and traffic control devices as directed by the City Engineer. Street name signs and traffic control devices shall be in conformance with all applicable city regulations and standards.

Applicant's Response:
The applicant will provide applicable street name signs and traffic control devices as coordinated with Public Works through the construction plan permitting process.

D. Street Lights. The applicant shall install street lights which shall be served from an underground source of supply. Street lights shall be in conformance with all City regulations.

Applicant's Response:
The proposed street plan includes streetlights along Molalla Ave and the proposed public street. Streetlights along Molalla Ave will be decorative in nature, consistent with the city's street lighting plan. Please see Shts DDP-C1.2, C1.3, C1.4, and L2.0.

E. Any new street proposed with a pavement width of less than thirty-two feet shall be processed through OCMC 16.12.013 and meet minimum life safety requirements, which may include fire suppression devices as determined by the Fire Marshall to assure an adequate level of fire and life safety. The modified street shall have no less than a twenty-foot wide unobstructed travel lane.

Applicant's Response:
The minimum width of the proposed public street is 36 feet. Please see Shts DDP-C1.2, C1.3, and C1.4.

F. All development shall include vegetated planter strips that are five feet in width or larger and located between the sidewalk and curb unless otherwise approved pursuant to this chapter. All development shall utilize the vegetated planter strip for the placement of street trees or place street trees in other acceptable locations, as prescribed by OCMC 12.08. Development proposed along a collector, minor arterial, or major arterial roads may place street trees within tree wells within a wider sidewalk in lieu of a planter strip. In addition to street trees per OCMC 12.08, vegetated planter strips shall include ground cover and/or shrubs spaced four feet apart and appropriate for the location. No invasive or nuisance plant species shall be permitted.

Applicant's Response:
The proposed public street includes 10.5' wide sidewalks with street trees in tree wells/grates along both sides of the street within the main development site and a 10.5' wide combined sidewalk/bike

path on the east side of the road through TL 500 with street trees placed behind the sidewalk where space allows instead of in tree grates within the pathway. Some street trees are proposed on the west side of this road where space allows. Please see Shts DDP-C1.2, C1.3, and C1.4.

G. Vehicle and pedestrian access easements may serve in lieu of streets when approved by the decision maker and only where dedication of a street is deemed impracticable.

Applicant's Response:
This application includes public streets and will include right-of-way dedication.

H. Vehicular and pedestrian easements shall allow for public access and shall comply with all applicable pedestrian access requirements.

Applicant's Response:
This application includes public streets and will include right-of-way dedication. The project also proposes a pedestrian pathway within the Geologic Hazard setback area to provide a pedestrian trail system along the top of the bluff above Newell Creek Canyon. This trail extends to the vicinity of the project's northeast corner, where it can be extended by others in the future.

16.12.017 - Street design—Access control.
A. A street which is dedicated to end at the boundary of the development or in the case of half-streets dedicated along a boundary shall have an access control granted to the City as a City controlled plat restriction for the purposes of controlling ingress and egress to the property adjacent to the end of the dedicated street. The access control restriction shall exist until such time as a public street is created, by dedication and accepted, extending the street to the adjacent property.

Applicant's Response:
The proposed project does not include a street stub for future extension. Instead, this project completes street improvements as described herein and include right-of-way that adjoins the project's an extended portion of the project's south property line so that specific access control is not necessary beyond what the city inherently possesses with a public street.

B. The City may grant a permit for the adjoining owner to access through the access control.

Applicant's Response:
The applicant acknowledges the city's ability to control access to the new public street.

C. The plat shall contain the following access control language or similar on the face of the map at the end of each street for which access control is required: "Access Control (See plat restrictions)."

Applicant's Response:
The proposed project does not include a street stub for future extension. Instead, this project completes street improvements as described herein and include right-of-way that adjoins the project's an extended portion of the project's south property line so that specific access control is not

necessary beyond what the city inherently possesses with a public street. Additionally, the project does not contemplate the need for a subdivision plat, so such a statement is not necessary.
D. Said plats shall also contain the following plat restriction note(s): "Access to (name of street or tract) from adjoining tracts (name of deed document number[s]) shall be controlled by the City of Oregon City by the recording of this plat, as shown. These access controls shall be automatically terminated upon the acceptance of a public road dedication or the recording of a plat extending the street to adjacent property that would access through those Access Controls."

Applicant's Response:
The proposed project does not include a street stub for future extension. Instead, this project completes street improvements as described herein and include right-of-way that adjoins the project's an extended portion of the project's south property line so that specific access control is not necessary beyond what the city inherently possesses with a public street. Additionally, the project does not contemplate the need for a subdivision plat, so such a statement is not necessary.

16.12.018 - Street design—Alignment.
The centerline of streets shall be:
A. Aligned with existing streets by continuation of the centerlines; or
B. Offset from the centerline by no more than five feet, provided appropriate mitigation, in the judgment of the City Engineer, is provided to ensure that the offset intersection will not pose a safety hazard.
C. Driveways that are at least twenty-four feet wide shall align with existing or planned streets on adjacent sites.

Applicant's Response:
The centerline of the proposed public street intersects Molalla Ave at the existing signal and aligns with traffic lanes on the west side of the intersection within the standards identified in this section (3.7' offset).

The centerline of the proposed public street intersects Beavercreek Rd at the existing signal at an angle of 83.7° with an offset from corresponding traffic lanes on the south side of the intersection within the standards identified in this section (2.4' offset).

16.12.019 - Traffic sight obstructions.
All new streets shall comply with the Traffic Sight Obstructions in Chapter 10.32.

Applicant's Response:
The proposed public street connects at existing signalized intersections at each end of the street. Both streets are 30 mph streets, requiring 300' of corner sight distance per the Corner Sight Distance Table in OCMC 10.32.020. Both signalized intersections have corner sight distance in excess of 300' from the proposed public street to oncoming vehicles from the left.

16.12.020 - Street design—Intersection angles.
Except where topography requires a lesser angle, streets shall be laid out to intersect at angles as near as possible to right angles. In no case shall the acute angles be less than eighty degrees unless there is a special intersection design. An arterial or collector street intersecting with another street shall have at

least one hundred feet of tangent adjacent to the intersection unless topography requires a lesser distance. Other streets, except alleys, shall have at least fifty feet of tangent adjacent to the intersection unless topography requires a lesser distance. All street intersections shall be provided with a minimum curb return radius of twenty-five feet for local streets. Larger radii shall be required for higher street classifications as determined by the City Engineer. Additional right-of-way shall be required to accommodate curb returns and sidewalks at intersections. Ordinarily, intersections should not have more than two streets at any one point.

Applicant's Response:
The proposed public street intersects Molalla Ave at an angle of approximately 89.9° and intersects Beavercreek Rd at an angle of approximately 83.7°. Please see Shts DDP-C1.2 & DDP-C1.4.

Centerline tangent lengths are also shown on DDP-C1.0. the proposed public street connection at the existing Molalla Ave signal results in a tangent length less than the Collector street standard; however, this shortened tangent length is the result of the location of the existing signal, the existing 50' no-build easement at the northwest corner of the property, and the short north-south distance from the required Molalla Ave connection point to the north property line of the subject property. These three factors severely limit the development opportunity for Parcel A while still complying with other code elements that would conflict with a 100' centerline tangent length (determination that the proposed public street is a Collector street, pedestrian connection without crossing a drive aisle, etc.). topography and the required Molalla Ave connection point are key factors limiting the project's ability to maintain a 100' centerline tangent on the proposed public street. The 100' tangent requirement does not rise to the level of a formal modification request since the criterion includes language indicating a lesser distance could be acceptable due to topographical limits.

16.12.021 - Street design—Grades and curves.
Grades and center line radii shall conform to standards approved by the City Engineer.

Applicant's Response:
Please see Sht DDP-C1.0 for proposed street centerline information and Shts DDP-C1.3 and C1.4 for proposed street profiles. Street centerline radii are as shown on Sht DDP-C1.0. The street centerline radii comply with Street Design Standards City of Oregon City Table 3-2 with speed control as noted on Sht DDP-C1.0.

16.12.022 - Street design—Development abutting arterial or collector street.
Where development abuts or contains an existing or proposed arterial or collector street, the decision maker may require: access control; screen planting or wall contained in an easement or otherwise protected by a restrictive covenant in a form acceptable to the decision maker along the rear or side property line; or such other treatment it deems necessary to adequately protect residential properties or afford separation of through and local traffic. Reverse frontage lots with suitable depth may also be considered an option for residential property that has arterial frontage. Where access for development abuts and connects for vehicular access to another jurisdiction's facility then authorization by that jurisdiction may be required.

Applicant's Response:

Access to each of the parcels is made via the proposed driveways as shown od Sht DDP-C1.0. Access is not proposed from Molalla Ave.

16.12.023 - Street design—Pedestrian and bicycle safety.

Where deemed necessary to ensure public safety, reduce traffic hazards and promote the welfare of pedestrians, bicyclists and residents of the subject area, the decision maker may require that local streets be so designed as to discourage their use by nonlocal automobile traffic.

The City Engineer may require that crosswalks include a large vegetated or sidewalk area which extends into the street pavement as far as practicable to provide safer pedestrian crossing opportunities. These curb extensions can increase the visibility of pedestrians and provide a shorter crosswalk distance as well as encourage motorists to drive slower. The City Engineer may approve an alternative design that achieves the same standard for constrained sites.

Applicant's Response:

The proposed street design does not include on-street parking. Instead, bike lanes are proposed as coordinated with Public Works. Curb extensions are not proposed as providing them would impact the functionality of the proposed bike lanes. Bike lanes connect with the widened sidewalks at each end of the public street within the main development area and a combined sidewalk and bike path is proposed on the east side of the proposed public street through TL 500 to promote pedestrian & bike safety and aligns with Transportation System Plan pedestrian/bicycle pathway project S28.

16.12.024 - Street design—Half street.

Half streets, while generally not acceptable, may be approved where essential to the development, when in conformance with all other applicable requirements, and where it will not create a safety hazard. When approving half streets, the decision maker shall first determine that it will be practical to require the dedication of the other half of the street when the adjoining property is divided or developed. Where the decision maker approves a half street, the applicant shall construct a half street with at least twenty feet of pavement width and provide signage prohibiting street parking so as to make the half street safe until such time as the other half is constructed. Whenever a half street is adjacent to property capable of being divided or developed, the other half of the street shall be provided and improved when that adjacent property divides or develops. Access control may be required to preserve the objectives of half streets.

When the remainder of an existing half-street improvement is completed it shall include the following items: dedication of required right-of-way, construction of the remaining portion of the street including pavement, curb and gutter, landscape strip, sidewalk, street trees, lighting and other improvements as required for that particular street. It shall also include at a minimum the pavement replacement to the centerline of the street. Any damage to the existing street shall be repaired in accordance with the City's "Pavement Cut Standards" or as approved by the City Engineer.

Applicant's Response:

The development does not propose half-street improvements.

16.12.025 - Street design—Cul-de-sacs and dead-end streets.

The City discourages the use of cul-de-sacs and permanent dead-end streets except where construction of a through street is found by the decision maker to be impracticable due to topography or some

significant physical constraint such as geologic hazards, wetland, natural or historic resource areas, pre-existing dedicated open space, pre-existing development patterns, arterial access restrictions or similar situation as determined by the decision maker. This section is not intended to preclude the use of curvilinear eyebrow widening of a street where needed.
A. When permitted, access from new cul-de-sacs and permanent dead-end streets shall be limited to a maximum of twenty-five dwelling units.

Applicant's Response:
The development does not propose a cul-de-sac or dead-end street.

B. Cul-de-sacs and permanent dead-end streets shall include pedestrian/bicycle accessways to meet minimum block width standards as prescribed in OCMC 16.12.030.

Applicant's Response:
The development does not propose a cul-de-sac or dead-end street.

C. Cul-de-sacs shall have sufficient radius to provide adequate turn-around for emergency vehicles in accordance with fire district and city adopted street standards.

Applicant's Response:
The development does not propose a cul-de-sac or dead-end street.

D. Permanent dead-end streets shall provide public street right-of-way/easements sufficient to provide a sufficient amount of turn-around space complete with appropriate no-parking signs or markings to accommodate waste disposal, sweepers, emergency and other long vehicles in the form of a hammerhead or other design to be approved by the decision maker.

Applicant's Response:
The development does not propose a dead-end street.

E. In the case of dead-end stub streets that will connect to streets on adjacent sites in the future, notification that the street is planned for future extension shall be posted on the stub street until the street is extended and shall inform the public that the dead-end street may be extended in the future. A dead-end street shall include signage or barricade meeting Manual on Uniform Traffic Control Devices (MUTCD).

Applicant's Response:
The development does not propose a dead-end street.

16.12.026 - Street design—Alleys.
Alleys with public access easements on private property shall be provided in the Park Place and South End concept plan areas for the following districts R-5, R-3.5, R-2, MUC-1, MUC-2 and NC zones unless other permanent provisions for private access to off-street parking and loading facilities are approved by the decision maker. All alleys intended to provide access for emergency vehicles shall be a minimum width of twenty feet. The corners of alley intersections shall have a radius of not less than ten feet and

shall conform to standards approved by the City Engineer. Access easements and maintenance agreements shall be recorded on affected properties.

Applicant's Response:
The development does not propose alleys.

16.12.027 - Street design—Off-site street improvements.
During consideration of the preliminary plan for a development, the decision maker shall determine whether existing streets impacted by, adjacent to, or abutting the development meet the applicable design or dimensional requirements. Where such streets fail to meet these requirements, the decision-maker shall require the applicant to make proportional improvements sufficient to achieve conformance with minimum applicable design standards required to serve the proposed development.

Applicant's Response:
As identified in the Traffic Impact Analysis included with this GDP/DDP application, all off-site study intersections are forecast to continue to meet the established v/c thresholds with the addition of project generated traffic.

Based on coordination with City staff, a pro-rata share contribution is required for the TSP project #D95, Beavercreek Road/OR-213 added westbound right turn merge lane. The City has indicated the current rate is $404 per weekday PM peak hour trip. As shown in Table 4 of the TIA, the project is forecast to contribute 55 project trips to the intersection during the PM peak hour. This results in an estimated fee of $22,220 at this location as pro-rata share contribution to the planned improvement project.

The project proposes to modify the existing signals at both Molalla Ave and Beavercreek Rd where the proposed street connects to the existing street system.

16.12.028 - Street design—Transit.
Streets shall be designed and laid out in a manner that promotes pedestrian and bicycle circulation. The applicant shall coordinate with transit agencies where the application impacts transit streets as identified in OCMC 17.04.1310. Pedestrian/bicycle access ways shall be provided as necessary to minimize the travel distance to transit streets and stops and neighborhood activity centers. The decision maker may require provisions, including easements, for transit facilities along transit streets where a need for bus stops, bus pullouts or other transit facilities within or adjacent to the development has been identified.

Applicant's Response:
The project proposes a combination of bike lanes and combined bike/ped pathways on the proposed public street. Additionally, the project proposes moving the existing bus stop immediately south of the Molalla Ave signal to the north side of the signal and construct a bus turnout and bus shelter.

16.12.029 - Excavations—Restoration of pavement.
Whenever any excavation shall have been made in any pavement or other street improvement on any street or alley in the City for any purpose whatsoever under the permit granted by the engineer, it shall

be the duty of the person making the excavation to restore the pavement in accordance with the City of Oregon City Public Works Pavement Cut Standards in effect at the time the permit is granted. The City Commission may adopt and modify the City of Oregon City Public Works Pavement Cut Standards by resolution as necessary to implement the requirements of this chapter.

Applicant's Response:
The applicant acknowledges this criterion. Formal construction plan submittal for the project will include applicable pavement restoration.

16.12.030 - Blocks—Width.
The width of blocks shall ordinarily be sufficient to allow for two tiers of lots with depths consistent with the type of land use proposed. The length, width and shape of blocks shall take into account the need for adequate building site size, convenient motor vehicle, pedestrian, bicycle and transit access, control of traffic circulation, and limitations imposed by topography and other natural features.

All new streets shall be designed as local streets unless otherwise designated as arterials and collectors in the current adopted Transportation System Plan. The maximum block spacing between streets is 530 feet and the minimum block spacing between streets is 150 feet as measured between the right-of-way centerlines except in zones GI, CI, MUE, I, and WFDD where determining the appropriate street spacing will be determined by the City Engineer. If the maximum block size is exceeded, pedestrian accessways shall be provided every 330 feet. The spacing standards within this section do not apply to alleys.

Applicant's Response:
Blocks are intended to provide connectivity through a site in multiple directions. The subject property is an in-fill development with existing residential and commercial development north of the site and existing commercial development south of the site. Adjacent properties do not include street stubs to the subject property so existing block separation is not provided. The project's proposed public street adjoins the main parcel's south property line for a large portion of the south property line and provides an access easement for the benefit of TL 700 & 800 near the property's southwest corner. Additionally, the relatively narrow north-south dimension of the west end of main property comprising Parcels A, B, C, & D with the 50' no-build easement encumbering Parcel A, together with the Geologic Hazard area on the east side of Parcel B limit the site's ability to accommodate intersecting streets in the north-south direction while still allowing room for development at a density that makes it economically viable.

As noted above, all new streets shall be designed as local streets unless otherwise designated as arterials and collectors in the current adopted TSP. The Transportation System Plan does not identify a collector street through this site or through TL 500. Public Works indicated the proposed street could be a local street in their pre-application conference notes and later changed this to a requirement that the proposed street be a collector street. The applicant objects to this determination but has been able to accommodate the geometry associated with a collector street, subject to the modification requests in our response to OCMC 16.12.0135. Two of the three modification requests are the result of the city's requirement that the proposed public street be

considered a collector street instead of a local street as identified in the TSP. As proposed, the proposed public street geometry exceeds that required by the adopted TSP.

The applicant has designed the proposed parcel layout to align major access points to each parcel to achieve the maximum block length spacing of 530' that balances this section with the rest of the OCMC code elements (building frontage requirements, driveway spacing, etc.).

The combination of these factors results in a layout that satisfies this criterion.

16.12.031 - Street design—Street names.
Except for extensions of existing streets, no street name shall be used which will duplicate or be confused with the name of an existing street. Street names shall conform to the established standards in the City and shall be subject to the approval of the City.

Applicant's Response:
The applicant acknowledges this criterion. A street name has not yet been chosen for the proposed public street but will be chosen prior to construction plan submittal following the normal street name approval process with the city.

16.12.032 – Public off-street pedestrian and bicycle accessways.
Pedestrian/bicycle accessways are intended to provide direct, safe and convenient connections between residential areas, retail and office areas, institutional facilities, industrial parks, transit streets, neighborhood activity centers, rights-of-way, and pedestrian/bicycle accessways which minimize out-of-direction travel, and transit-orientated developments where public street connections for automobiles, bicycles and pedestrians are unavailable. Pedestrian/bicycle accessways are appropriate in areas where public street options are unavailable, impractical or inappropriate. Pedestrian and bicycle accessways are required through private property or as right-of-way connecting development to the right-of-way at intervals not exceeding 330 feet of frontage; or where the lack of street continuity creates inconvenient or out of direction travel patterns for local pedestrian or bicycle trips.

Applicant's Response:
Bike lanes are included with the proposed public street as coordinated with Public Works. Bike lanes connect with the widened sidewalks at each end of the public street within the main development area and a combined sidewalk and bike path is proposed on the east side of the proposed public street through TL 500 to promote pedestrian & bike safety and aligns with Transportation System Plan pedestrian/bicycle pathway project S28. The proposed pedestrian/bike facilities connect to existing similar facilities in Molalla Ave and Beavercreek Rd. Accordingly, off-site pedestrian and bicycle accessways are not needed, nor are they proposed.

A. Entry points shall align with pedestrian crossing points along adjacent streets and with adjacent street intersections.

Applicant's Response:
Bike lanes are included with the proposed public street as coordinated with Public Works. Bike lanes connect with the widened sidewalks at each end of the public street within the main development area and a combined sidewalk and bike path is proposed on the east side of the proposed public street through TL 500 to promote pedestrian & bike safety and aligns with Transportation System Plan pedestrian/bicycle pathway project S28. The proposed pedestrian/bike facilities connect to existing similar facilities in Molalla Ave and Beavercreek Rd. Accordingly, off-site pedestrian and bicycle accessways are not needed, nor are they proposed.

B. Accessways shall be free of horizontal obstructions and have a nine foot six inch high vertical clearance to accommodate bicyclists. To safely accommodate both pedestrians and bicycles, accessway right-of-way widths shall be as follows:

1. Accessways shall have a fifteen- foot wide right-of-way with a seven-foot wide paved surface with a minimum four-foot planter strip on either side.

2. If an accessway also provides secondary fire access, the right-of-way width shall be at least twenty- four feet wide with a - sixteen foot paved surface between four-foot planter strips on either side.

Applicant's Response:
Bike lanes are included with the proposed public street as coordinated with Public Works. Bike lanes connect with the widened sidewalks at each end of the public street within the main development area and a combined sidewalk and bike path is proposed on the east side of the proposed public street through TL 500 to promote pedestrian & bike safety and aligns with Transportation System Plan pedestrian/bicycle pathway project S28. The proposed pedestrian/bike facilities connect to existing similar facilities in Molalla Ave and Beavercreek Rd. Accordingly, off-site pedestrian and bicycle accessways are not needed, nor are they proposed.

C. Accessways shall be direct with at least one end point of the accessway always visible from any point along the accessway. On-street parking shall be prohibited within fifteen feet of the intersection of the accessway with public streets to preserve safe sight distance and promote safety.

Applicant's Response:
Bike lanes are included with the proposed public street as coordinated with Public Works. Bike lanes connect with the widened sidewalks at each end of the public street within the main development area and a combined sidewalk and bike path is proposed on the east side of the proposed public street through TL 500 to promote pedestrian & bike safety and aligns with Transportation System Plan pedestrian/bicycle pathway project S28. The proposed pedestrian/bike facilities connect to existing similar facilities in Molalla Ave and Beavercreek Rd. Accordingly, off-site pedestrian and bicycle accessways are not needed, nor are they proposed.

D. To enhance pedestrian and bicycle safety, accessways shall be lighted with pedestrian-scale lighting. Accessway lighting shall be to a minimum level of one-half-foot-candles, a one and one-half foot-candle average, and a maximum to minimum ratio of seven-to-one and shall be oriented not to shine upon adjacent properties. Street lighting shall be provided at both entrances.

Applicant's Response:
Bike lanes are included with the proposed public street as coordinated with Public Works. Bike lanes connect with the widened sidewalks at each end of the public street within the main development area and a combined sidewalk and bike path is proposed on the east side of the proposed public street through TL 500 to promote pedestrian & bike safety and aligns with Transportation System Plan pedestrian/bicycle pathway project S28. The proposed pedestrian/bike facilities connect to existing similar facilities in Molalla Ave and Beavercreek Rd. Accordingly, off-site pedestrian and bicycle accessways are not needed, nor are they proposed.

E. Accessways shall comply with Americans with Disabilities Act (ADA).

Applicant's Response:
Bike lanes are included with the proposed public street as coordinated with Public Works. Bike lanes connect with the widened sidewalks at each end of the public street within the main development area and a combined sidewalk and bike path is proposed on the east side of the proposed public street through TL 500 to promote pedestrian & bike safety and aligns with Transportation System Plan pedestrian/bicycle pathway project S28. The proposed pedestrian/bike facilities connect to existing similar facilities in Molalla Ave and Beavercreek Rd. Accordingly, off-site pedestrian and bicycle accessways are not needed, nor are they proposed.

F. The planter strips on either side of the accessway shall be landscaped along adjacent property by installation of the following:

1. Either an evergreen hedge screen of thirty to forty-two inches high or shrubs spaced no more than four feet apart on average; and
2. Ground cover covering one hundred percent of the exposed ground. No bark mulch shall be allowed except under the canopy of shrubs and within two feet of the base of trees; and
3. A two-inch minimum caliper tree for every thirty-five -feet along the accessway. Trees may be planted on either side of the accessway, provided they are spaced no more than thirty-five feet apart; and
4. In satisfying the requirements of this section, evergreen plant materials that grow over forty-two inches in height shall be avoided. All plant materials shall be selected from the Oregon City Native Plant List.

Applicant's Response:
Bike lanes are included with the proposed public street as coordinated with Public Works. Bike lanes connect with the widened sidewalks at each end of the public street within the main development area and a combined sidewalk and bike path is proposed on the east side of the proposed public street through TL 500 to promote pedestrian & bike safety and aligns with Transportation System Plan pedestrian/bicycle pathway project S28. The proposed pedestrian/bike facilities connect to existing similar facilities in Molalla Ave and Beavercreek Rd. Accordingly, off-site pedestrian and bicycle accessways are not needed, nor are they proposed.

G. Accessways shall be designed to prohibit unauthorized motorized traffic. Curbs and removable, lockable bollards are suggested mechanisms to achieve this.

Applicant's Response:
Bike lanes are included with the proposed public street as coordinated with Public Works. Bike lanes connect with the widened sidewalks at each end of the public street within the main development area and a combined sidewalk and bike path is proposed on the east side of the proposed public street through TL 500 to promote pedestrian & bike safety and aligns with Transportation System Plan pedestrian/bicycle pathway project S28. The proposed pedestrian/bike facilities connect to existing similar facilities in Molalla Ave and Beavercreek Rd. Accordingly, off-site pedestrian and bicycle accessways are not needed, nor are they proposed.

H. Accessway surfaces shall be paved with all-weather materials as approved by the City. Pervious materials are encouraged. Accessway surfaces shall be designed to drain stormwater runoff to the side or sides of the accessway. Minimum cross slope shall be two percent.

Applicant's Response:
Bike lanes are included with the proposed public street as coordinated with Public Works. Bike lanes connect with the widened sidewalks at each end of the public street within the main development area and a combined sidewalk and bike path is proposed on the east side of the proposed public street through TL 500 to promote pedestrian & bike safety and aligns with Transportation System Plan pedestrian/bicycle pathway project S28. The proposed pedestrian/bike facilities connect to existing similar facilities in Molalla Ave and Beavercreek Rd. Accordingly, off-site pedestrian and bicycle accessways are not needed, nor are they proposed.

I. In parks, greenways or other natural resource areas, accessways may be approved with a five-foot wide gravel path with wooden, brick or concrete edgings.

Applicant's Response:
Bike lanes are included with the proposed public street as coordinated with Public Works. Bike lanes connect with the widened sidewalks at each end of the public street within the main development area and a combined sidewalk and bike path is proposed on the east side of the proposed public street through TL 500 to promote pedestrian & bike safety and aligns with Transportation System Plan pedestrian/bicycle pathway project S28. The proposed pedestrian/bike facilities connect to existing similar facilities in Molalla Ave and Beavercreek Rd. Accordingly, off-site pedestrian and bicycle accessways are not needed, nor are they proposed.

J. The decision maker may approve an alternative accessway design due to existing site constraints through the modification process set forth in OCMC 16.12.013.

Applicant's Response:
Bike lanes are included with the proposed public street as coordinated with Public Works. Bike lanes connect with the widened sidewalks at each end of the public street within the main development area and a combined sidewalk and bike path is proposed on the east side of the proposed public street through TL 500 to promote pedestrian & bike safety and aligns with Transportation System Plan pedestrian/bicycle pathway project S28. The proposed pedestrian/bike facilities connect to existing similar facilities in Molalla Ave and Beavercreek Rd. Accordingly, off-site pedestrian and bicycle accessways are not needed, nor are they proposed.

K. Ownership, liability and maintenance of accessways. To ensure that all pedestrian/bicycle accessways will be adequately maintained over time, the City Engineer shall require one of the following:

1. Dedicate the accessways to the public as public right-of-way prior to the final approval of the development; or

2. The developer incorporates the accessway into a recorded easement or tract that specifically requires the property owner and future property owners to provide for the ownership, liability and maintenance of the accessway.

Applicant's Response:
Bike lanes are included with the proposed public street as coordinated with Public Works. Bike lanes connect with the widened sidewalks at each end of the public street within the main development area and a combined sidewalk and bike path is proposed on the east side of the proposed public street through TL 500 to promote pedestrian & bike safety and aligns with Transportation System Plan pedestrian/bicycle pathway project S28. The proposed pedestrian/bike facilities connect to existing similar facilities in Molalla Ave and Beavercreek Rd. Accordingly, off-site pedestrian and bicycle accessways are not needed, nor are they proposed.

16.12.033 - Mobility standards.

Development shall demonstrate compliance with intersection mobility standards. When evaluating the performance of the transportation system, the City of Oregon City requires all intersections, except for the facilities identified in subsection E below, to be maintained at or below the following mobility standards during the two-hour peak operating conditions. The first hour has the highest weekday traffic volumes and the second hour is the next highest hour before or after the first hour. Except as provided otherwise below, this may require the installation of mobility improvements as set forth in the Transportation System Plan (TSP) or as otherwise identified by the City Engineer.

A. For intersections within the regional center, the following mobility standards apply:

1. During the first hour, a maximum v/c ratio of 1.10 shall be maintained. For signalized intersections, this standard applies to the intersection as a whole. For unsignalized intersections, this standard applies to movements on the major street. There is no performance standard for the minor street approaches.

2. During the second hour, a maximum v/c ratio of 0.99 shall be maintained at signalized intersections. For signalized intersections, this standard applies to the intersection as a whole. For unsignalized intersections, this standard applies to movements on the major street. There is no performance standard for the minor street approaches.

3. Intersections located on the Regional Center boundary shall be considered within the Regional Center.

B. For intersections outside of the Regional Center but designated on the Arterial and Throughway Network, as defined in the Regional Transportation Plan, the following mobility standards apply:

1. During the first hour, a maximum v/c ratio of 0.99 shall be maintained. For signalized intersections, this standard applies to the intersection as a whole. For unsignalized intersections, this standard applies to movements on the major street. There is no performance standard for the minor street approaches.

2. During the second hour, a maximum v/c ratio of 0.99 shall be maintained at signalized intersections. For signalized intersections, this standard applies to the intersection as a whole. For unsignalized intersections, this standard applies to movements on the major street. There is no performance standard for the minor street approaches.

C. For intersections outside the boundaries of the Regional Center and not designated on the Arterial and Throughway Network, as defined in the Regional Transportation Plan, the following mobility standards apply:

1. For signalized intersections:

a. During the first hour, LOS "D" or better will be required for the intersection as a whole and no approach operating at worse than LOS "E" and a v/c ratio not higher than 1.0 for the sum of the critical movements.

b. During the second hour, LOS "D" or better will be required for the intersection as a whole and no approach operating at worse than LOS "E" and a v/c ratio not higher than 1.0 for the sum of the critical movements.

2. For unsignalized intersections outside of the boundaries of the Regional Center:

a. For unsignalized intersections, during the peak hour, all movements serving more than twenty vehicles shall be maintained at LOS "E" or better. LOS "F" will be tolerated at movements serving no more than twenty vehicles during the peak hour.

D. For the intersection of OR 213 & Beavercreek Road, the following mobility standards apply:

1. During the first, second & third hours, a maximum v/c ratio of 1.00 shall be maintained. Calculation of the maximum v/c ratio will be based on an average annual weekday peak hour.

E. Until the City adopts new performance measures that identify alternative mobility targets, the City shall exempt proposed development that is permitted, either conditionally, outright, or through detailed development master plan approval, from compliance with the above-referenced mobility standards for the following state-owned facilities:
I-205/OR 99E Interchange
State intersections located within or on the Regional Center Boundaries

1. In the case of conceptual development approval for a master plan that impacts the above references intersections:

a. The form of mitigation will be determined at the time of the detailed development plan review for subsequent phases utilizing the Code in place at the time the detailed development plan is submitted; and

b. Only those trips approved by a detailed development plan review are vested.

2. Development which does not comply with the mobility standards for the intersections identified in OCMC 16.12.033 shall provide for the improvements identified in the Transportation System Plan (TSP) in an effort to improve intersection mobility as necessary to offset the impact caused by development. Where required by other provisions of the Code, the applicant shall provide a traffic impact study that includes an assessment of the development's impact on the intersections identified in this exemption and shall construct the intersection improvements listed in the TSP or required by the Code.

Applicant's Response:
The Traffic Impact Analysis included with this GDP/DDP application has been prepared in coordination with Oregon City Public Works and Oregon Department of Transportation staff and considers all applicable mobility standards required by the city and ODOT (please see Appendix H). As identified in the TIA, all off-site study intersections are forecast to continue to meet the established v/c thresholds with the addition of project generated traffic.

Based on coordination with City staff, a pro-rata share contribution is required for the TSP project #D95, Beavercreek Road/OR-213 added westbound right turn merge lane. The City has indicated the current rate is $404 per weekday PM peak hour trip. As shown in Table 4 of the TIA, the project is forecast to contribute 55 project trips to the intersection during the PM peak hour. This results in an estimated fee of $22,220 at this location as pro-rata share contribution to the planned improvement project.

The project proposes to modify the existing signals at both Molalla Ave and Beavercreek Rd where the proposed street connects to the existing street system.

16.12.035 - Driveways.
A. All new development and redevelopment shall meet the minimum driveway spacing standards identified in Table 16.12.035.A.
Table 16.12.035.A Minimum Driveway Spacing Standards

Table 16.12.035.A Minimum Driveway Spacing Standards		
Street Functional Classification	***Minimum Driveway Spacing Standards***	***Distance***
Major Arterial Streets	*Minimum distance from a street corner to a driveway for all uses other than detached single and two-family dwellings*	*175 ft.*
Minor Arterial Streets	*Minimum distance from a street corner to a driveway for all uses other than detached single and two-family dwellings*	*175 ft.*
Collector Streets	*Minimum distance from a street corner to a driveway for all uses other than detached single and two-family dwellings*	*100 ft.*
Local Streets	*Minimum distance from a street corner to a driveway for all uses other than detached single and two-family dwellings*	*25 ft.*

The distance from a street corner to a driveway is measured along the right-of-way from the edge of the intersection (on the same side of the road) right-of-way to the nearest portion of the driveway and the distance between driveways is measured at the nearest portions of the driveway at the right-of-way.

Applicant's Response:
All proposed driveways meet the access spacing requirements identified in Table 16.12.035.A, with the exception of the easterly driveway for Parcel A and the westerly driveway for Parcel B. The separation between these two driveways measured at the right-of-way from curb-to-curb on the driveways is approximately 48.3 ft. This driveway separation distance is due to the large-radius curve entering Parcel a so that truck turning movements can occur without impacting oncoming traffic. With the pre-application notes prepared by Public Works indicating the proposed road was a Local

Street, this driveway separation met the minimum 25-ft separation identified in the above table. However, subsequent to the pre-application notes Public Works increased the road classification to a Collector Street, which places the driveway spacing in conflict with Table 16.12.035.A.

The applicant wishes to keep the proposed driveways as shown on the proposed site layout (Shts DDP-C1.0 and GDP-C1.0 for the following reasons:

1. **Oregon Fire Code Appendix D106.2 and D106.3 require two access points for multi-family residential projects having more than 200 units and that they be separated by a distance not less than one-half of the length of the maximum overall diagonal dimension of the property (measured in a straight line between accesses). The maximum diagonal distance of Parcel B is 879 ft, resulting in a minimum driveway spacing of approximately 439 ft.**
2. **Moving the Parcel B westerly driveway further east along the proposed public road to a distance of 439 ft from the easterly driveway results in splitting the current 70-unit building in two, reducing unit count while increasing building construction costs to a point where the multi-family development becomes unviable. Such a new driveway location would place it in the middle of the west diagonal leg of this building (see Sht GDP-C1.0 for building reference).**

B. Nonresidential or multi-family residential driveways that generate high traffic volumes shall be treated as intersections and shall adhere to requirements of OCMC 16.12.020.

Applicant's Response:
Proposed driveways comply with the intersection angles identified in OCMC 16.12.020. Please see Sht DDP-C1.0.

C. One driveway may be allowed per frontage, unless otherwise restricted. In no case shall more than two driveways be allowed for any single-family attached or detached residential property, duplex, 3-4 plex, or property developed with an ADU or internal conversion with multiple frontages, unless otherwise approved by the City Engineer.

Applicant's Response:
Each parcel includes two driveways as shown on Sht DDP-C1.0. see also GDP-C1.0.

D. When a property fronts multiple roads, access shall be provided from the road with the lowest classification in the Transportation System Plan whenever possible to minimize points of access to arterials and collectors. At the discretion of the City Engineer, properties fronting a collector or arterial road may be allowed a second driveway, for the creation of a circulation pattern that eliminates reverse maneuvers for vehicles exiting a property if applied for and granted through procedures in OCMC 16.12.013. All lots proposed with a driveway and lot orientation on a collector or minor arterial shall combine driveways into one joint access per two or more lots unless the City Engineer determines that:

1. No driveway access may be allowed since the driveway(s) would cause a significant traffic safety hazard; or
2. Allowing a single driveway access per lot will not cause a significant traffic safety hazard.

Applicant's Response:
Parcels A & D include frontage on Molalla Ave and Parcel D includes frontage on Beavercreek Way as well. Access to Parcels A & D are proposed to come from the proposed new public street. Access to Parcel B comes from the proposed new public street. Please see Sht DDP-C1.0

E. All driveway approaches shall be limited to the dimensions identified in Table 16.12.035.D.
Table 16.12.035.D Driveway Approach Size Standards

Table 16.12.035.D Driveway Approach Size Standards			
Property Use	***Minimum Driveway Approach Width***		***Maximum Driveway Approach Width***
Single-Family Attached	*10 feet*		*12 feet*
Single-Family Detached in R-5 & R-3.5	*10 feet*		*12 feet*
Single-Family Detached in R-10, R-8, & R-6	*12 feet*		*24 feet*
Duplexes	*12 feet*		*24 feet*
3-4 Plexes	*12 feet*		*24 feet*
Multi-Family	*18 feet*		*30 feet*
Commercial, Industrial, Office, Institutional, Mixed Use, and/or Nonresidential	*One-Way 12 feet*	*Two-Way 20 feet*	*40 feet*

Driveway widths shall match the width of the driveway approach where the driveway meets sidewalk or property line but may be widened onsite (for example between the property line and the entrance to a garage). Groups of more than four parking spaces shall be so located and served by driveways so that their use will not require backing movements or other maneuvering within a street right-of-way other than an alley.

Applicant's Response:
Each of the proposed driveways will be commercial/mixed use driveways. The overall development is considered horizontal mixed-use with a maximum driveway width of 40'. Each of the proposed driveways falls within this maximum width with the exception of the northerly driveway for Parcel D. This driveway width is approximately 45.4' wide at the right-of-way line due to the curved nature of the proposed public street. This driveway tapers into the site to a 24' wide driveway. Making it narrower to satisfy the 40' wide width at the right-of-way line would result in an internal drive aisle width of just over 19' wide, which conflicts with the 24' minimum two-way drive aisle width requirements of OCMC 17.52.030.D. The curve in the public street is the driving factor in making the driveway wider than 40' at the right-of-way line. The centerline curve in the proposed public street exceeds the minimum centerline radius requirement of 185' for a 25-mph curve according to Table 3-2 of the city's street design standards. Adequate sight distance can be achieved at this driveway as shown on Sht DDP-C1.0.

Holding a maximum driveway width of 40' at the right-of-way line could technically accommodate a minimum 25' radius curb return within the right-of-way and transition to a sharper, compound curve beyond the right-of-way. An 18' radius would work just inside the parcel, but doing so could confuse drivers entering this driveway by unnecessarily directing them towards exiting vehicles. We do not recommend this solution.

F. The City Engineer reserves the right to require a reduction in the number and size of driveway approaches as far as practicable for any of the following purposes:

1. *To provide adequate space for on-street parking;*
2. *To facilitate street tree planting requirements;*
3. *To assure pedestrian and vehicular safety by limiting vehicular access points; and*
4. *To assure that adequate sight distance requirements are met.*
    a. *Where the decision maker determines any of these situations exist or may occur due to the approval of a proposed development for non-residential uses or attached or multi-family housing, a shared driveway shall be required and limited to twenty-four feet in width adjacent to the sidewalk or property line.*

Applicant's Response:
The applicant acknowledges the city's ability to limit the number and size of driveways; however, doing so beyond what is proposed puts tenant interest at risk.

G. For all driveways, the following standards apply.
1. Each new or redeveloped curb cut shall have an approved concrete approach or asphalted street connection where there is no concrete curb and a minimum hard surface for at least ten feet back into the property as measured from the current edge of sidewalk or street pavement to provide for controlling gravel tracking onto the public street. The hard surface may be concrete, asphalt, or other surface approved by the City Engineer.

2. Any driveway approach built within public right-of-way shall be built and permitted per City requirements as approved by the City Engineer.

3. No driveway with a slope of greater than fifteen percent shall be permitted without approval of the City Engineer.

Applicant's Response:
Proposed parcel driveways meet the city's commercial driveway standards as described herein and as shown on Sht DDP-C1.0, with minimum curb return radii of 25' (Parcel A's truck access curb return is 40' to accommodate truck movements so they do not impact oncoming traffic). Each of the parcels will provide separate DDP with more detailed access information; however, all driveways are expected to be flatter than 15%.

H. Exceptions. The City Engineer reserves the right to waive these standards or not allow driveway access, if the driveway(s) would cause a significant traffic safety hazard. Narrower driveway widths may be considered where field conditions preclude use of recommended widths. When larger vehicles and trucks will be the predominant users of a particular driveway, turning templates may be utilized to

develop a driveway width that can safely and expeditiously accommodate the prevalent type of ingress and egress traffic.

Applicant's Response:
The applicant acknowledges the exceptions described in this section. The applicant requests an exception to the Parcel A northerly driveway width via this section.

16.12.065 - Building site—Grading.
Grading of building sites shall conform to the State of Oregon Structural Specialty Code, Title 18, any approved grading plan and any approved residential lot grading plan in accordance with the requirements of OCMC 13.12,15.48, 16.12 and the Public Works Stormwater and Grading Design Standards, and the erosion control requirements of OCMC 17.47.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. The proposed rough grading plan will be prepared in conformance to the above-reference sections and standards at the time of detailed construction plan submittal. For detailed grading of Parcels A, B, & D, each of these parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

16.12.085 - Easements.
The following shall govern the location, improvement and layout of easements:
A. Utilities. Utility easements shall be required where necessary as determined by the City Engineer. Insofar as practicable, easements shall be continuous and aligned from block-to-block within the development and with adjoining subdivisions or partitions. Specific utility easements for water, sanitary or storm drainage shall be provided based on approved final engineering plans.

Applicant's Response:
The project proposes a public sanitary sewer easement on the east side of Parcel B for the extension of sanitary sewer service to the project's northeast corner for future extension by others to ultimately abandon the Hilltop Ave sanitary sewer pump station. The exact location of the easement alignment will be confirmed during DDP and detailed construction plan preparation for Parcel D; however, the currently proposed DDP plan proposes a stub to the Parcel B easterly driveway for Parcel B's extension. Parcel B will extend the sanitary sewer to the northeast corner of the property.

B. Unusual Facilities. Easements for unusual facilities such as high voltage electric transmission lines, drainage channels and stormwater detention facilities shall be adequately sized for their intended purpose, including any necessary maintenance roads. These easements shall be shown to scale on the preliminary and final plats or maps. If the easement is for drainage channels, stormwater detention facilities or related purposes, the easement shall comply with the requirements of the Public Works Stormwater and Grading Design Standards.

Applicant's Response:
While unusual easements are not contemplated for the proposed project, if the need arises during detailed design and construction plan preparation. We've coordinated with PGE on a preliminary power service routing that aligns with the project's PUE location. PGE's preliminary layout is included in Appendix I, together with our correspondence with PGE on preliminary power routing and Molalla Ave utility poles.

C. Watercourses. Where a development is traversed or bounded by a watercourse, drainageway, channel or stream, a stormwater easement or drainage right-of-way shall be provided which conforms substantially to the line of such watercourse, drainageway, channel or stream and is of a sufficient width to allow construction, maintenance and control for the purpose as required by the responsible agency. For those subdivisions or partitions which are bounded by a stream of established recreational value, setbacks or easements may be required to prevent impacts to the water resource or to accommodate pedestrian or bicycle paths.

Applicant's Response:
The project does not traverse, nor is it bounded by a watercourse, drainageway, channel or stream. The project's ultimate stormwater point of connection is located at the existing storm line at the low point in the proposed public street near Beavercreek Rd. This existing storm line extends to the east and discharges into the existing drainage channel of a tributary of Newell Creek. The stormwater point of connection lies within proposed public right-of-way.

D. Access. When easements are used to provide vehicular access to lots within a development, the construction standards, but not necessarily width standards, for the easement shall meet City specifications. The minimum width of the easement shall be 20 feet. The easements shall be improved and recorded by the applicant and inspected by the City Engineer. Access easements may also provide for utility placement.

Applicant's Response:
The project proposes an access easement for future access to TL 700 & 800 as identified on the Beavercreek Access Management Plan. This access is an easement only and no physical improvements will be made.

E. Resource Protection. Easements or other protective measures may also be required as the Community Development Director deems necessary to ensure compliance with applicable review criteria protecting any unusual significant natural feature or features of historic significance.

Applicant's Response:
The proposed development does not generate the need for resource protection; however, formal development of Parcel B includes a portion of land within the Geologic Hazard area that the tenant of Parcel B may, or may not, consider setting aside for resource protection. This may be addressed with the Parcel B DDP process.

16.12.090 - Minimum improvements—Procedures.

In addition to other requirements, improvements installed by the applicant either as a requirement of these or other regulations, or at the applicant's option, shall conform to the requirements of this title and be designed to City specifications and standards as set out in the City's facility master plan and Public Works Stormwater and Grading Design Standards. The improvements shall be installed in accordance with the following procedure:

A. Improvement work shall not commence until construction plans have been reviewed and approved by the City Engineer and to the extent that improvements are located in County or State right-of-way, they shall be approved by the responsible authority. To the extent necessary for evaluation of the proposal, the plans may be required before approval of the preliminary plat of a subdivision or partition. Expenses incurred thereby shall be borne by the applicant and paid for prior to final plan review.

Applicant's Response:
The applicant acknowledges the requirement to conform to applicable city requirements.

B. Improvements shall be constructed under the inspection and approval of the City Engineer. Expenses incurred thereby shall be borne by the applicant and paid prior to final approval. Where required by the City Engineer or other City decision-maker, the applicant's project engineer also shall inspect construction.

Applicant's Response:
The applicant acknowledges this criterion.

C. Erosion control or resource protection facilities or measures are required to be installed in accordance with the requirements of OCMC 17.47, 17.49 and the Public Works Erosion and Sediment Control Standards.

Applicant's Response:
The applicant acknowledges this criterion. Detailed construction plans will be prepared following a positive decision of this GDP/DDP application in conformance with the above requirements.

D. Underground utilities, waterlines, sanitary sewers and storm drains installed in streets shall be constructed prior to the surfacing of the streets. Stubs for service connections for underground utilities, such as, storm, water and sanitary sewer shall be placed beyond the ten-foot wide franchise utility easement within private property.

Applicant's Response:
The applicant acknowledges this criterion. Utility stubs to each parcel will extend beyond the 5' PUE where the PUE exists (please see Sht DDP-C1.0, C1.2, and C1.3 for PUE location). In the MUC-2 zone, a 5' PUE is required. The location of the PUE has been coordinated with PGE and alternates from one side of the proposed public street to the other as shown on the above-referenced sheets. Please see Appendix I for the preliminary PGE power plan.

E. As-built construction plans and digital copies of as-built drawings shall be filed with the City Engineer upon completion of the improvements.

Applicant's Response:
The applicant acknowledges the requirement of this section.

F. The City Engineer may regulate the hours of construction and access routes for construction equipment to minimize impacts on adjoining residences or neighborhoods.

Applicant's Response:
The applicant acknowledges the requirement of this section.

16.12.095 - Minimum improvements—Public facilities and services.
The following minimum improvements shall be required of all applicants for a development, unless the decision-maker determines that any such improvement is not proportional to the impact imposed on the City's public systems and facilities:
A. Transportation System. Applicants and all subsequent lot owners shall be responsible for improving the City's planned level of service on all public streets, including alleys within the development and those portions of public streets adjacent to but only partially within development. Applicants are responsible for designing and providing adequate vehicular, bicycle and pedestrian access to their developments and for accommodating future access to neighboring undeveloped properties that are suitably zoned for future development. Storm drainage facilities shall be installed and connected to off-site natural or man-made drainageways. Upon completion of the street improvement survey, the applicant shall reestablish and protect monuments of the type required by ORS 92.060 in monument boxes with covers at every public street intersection and all points or curvature and points of tangency of their center line, and at such other points as directed by the City Engineer.

Applicant's Response:
Please see the proposed street and utility improvement plans included with this DDP application, together with the project's Traffic Impact Analysis. The proposed improvements shown on these plans are the result of coordination with Public Works staff relative to street alignment/configuration. Formal construction plans will follow, pending on the outcome of the masterplan land-use process. Final construction plans will include requirements to preserve existing survey monuments (or replace any that have been damaged) and to include monuments in monument boxes for street centerline monumentation in conformance with this section.

B. Stormwater Drainage System. Applicants shall design and install drainage facilities within a development and shall connect the development's drainage system to the appropriate downstream storm drainage system as a minimum requirement for providing services to the applicant's development. The applicant shall obtain county or state approval when appropriate. Applicants are responsible for extending the appropriate storm drainage system to the development site and for providing for the connection of upgradient properties to that system. The applicant shall design the drainage facilities in accordance with City drainage master plan requirements, OCMC 13.12 and the Public Works Stormwater and Grading Design Standards.

Applicant's Response:
Please see the proposed street and utility improvement plans included with this DDP application, together with the project's Stormwater Management Report. Upgradient properties are already served with stormwater services, so extension of the project's storm system to upgradient properties is not necessary. That said, the grading design is prepared so that proposed grading does not impound stormwater runoff from adjacent properties.

C. Sanitary Sewer System. The applicant shall design and install a sanitary sewer system to serve all lots or parcels within a development in accordance with the City's sanitary sewer design standards and shall connect those lots or parcels to the City's sanitary sewer system, except where connection is required to the county sanitary sewer system as approved by the county. Applicants are responsible for extending the City's sanitary sewer system to the development site and through the applicant's property to allow for the future connection of neighboring undeveloped properties that are suitably zoned for future development. The applicant shall obtain all required permits and approvals from all affected jurisdictions prior to final approval and prior to commencement of construction. Design shall be approved by the City Engineer before construction begins.

Applicant's Response:
The project proposes a public sanitary sewer easement on the east side of Parcel B for the extension of sanitary sewer service to the project's northeast corner for future extension by others to ultimately abandon the Hilltop Ave sanitary sewer pump station. The exact location of the easement alignment will be confirmed during DDP and detailed construction plan preparation for Parcel D; however, the currently proposed DDP plan proposes a stub to the Parcel B easterly driveway for Parcel B's extension. Parcel B will extend the sanitary sewer to the northeast corner of the property.

D. Water System. The applicant shall design and install a water system to serve all lots or parcels within a development in accordance with the City public works water system design standards and shall connect those lots or parcels to the City's water system. Applicants are responsible for extending the City's water system to the development site and through the applicant's property to allow for the future connection of neighboring undeveloped properties that are suitably zoned for future development.

Applicant's Response:
The project proposes to connect the existing water lines in Beavercreek Rd and Molalla Ave via a 12-inch water line within the proposed public street. The Molalla Ave water connection will be on the west side of Molalla Ave and will not connect to the transmission line on the east side of Molalla Ave.

E. Street Trees. Refer to OCMC 12.08, Street Trees.

Applicant's Response:
Please see our response to OCMC 12.08.

F. Bench Marks. At least one bench mark shall be located within the subdivision boundaries using datum plane specified by the City Engineer.

Applicant's Response:
The applicant acknowledges this requirement and will include the same requirement on the final construction plans.

G. Other Utilities. The applicant shall make all necessary arrangements with utility companies or other affected parties for the installation of underground lines and facilities. Existing and new electrical lines and other wires, including but not limited to communication, street lighting and cable television, shall be placed underground.

Applicant's Response:
The project team has already coordinated with PGE for a preliminary underground utility route through the site. The other dry utilities serving the site will follow PGE via a joint utility trench. The final construction plans will include additional coordination with affected utilities.

H. Oversizing of Facilities. All facilities and improvements shall be designed to City standards as set out in the City's facility master plan, public works design standards, or other City ordinances or regulations. Compliance with facility design standards shall be addressed during final engineering. A development may be required to modify or replace existing offsite systems if necessary to provide adequate public facilities. The City may require oversizing of facilities to meet standards in the City's facility master plan or to allow for orderly and efficient development. Where oversizing is required, the applicant may request reimbursement from the City for oversizing based on the City's reimbursement policy and funds available, or provide for recovery of costs from intervening properties as they develop.

Applicant's Response:
As noted above, the project proposes to connect the existing water lines in Beavercreek Rd and Molalla Ave via a 12-inch water line within the proposed public street. The project is not expected to need a 12-inch water line; however, the water system master plan indicates a 12-inch water line is to route through this site. The applicant may seek recovery for over-sizing this line beyond the needs of the project, subject to water demand calculations at the time of formal construction plan submittal.

I. Erosion Control Plan—Mitigation. The applicant shall be responsible for complying with all applicable provisions of OCMC 17.47 with regard to erosion control.

Applicant's Response:
The applicant acknowledges this criterion.

16.12.100 - Same—Road standards and requirements.
A. The creation of a public street and the resultant separate land parcels shall be in conformance with requirements for subdivisions or partitions and the applicable street design standards of this Chapter. However, the decision-maker may approve the creation of a public street to be established by deed without full compliance with the regulations applicable to subdivisions or partitions where any of the following conditions exist:

1. The establishment of the public street is initiated by the City Commission and is declared essential for the purpose of general traffic circulation and the partitioning of land is an incidental effect rather than the primary objective of the street;

2. The tract in which the street is to be dedicated is within an isolated ownership either not over one acre or of such size and characteristics as to make it impossible to develop building sites for more than three dwelling units.

Applicant's Response:
The applicant acknowledges the requirements of this section. The main subject property includes four parcels, which will be adjusted to result in the geometry of Parcels A, B, C, and D. Parcel C is proposed to be dedicated to the city for public road and utility purposes, together with the public road through TL 500.

B. For any public street created pursuant to subsection A of this section, a copy of a preliminary plan and the proposed deed shall be submitted to the Community Development Director and City Engineer at least ten days prior to any public hearing scheduled for the matter. The plan, deed and any additional information the applicant may submit shall be reviewed by the decision-maker and, if not in conflict with the standards of Title 16 and Title 17, may be approved with appropriate conditions.

Applicant's Response:
The applicant acknowledges this criterion.

16.12.105 - Same—Timing requirements.
A. Prior to applying for final plat approval, the applicant shall either complete construction of all public improvements required as part of the preliminary plat approval or guarantee the construction of those improvements. Whichever option the applicant elects shall be in accordance with OCMC 17.50.140.

Applicant's Response:
The applicant proposes a Property Line Adjustment process rather than a partition plat or subdivision plat. The applicant acknowledges the construction completion or financial guarantee provisions for public improvements in this section

B. Construction. The applicant shall construct the public improvements according to approved final engineering plans and all applicable requirements of this Code, and under the supervision of the City Engineer. Under this option, the improvement shall be complete and accepted by the City Engineer prior to final plat approval.

Applicant's Response:
The applicant acknowledges this criterion.

16.12.110 -Public improvements—Financial guarantees.
A. To ensure construction of required public improvements, the applicant shall provide the City with a performance guarantee in accordance with OCMC 17.50.140.

Applicant's Response:
The applicant acknowledges this criterion.

B. After satisfactory completion of required public improvements and facilities, all public improvements not constructed by the City, shall be maintained and under warranty provided by the property owner or developer constructing the facilities until the City accepts the improvements at the end of the warranty period as prescribed in OCMC 17.50.141.

Applicant's Response:
The applicant acknowledges this criterion.

16.12.120 Waiver of Remonstrance
The review authority may require a property owner to sign a waiver of remonstrance against the formation of and participation in a local improvement district where it deems such a waiver necessary to provide needed improvements reasonably related to the impacts created by the proposed development. To ensure compliance with this chapter, the review authority may require an applicant to sign or accept a legal and enforceable covenant, contract, dedication, easement, performance guarantee, or other document, which shall be approved in form by the City Attorney.

Applicant's Response:
The applicant acknowledges this criterion.

CHAPTER 16.20 PROPERTY LINE ADJUSTMENTS AND ABANDONMENT PROCESS AND STANDARDS

16.20.010 Purpose and general provisions.
The community development director under the applicable provisions in Chapter 17.50 shall process applications for property line adjustments and abandonments as a Type I decision. Approval shall be granted only upon determination by the community development director that all applicable requirements of this title and ORS Chapter 92 have been met.

16.20.020 Adjustment/abandonment submission requirements.
An application for a property line adjustment or abandonment shall include two copies of the following documents submitted to the Community Development Director:

A. Application requirements as identified in OCMC 17.50.080;

B. A boundary survey prepared by an Oregon professional land surveyor in accordance with ORS 92.060(7) except where the application proposes the relocation of a currently monumented common boundary of a lot in a subdivision or a parcel in a partition when the adjusted property line is a distance of even width along the common boundary. The survey shall include in its title the following: "Proposed Property Line Adjustment Survey," shall identify the city planning file number and approval date immediately below the title block with space for signature and date by the community development director;

C. Legal descriptions of the parent parcels to be adjusted and the resulting parcels to be created;

D. A current preliminary title report or trio for the subject property(ies);

E. A receipt from the county assessor's office indicating that all taxes for the lot or parcels involved are paid in full for the preceding tax year; and

F. Documentation indicating there are not any liens favoring the city on the subject site.

Applicant's Response:
The applicant acknowledges this criterion. The main subject property consists of three legal lots. One of the parcels (likely Parcel B) can include the proposed public street and dedicate the proposed public street by deed. The applicant understands the Property Line Adjustment will occur as a separate Type I application and can be completed prior to DDP submittal of Parcels A, B, and D. Please see Appendix J for the current title report.

16.20.040 Adjustment/abandonment approval standards.
All parcels resulting from a lot line adjustment or abandonment shall conform to the applicable requirements of Title OCMC 16 and 17 including the standards within the zoning designation such as, but not limited to, lot width, depth, lot coverage, subdivision density requirements, setbacks, as well as access and frontage requirements, ORS 92.010 to ORS 92.160, and any other city regulation deemed applicable by the community development director or state law. In no case shall a lot line adjustment result in a parcel that is unbuildable due to the presence of an overlay district or other physical constraint unless the parcel is recorded as a "tract" as defined by OCMC 17.04.1303.

The community development director shall determine if the applicant's submission complies with these standards, and issue to the applicant a notice of decision consistent with OCMC 17.50.120. The

community development Director decision is final and not appealable to any other decision-maker within the city.

Applicant's Response:
The applicant acknowledges this criterion.

CHAPTER 17.29 MUC MIXED USE CORRIDOR DISTRICT

17.29.010 Designated.

The mixed-use corridor (MUC) district is designed to apply along selected sections of transportation corridors such as Molalla Avenue, 7th Street, Beavercreek Road, and along Warner-Milne Road. Land uses are characterized by high-volume establishments such as retail, service, office, multi-family residential, lodging, recreation and meeting facilities, or a similar use as defined by the Community Development Director. A mix of high-density residential, office, and small-scale retail uses are encouraged in this district. Moderate density (MUC-1) and high density (MUC-2) options are available within the MUC zoning district. The area along 7th Street is an example of MUC-1, and the area along Warner-Milne Road is an example of MUC-2.

17.29.020 - Permitted uses—MUC-1 and MUC-2.

A. Banquet, conference facilities and meeting rooms.
B. Bed and breakfast/boarding houses, hotels, motels, and other lodging facilities.
C. Child care centers and/or nursery schools.
D. Indoor entertainment centers and arcades.
E. Health and fitness clubs.
F. Medical and dental clinics, outpatient; infirmary services.
G. Museums, libraries and cultural facilities.
H. Offices, including finance, insurance, real estate and government.
I. Outdoor markets, such as produce stands, craft markets and farmers markets that are operated on the weekends and after six p.m. during the weekday.
J. Postal services.
K. Parks, playgrounds, playfields and community or neighborhood centers.
L. Repair shops, for radio and television, office equipment, bicycles, electronic equipment, shoes and small appliances and equipment.
M. Multi-family residential, triplexes and quadplexes.
N. One or two dwelling units in conjunction with a nonresidential use, provided that the residential use occupies no more than fifty percent of the total square footage of the development.
O. Restaurants, eating and drinking establishments without a drive-through.
P. Services, including personal, professional, educational and financial services; laundry and dry-cleaning.
Q. Retail trade, including grocery, hardware and gift shops, bakeries, delicatessens, florists, pharmacies, specialty stores, marijuana, and similar, provided the maximum footprint for a standalone building with a single store or multiple buildings with the same business does not exceed sixty thousand square feet.
R. Seasonal sales.
S. Residential care facilities, assisted living facilities; nursing homes and group homes for over fifteen patients licensed by the state.
T. Studios and galleries, including dance, art, photography, music and other arts.
U. Utilities: Basic and linear facilities, such as water, sewer, power, telephone, cable, electrical and natural gas lines, not including major facilities such as sewage and water treatment plants, pump stations, water tanks, telephone exchanges and cell towers.
V. Veterinary clinics or pet hospitals, pet day care.
W. Home occupations.
X. Research and development activities.

Y. Temporary real estate offices in model dwellings located on and limited to sales of real estate on a single piece of platted property upon which new residential buildings are being constructed.
Z. Transportation facilities.
AA. Live/work dwellings.
BB. Accessory dwelling unit in conjunction with a legally established non-conforming single-family dwelling.
CC. Duplex.
DD. After-hours public parking.

Applicant's Response:
The proposed development uses include multi-family residential (17.29.020.M), retail less than 60,000 sf in building area (17.29.020.Q), and restaurant uses (17.29.020.O). The restaurant use is approved in this zone; however, a drive-through is a conditional use. The conditional use is further described in subsequent responses. Seasonal sales are also a permitted use in this zone, which may arise from time to time on the retail pad.

17.29.030 - Conditional uses—MUC-1 and MUC-2 zones.
The following uses are permitted in this district when authorized and in accordance with the process and standards contained in OCMC 17.56:
A. Drive-through facilities;
B. Emergency service facilities (police and fire), excluding correctional facilities;
C. Gas stations;
D. Outdoor markets that do not meet the criteria of OCMC 17.29.020.I;
E. Public utilities and services including sub-stations (such as buildings, plants and other structures);
F. Public and/or private educational or training facilities;
G. Religious institutions;
H. Retail trade, including gift shops, bakeries, delicatessens, florists, pharmacies, specialty stores and any other use permitted in the neighborhood, historic or limited commercial districts that have a footprint for a standalone building with a single store in excess of sixty thousand square feet in the MUC-1 or MUC-2 zone;
I. Hospitals;
J. Parking not in conjunction with a primary use on private property, excluding after-hours public parking;
K. Passenger terminals, excluding bus stops;
L. Shelters.

Applicant's Response:
Both Parcels A and D include drive-throughs. A drive-through is a conditional use in the MUC-2 zone and will be reviewed by Planning Commission as a part of this project's General Development Plan process. Please see our responses to 17.56 Conditional Use later in this code response.

17.29.040 - Prohibited uses in the MUC-1 and MUC-2 zones.
The following uses are prohibited in the MUC district:
A. Distributing, wholesaling and warehousing;
B. Outdoor storage;

C. Outdoor sales that are not ancillary to a permitted use on the same or abutting property under the same ownership;
D. Correctional facilities;
E. Heavy equipment service, repair, sales, storage or rentals (including but not limited to construction equipment and machinery and farming equipment);
F. Kennels;
G. Motor vehicle and recreational vehicle sales and incidental service;
H. Motor vehicle and recreational vehicle repair/service;
I. Self-service storage facilities;
J. Marijuana production, processing, wholesaling, research, testing, and laboratories;
K. Mobile food units, except with a special event permit.

Applicant's Response:
The proposed uses for this project are either approved outright or will be reviewed as a conditional use, and do not fall within the prohibited uses identified in this section.

17.29.050 - Dimensional standards—MUC-1.
Applicant's Response:
The subject property lies within the MUC-2 zone. Accordingly, this section is not applicable.

17.29.060 - Dimensional standards—MUC-2.
A. Minimum lot area: None.

Applicant's Response:
Acknowledged.

B. Minimum floor area ratio: 0.25.

Applicant's Response:
The project's overall floor area ratio is 0.73, which exceeds the minimum requirement of this zone. Please our response to 17.29.070 for greater detail.

C. Minimum building height: Twenty-five feet or two stories except for accessory structures or buildings under one thousand square feet.

Applicant's Response:
Acknowledged. Each of the parcels will seek Detailed Development Plan approval following this General Development Plan decision and will elaborate more on their respective building heights in those applications; however, each of the buildings will be in compliance with this section.

D. Maximum building height: Sixty feet.

Acknowledged. Each of the parcels will seek Detailed Development Plan approval following this General Development Plan decision and will elaborate more on their respective building heights in those applications; however, each of the buildings will be in compliance with this section.

E. Minimum required setbacks if not abutting a residential zone: None.

Applicant's Response:
The project abuts residential zoning along the property's most northern boundary. Minimum setbacks for the residentially zone properties north of the property will be addressed below. The property abuts an adjacent MUC-2 zoned property at the most northwesterly corner of the site (adjacent Wendy's restaurant). The applicant acknowledges a zero setback along this adjacent property; however, the proposed retail building is located away from this adjacent property.

F. Minimum required interior and rear yard setbacks if abutting a residential zone: Twenty feet, plus one foot additional yard setback for every two feet of building height over thirty-five feet.

Applicant's Response:
The project abuts residential zoning along the property's most northern boundary (R-2 and R-10). Proposed buildings abutting this residentially zone property include Retail and Multi-Family Buildings.

- **Retail - This building is expected to be less than 35 feet tall, so no additional building setback is applied, and the minimum setback is 20 feet. The proposed retail building is located approximately 36 feet south of the northerly property line, which exceeds the minimum setback.**
- **Multi-Family – There are three multi-family buildings proposed on Parcel B, two of which are situated in the northern part of the site, while the third fronts the internal public street. The two northerly buildings are approximately 60 feet tall and result in a minimum building setback of 33 ft (60'-35' = 25'; 25' / 2 = 12.5', or 13'; min setback = 20' + 13' = 33'). These buildings are proposed to be approximately 93 feet south of the northerly property line, which exceeds the minimum setback.**

G. Maximum Allowed Setbacks.
1. Front yard: Five feet.

Applicant's Response:
Maximum building setbacks are exceeded with the Retail building on Parcel A and the Quick Service Restaurant building on Parcel D, which will be addressed via implementation of at least one of the nine design elements described in 17.62.055.D and described in more detail during the Detailed Development Plan applications for each of those parcels. The multi-family building which fronts the proposed internal street is set back slightly further away from the right-of-way to provide adequate sight distance at the entrance drive for the multi-family development. Please see Sht DDP-C1.0 for sight distance information resulting in the need to set the building back further from the right-of-way. This will be further addressed during the Detailed Development Plan application for the multi-family parcel.

2. Interior side yard: None.

Applicant's Response:
Acknowledged. Each of the proposed buildings on the proposed parcels are set back from interior lot lines to reduce impact to adjacent properties.

3. Corner side yard abutting street: Twenty feet.

Applicant's Response:
Parcels A and D both abut Molalla Ave and the proposed public road. Accordingly, this criterion applies to both of these proposed parcels. Both Parcel A and D buildings are set back well beyond the twenty foot setback as can be seen by inspection of the General Development Plan Site Plan (see Sht GDP-C1.0).

4. Rear yard: None.

Applicant's Response:
Acknowledged. Each of the proposed buildings on the proposed parcels are set back from rear lot lines to reduce impact to adjacent properties. Please see our response to 17.29.060.F for further discussion of Multi-Family setback where it abuts a residential zone.

H. Maximum site coverage of building and parking lot: Ninety percent.

Applicant's Response:
Proposed Total Site Coverage for each of the parcels is shown below, subject to Detailed Development Plan approval for each parcel:

Parcel	Tot Parcel Area (sf)	Building & Parking Lot Area (sf)	Site Coverage (%)
A	85,346	74,500	87+/-
B	288,563	185,000	64+/-
D	87,773	55,000	63+/-

These values are approximate and show broad compliance with the criterion; however, each parcel will provide detailed information with their own Detailed Development Plan applications.

I. Minimum landscaping requirement (including parking lot): Ten percent.

Applicant's Response:
Proposed landscaping for each of the parcels is shown below, subject to Detailed Development Plan approval for each parcel:

Parcel	Tot Parcel Area (sf)	Proposed Landscape Area (sf)	Landscape Coverage (%)
A	85,346	11,000	13+/-
B	288,563	108,000	37+/-
D	87,773	34,000	39+/-

These values are approximate and show broad compliance with the criterion; however, each parcel will provide detailed information with their own Detailed Development Plan applications.

J. Residential minimum net density of 17.4 units per acre, except that no minimum net density shall apply to residential uses proposed above nonresidential uses in a mixed-use configuration or to live/work dwellings.

Applicant's Response:
Parcel B includes multi-family residential use with 208 total units. The total area of Parcel B is 288,617 sf. Of that total area, the area east of the geologic hazard area 35-ft setback line, building setback line along the north property line, the area covered by a PUE, and that area included within the proposed public sanitary sewer easement are excluded. The net developable area then becomes 199,641 sf or 4.58 acres, resulting in a net residential density of 45.3 units per acre, which exceeds the minimum density identified in this criterion.

17.29.070 - Floor area ratio (FAR).
Floor area ratios are a tool for regulating the intensity of development. Minimum FARs help to achieve more intensive forms of building development in areas appropriate for larger-scale buildings and higher residential densities.
A. The minimum floor area ratios contained in OCMC 17.29.050 and 17.29.060 apply to all nonresidential and mixed-use building development, except stand-alone commercial buildings less than ten thousand square feet in floor area.
B. Required minimum FARs shall be calculated on a project-by-project basis and may include multiple contiguous blocks. In mixed-use developments, residential floor space will be included in the calculations of floor area ratio to determine conformance with minimum FARs.
C. An individual phase of a project shall be permitted to develop below the required minimum floor area ratio provided the applicant demonstrates, through covenants applied to the remainder of the site or project or through other binding legal mechanism, that the required density for the project will be achieved at project build out.

Applicant's Response:
The minimum FAR for the MUC-2 zone is 0.25 per OCMC 17.29.060.B. The proposed project includes mixed use buildings consisting of multi-family residential, retail (including an in-line quick service restaurant), and a quick-service restaurant. Proposed FAR exceeds the minimum FAR required in this zone. Please see General Development Plan Sht FAR-EXH for FAR as proposed.

17.29.080 – Additional standards for Thimble Creek concept plan area.
A. Applicability. This section applies to all development in the MUC-2 district within the Thimble Creek Concept Plan Area.
B. Relationship of Standards. These standards apply in addition to and supersede the standards of the MUC-2 zone within the Thimble Creek Concept Plan Area. In the event of a conflict, the standards of this section control.
C. Uses.

1. Light industrial uses limited to the design, light manufacturing, processing, assembly, packaging, fabrication and treatment of products made from previously prepared or semi-finished materials are permitted.
2. The following permitted uses, alone or in combination, shall not exceed twenty percent of the total gross floor area of all of the other permitted and conditional uses within the development site. The total gross floor area of two or more buildings may be used, even if the buildings are not all on the same parcel or owned by the same property owner, as long as they are part of the net developable portion of contiguous mixed-use corridor zoned lands.
a. Restaurants, eating and drinking establishments;
b. Services, including personal, professional, educational and financial services; laundry and drycleaning;
c. Retail trade, including grocery, hardware and gift shops, bakeries, delicatessens, florists, pharmacies, specialty stores, marijuana, and similar, provided the maximum footprint for a standalone building with a single store does not exceed twenty thousand square feet; and
d. Grocery stores provided the maximum footprint for a standalone building does not exceed forty thousand square feet.
3. Drive-throughs are prohibited.
4. Gas stations are prohibited.
5. Bed and breakfast and other lodging facilities for up to ten guests per night are a conditional use.
6. Tax Lot 00800, located on Clackamas County Map #32E10C has a special provision to allow the multifamily residential use permitted as of July 31, 2020 as a permitted use. This property may only maintain and expand the current use.

Applicant's Response:
The subject property is not located within the Thimble Creek concept plan area. Accordingly, these criteria are not applicable.

D. Dimensional Standards.
1. Minimum floor area ratio (FAR) shall be 0.35.
2. Maximum allowed setback for corner side yard abutting street shall be five feet.

Applicant's Response:
The subject property is not located within the Thimble Creek concept plan area. Accordingly, these criteria are not applicable.

E. Residential Uses. All residential uses, except live/work units, are limited to upper stories only, and may only be proposed as part of a single development application incorporating nonresidential uses allowed in the MUC-2 district on the ground floor.

Applicant's Response:
The subject property is not located within the Thimble Creek concept plan area. Accordingly, these criteria are not applicable.

CHAPTER 17.41 TREE PROTECTION, PRESERVATION, REMOVAL AND REPLANTING STANDARDS

17.41.010 - Protection of trees—Intent.
The intent of this chapter is to ensure that new development is designed in a manner that preserves trees to the maximum extent practicable. As a requirement of any Type II land use application, the siting of structures, roadways and utility easements, shall provide for the protection of tree resources to the maximum extent practicable. This chapter applies to all land division and site plan and design review applications.

Applicant's Response:
The applicant acknowledges the intent of this chapter.

17.41.020 - Tree protection—Applicability.
A. Applications for development subject to OCMC 16.08 (Land Divisions) or OCMC 17.62 (Site Plan and Design Review) shall demonstrate compliance with these standards as part of the review proceedings for those developments. Compliance with this chapter is required from the date a land use application is filed until a land division is recorded or other development approval is final.

B. For public capital improvement projects, the City engineer shall demonstrate compliance with these standards pursuant to a Type I process.

C. Tree canopy removal greater than twenty-five percent on areas with greater than twenty-five percent slope, unless exempted under OCMC 17.41.040, shall be subject to these standards.

D. A heritage tree or grove which has been designated pursuant to the procedures of OCMC 12.32 shall be subject to the standards of this section.

E. A tree that has been planted pursuant to this section shall remain or shall be replaced with a new tree if removed.

Applicant's Response:
The applicant acknowledges the applicability of this chapter.

17.41.030 - Tree protection—Conflicting code provisions.
Except as otherwise specified in this section, where these standards conflict with adopted city development codes or policies, the provision which provides the greater protection for regulated trees or groves, as defined in OCMC 17.04, shall govern.

Applicant's Response:
The applicant acknowledges the resolution of conflicting elements identified in this section.

17.41.040 - Exemptions.

These regulations are not intended to regulate normal cutting, pruning and maintenance of trees on private property except where trees are located on lots that are undergoing development review or are otherwise protected within the natural resource overlay district (NROD) of OCMC 17.49. These standards are not intended to regulate farm and forest practices as those practices are defined under ORS 30.930, for farm or forestlands. These regulations to not apply to the removal of trees that are considered invasive species. An applicant for development may claim exemption from compliance with these standards if the development site containing the regulated grove or trees was a designated farm or forest use, tree farm, Christmas tree plantation, or other approved timber use within one year prior to development application. "Forest practices" and "forestlands" as used in this subsection shall have the meaning as set out in ORS 30.930. The Community Development Director has the authority to modify or waive compliance in this case.

Applicant's Response:

The applicant acknowledges the exemptions identified in this section. The Arborist Report identifies impacted trees and indicates some of those trees as invasive species. Mitigation of invasive species is exempt from the standards of this chapter as noted in this section.

17.41.050 - Compliance options.

Applicants for review shall comply with these requirements through one or a combination of the following procedures:

A. Option 1—Mitigation. Retention and removal of trees, with subsequent mitigation by replanting pursuant to OCMC 17.41.060.

B. Option 2—Dedicated Tract. Protection of trees or groves by placement in a tract within a new subdivision or partition plat pursuant to OCMC 17.41.080; or

C. Option 3—Restrictive Covenant. Protection of trees or groves by recordation of a permanent restrictive covenant pursuant to OCMC 17.41.110; or

D. Option 4—Cash-in-lieu of planting pursuant to OCMC 17.41.120.

Applicant's Response:

The proposed project seeks mitigation via a combination of Options 1 and 4 as further explained below.

17.41.060 - Tree removal and replanting—Mitigation (Option 1).

A. Applicants for development who select this option shall ensure that all healthy trees shall be preserved outside the construction area as defined in OCMC 17.04 to the extent practicable. Preserved trees are subject to Option 3 of this chapter. Compliance with these standards shall be demonstrated in a tree mitigation plan report prepared by a certified arborist, horticulturalist or forester or other environmental professional with experience and academic credentials in forestry or arboriculture. Tree inventories for the purposes of mitigation calculations may be prepared by a licensed surveyor. At the applicant's expense, the City may require the report to be reviewed by a consulting arborist. The number of

replacement trees required on a development site shall be calculated separately from, and in addition to, any public or street trees in the public right-of-way required under OCMC 12.08, Public and Street Trees, any required tree planting in parking lots, and any trees planted in pedestrian and bicycle accessways.

Applicant's Response:
Please see the 2013 Arborist report prepared by Walter H. Knapp & Associates, LLC, included in Appendix K. Please also see the tree removal plan and accompanying sheets, DDP-L0.1, L0.2, & L0.3.

B. The applicant shall determine the number of trees to be mitigated on the site by counting all of the trees six-inch DBH (minimum four and one-half feet from the ground) or larger on the entire site and either:

1. Trees that are removed outside of the construction area shall be replanted with the number of trees specified in Column 1 of Table 17.41.060-1. Trees that are removed within the construction area shall be replanted with the number of replacement trees required in Column 2; or

2. Dying, diseased or hazardous trees, when the condition is verified by a certified arborist to be consistent with the definitions in OCMC 17.04, may be removed from the tree replacement calculation. Dead trees may also be removed from the calculation, with the condition of the tree verified either by the Community Development Director or by a certified arborist at the applicant's expense, when the Community Development Director cannot make a determination. To the extent that the Community Development Director determines that the dead, dying, hazardous or diseased condition of the tree is the result of intentional action, the removal of that tree shall require mitigation pursuant to Column 2 of Table 17.41.060-1.

Applicant's Response:
The 2013 Arborist Report provides summary tables and mapping showing trees, trees to be removed, and their condition. Please also see DDP-L0.3 for an overlay of the current construction limits onto the Arborist Report exhibit. As shown on DDP-L0.3, some of the trees in the southwest corner of the site do not need to be removed as the current development footprint is slightly smaller than that contemplated with the 2013 plan. The 2013 Arborist Report indicates a total of 332 trees are to be removed, with a total mitigation of 862 replacement trees. An updated Arborist Report will be provided along with construction plan submittal reflecting final construction limits and tree impacts/mitigation/protection. The updated Arborist Report and final construction plans will provide final removal and mitigation totals.

Table 17.41.060-1
Tree Replacement Requirements

Size of tree removed (DBH)	***Number of trees to be planted. (If removed Outside of construction area)***	***Number of trees to be planted. (If removed Within the construction area)***
6 to 12"	*3*	*1*
13 to 18"	*6*	*2*
19 to 24"	*9*	*3*

25 to 30"	*12*	*4*
31 and over"	*15*	*5*

Steps for calculating the number of replacement trees:
1. Count all trees measuring six inches DBH (minimum four and one-half feet from the ground) or larger on the entire development site.

2. Designate the size (DBH) of all trees pursuant to accepted industry standards.

3. Document in a certified arborist report any trees that are currently dead, dying, diseased or hazardous.

4. Subtract the number of dead, dying, diseased or hazardous trees in step 3 from the total number of trees on the development site in step 1. The remaining number is the number of healthy trees on the site. Use this number to determine the number of replacement trees in steps 5 through 8.

5. Identify the construction area (as defined in OCMC 17.04.230).

6. Determine the number and diameter of trees to be removed within the construction area. Based on the size of each tree, use Column 2 to determine the number of replacement trees required.

7. Determine the number and diameter of trees to be removed outside of the construction area. Based on the size of each tree, use Column 1 to determine the number of replacement trees required.

8. Determine the total number of replacement trees from steps 6 and 7.

Applicant's Response:
The 2013 Arborist Report provides summary tables and mapping showing trees, trees to be removed, and their condition. Please also see DDP-L0.3 for an overlay of the current construction limits onto the Arborist Report exhibit. As shown on DDP-L0.3, some of the trees in the southwest corner of the site do not need to be removed as the current development footprint is slightly smaller than that contemplated with the 2013 plan. The 2013 Arborist Report indicates a total of 332 trees are to be removed, with a total mitigation of 862 replacement trees. An updated Arborist Report will be provided along with construction plan submittal reflecting final construction limits and tree impacts/mitigation/protection. The updated Arborist Report and final construction plans will provide final removal and mitigation totals.

Please complete the Table below for trees being removed based on the Tree Replacement Requirements in Table 17.41.060-1

Size of tree removed (DBH)	***Number of Trees Removed Outside of Construction Area***	***Number of Trees Removed Within the Construction area***	***Number of Mitigation Trees Required (See Table 17.41.060-1)***
6 to 12"			

13 to 18"			
19 to 24"			
25 to 30"			
31 and over"			

C. Planting Area Priority for Mitigation. Development applications which opt for removal of trees with subsequent replanting pursuant to OCMC 17.41.050.A shall be required to mitigate for tree cutting by complying with the following priority for replanting standards below:

1. First Priority. Replanting on the development site.

2. Second Priority. Off-site replacement tree planting locations. If the Community Development Director determines that it is not practicable to plant the total number of replacement trees on-site, a suitable off-site planting location for the remainder of the trees may be approved that will reasonably satisfy the objectives of this section. Such locations may include either publicly owned or private land and shall be approved by the Community Development Director.

Applicant's Response:
Mitigation for tree removal is proposed on the east and north sides of Parcel B as shown on Sht DDP-L1.0. In the event there is not enough space within the mitigation areas identified, Mitigation Option $ will be investigated.

D. Replacement tree planting standards.

1. All replacement trees shall be either two-inch caliper deciduous or six-foot high conifer.

Applicant's Response:
The applicant acknowledges the tree planting standards in this section.

2. Replacement tree species shall be approved by a landscape architect or certified arborist or shall be found on the City's Native Plant or Street Tree lists.

Applicant's Response:
The applicant acknowledges the replacement tree species requirement of this section and will engage either a certified arborist or landscape architect in preparing the proposed tree mitigation plan.

3. Due to their diminishing range in the region, Oregon white oak (Quercus garryana) trees, if removed, shall be replaced by the same species.

Applicant's Response:
The applicant acknowledges the requirement to replace any Oregon white oak trees with the same species.

E. All existing tree(s) in the tract shall be protected by a permanent restrictive covenant or easement approved in form by the City.

Applicant's Response:
The applicant acknowledges the requirement for a permanent restrictive covenant or easement for trees that will remain. The applicant also understands that such restrictive covenant or easement does not preclude future tree removal, subject to applicable tree removal/land-use approval processes identified in the Oregon city Municipal Code.

F. Alternative Mitigation Plan. The Community Development Director may, subject to a Type II procedure, approve an alternative mitigation plan that adequately protects habitat pursuant to the standards for the natural resource overlay district alternative mitigation plan in OCMC 17.49.190.

Applicant's Response:
The applicant is open to discussing further the possibility of an alternative mitigation plan that protects habitat. Prior to submittal of construction plans, the applicant and the city will resolve whether an alternative tree mitigation plan is appropriate to pursue.

17.41.080 - Tree preservation within subdivisions and partitions—Dedicated tract (Option 2).
A. An applicant for a new subdivision and partition may delineate and show the regulated trees or groves as either a separate tract or part of a larger tract that meets the requirements of subsection D. of this section. All existing tree(s) in the tract shall be protected by a permanent restrictive covenant or easement approved in form by the City

Applicant's Response:
The proposed project seeks mitigation via a combination of Options 1 and 4

17.41.110 - Tree protection by restrictive covenant (Option 3).
Any regulated tree or grove which cannot be protected in a tract pursuant to Section 17.41.080 above shall be protected with a restrictive covenant in a format to be approved by the Community Development Director. Such covenant shall be recorded against the property deed and shall contain provisions to permanently protect the regulated tree or grove unless such tree or grove, as determined by a certified arborist and approved by the Community Development Director, are determined to be diseased or hazardous.

Applicant's Response:
The proposed project seeks mitigation via a combination of Options 1 and 4

17.41.120 - Cash-in-lieu of planting (Option 4).
The applicant may choose this option in-lieu-of or in addition to Compliance Options 1 through 3. In this case, the Community Development Director may approve the payment of cash-in-lieu into a dedicated fund for the remainder of trees that cannot be replanted in the manner described above.

The cash-in-lieu payment per required mitigation tree shall be as listed on the adopted fee schedule and shall be adjusted annually based on the Consumer Price Index. The price shall include 150% of the cost of materials, transportation and planting.

Applicant's Response:
The proposed project seeks mitigation via a combination of Options 1 and 4

17.41.130 - Regulated tree protection procedures during construction.

A. No permit for any grading or construction of public or private improvements may be released prior to verification by the Community Development Director that regulated trees designated for protection or conservation have been protected according to the following standards. No trees designated for removal shall be removed without prior written approval from the Community Development Director.

B. Tree protection shall be as recommended by a qualified arborist or, as a minimum, to include the following protective measures:

1. Except as otherwise determined by the Community Development Director, all required tree protection measures set forth in this section shall be instituted prior to any development activities, including, but not limited to clearing, grading, excavation or demolition work, and such measures shall be removed only after completion of all construction activity, including necessary landscaping and irrigation installation, and any required plat, tract, conservation easement or restrictive covenant has been recorded.

2. Approved construction fencing, a minimum of four feet tall with steel posts placed no farther than ten feet apart, shall be installed at the edge of the tree protection zone or dripline, whichever is greater. An alternative may be used with the approval of the Community Development Director.

3. Approved signs shall be attached to the fencing stating that inside the fencing is a tree protection zone, not to be disturbed unless prior approval has been obtained from the Community Development Director.

4. No construction activity shall occur within the tree protection zone, including, but not limited to; dumping or storage of materials such as building supplies, soil, waste items; nor passage or parking of vehicles or equipment.

5. The tree protection zone shall remain free of chemically injurious materials and liquids such as paints, thinners, cleaning solutions, petroleum products, and concrete or dry wall excess, construction debris, or run-off.

6. No excavation, trenching, grading, root pruning or other activity shall occur within the tree protection zone unless directed by an arborist present on site and approved by the Community Development Director.

7. No machinery repair or cleaning shall be performed within ten feet of the dripline of any trees identified for protection.

8. Digging a trench for placement of public or private utilities or other structure within the critical root zone of a tree to be protected is prohibited. Boring under or through the tree protection zone may be permitted if approved by the Community Development Director and pursuant to the approved written recommendations and on-site guidance and supervision of a certified arborist.

9. The Community Development Director may require that a certified arborist be present during any construction or grading activities that may affect the dripline of trees to be protected.

10. The Community Development Director may impose conditions to avoid disturbance to tree roots from grading activities and to protect trees and other significant vegetation identified for retention from harm. Such conditions may include, if necessary, the advisory expertise of a qualified consulting arborist or horticulturist both during and after site preparation, and a special maintenance/management program to provide protection to the resource as recommended by the arborist or horticulturist.

Applicant's Response:
The applicant acknowledges the procedural requirements of this section. Design and construction elements of this section will be addressed with construction plan preparation and will be subject to city review prior to approval.

C. Changes in soil hydrology due to soil compaction and site drainage within tree protection areas shall be avoided. Drainage and grading plans shall include provision to ensure that drainage of the site does not conflict with the standards of this section. Excessive site run-off shall be directed to appropriate storm drainage facilities and away from trees designated for conservation or protection.

Applicant's Response:
The applicant acknowledges the requirements of this section. Construction plans will be prepared in coordination with a certified arborist or landscape architect to assure protection of trees to remain.

CHAPTER 17.44 GEOLOGIC HAZARDS

17.44.010 Intent and purpose.
The intent and purpose of the provisions of this chapter are:

A. To ensure that activities in geologic hazard areas are designed based on detailed knowledge of site conditions in order to reduce the risk of private and public losses;

B. To establish standards and requirements for the use of lands within geologic hazard areas;

C. To provide safeguards to prevent undue hazards to property, the environment, and public health, welfare, and safety in connection with use of lands within geologic hazard areas;

D. To mitigate risk associated with geologic hazard areas, not to act as a guarantee that the hazard risk will be eliminated, nor as a guarantee that there is a higher hazard risk at any location. Unless otherwise provided, the geologic hazards regulations are in addition to generally applicable standards provided elsewhere in the Oregon City Municipal Code.

Applicant's Response:
The applicant acknowledges the intent and purpose of this chapter.

17.44.025 When required; regulated activities; permit and approval requirements.
No person shall develop land, construct, reconstruct, structurally alter, relocate or enlarge any building or structure for which a land development, sign, or building permit is required on a property that contains an area mapped within the adopted Oregon City Geologic Hazards Overlay Zone without first obtaining permits or approvals as required by this chapter.

The requirements of this chapter are in addition to other provisions of the Oregon City Municipal Code. Where the provisions of this chapter conflict with other provisions of the Oregon City Municipal Code, the provisions that are the more restrictive of regulated development activity shall govern.

Applicant's Response:
The applicant acknowledges the intent and purpose of this section.

17.44.030 Procedures.
No building or site development permit or other authorization for development shall be issued until the plans and other documents required by this chapter have been reviewed and found by the review authority to comply with the requirements of this chapter.

A. Where the development is part of an application that otherwise requires a Type III procedure, review shall occur in the manner established in Chapter 17.50 for a consolidated Type III review.

B. Where the development is part of an application that otherwise requires a Type II procedure, review shall occur in the manner established in Chapter 17.50 for a consolidated Type II review.

C. For any other proposed development not otherwise subject to review as part of a development proposal that requires land use review, review shall occur in the manner established in Chapter 17.50 for a Type II procedure.

Applicant's Response:

The applicant acknowledges the procedures of this section.

17.44.035 Exemptions.

The following activities, and persons engaging in same, are EXEMPT from the provisions of this chapter.

A. An excavation which is less than two feet in depth, or which involves less than twenty-five cubic yards of volume;

B. A fill which does not exceed two feet in depth or which includes less than twenty-five cubic yards of volume;

C. A combined cut and fill that does not involve more than twenty-five cubic yards of volume.

D. Installation, new construction, addition or structural alteration of any existing structure of less than five hundred square feet in building footprint that does not involve grading as defined in this chapter;

E. Installation, construction, reconstruction, or replacement of public and private utility lines in the hardscape portion of the city right-of-way, existing utility crossings, existing basalt lined drainage channels, or public easement, not including electric substations;

F. Tree removal on slopes twenty-five percent or greater where canopy area removal is less than twenty-five percent of the portion of the lot which contains twenty-five percent or greater slopes. For the purpose of this chapter, "tree" shall be as defined in OCMC 17.04.1315.

G. The removal or control of noxious vegetation;

H. Emergency actions which must be undertaken immediately to prevent an imminent threat to public health or safety, or prevent imminent danger to public or private property. The person undertaking emergency action shall notify the building official on all regulated activities associated with any building permit or city engineer/public works director on all others within one working day following the commencement of the emergency activity. If the city engineer/public works director or building official determine that the action or part of the action taken is beyond the scope of allowed emergency action, enforcement action may be taken.

Applicant's Response:

The improvements associated with the proposed GDP/DDP application do not qualify for any of the exemptions of this section.

17.44.050 Development—Application requirements and review procedures and approvals.

Except as provided by subsection C of this section, an application for a geologic hazards overlay review shall include the following:

A. A geological assessment and geotechnical report that specifically includes, but is not limited to:

1. Comprehensive information and data regarding the nature and distribution of underlying geology, the physical and chemical properties of existing soils and groundwater; an opinion of site geologic stability, and conclusions regarding the effect of geologic conditions on the proposed development. In addition to any field reconnaissance or

subsurface investigation performed for the site, the following resources, as a minimum, shall be reviewed to obtain this information and data:

a. The State of Oregon Department of Geology and Mineral Industries (DOGAMI) in Bulletin 99, Geology and Geological Hazards of North Clackamas County, Oregon (1979), or in any subsequent DOGAMI mapping for the Oregon City area;

b. Portland State University study entitled "Environmental Assessment of Newell Creek Canyon, Oregon City, Oregon" (1992);

c. Portland State University study, "Landslides in the Portland, Oregon, Metropolitan Area Resulting from the Storm of February 1996: Inventory Map, Database and Evaluation" (Burns and others, 1998);

d. DOGAMI Open File Report O-06-27, "Map of Landslide Geomorphology of Oregon City, Oregon, and Vicinity Interpreted from LIDAR Imagery and Aerial Photographs" (Madin and Burns, 2006);

e. "Preliminary Geologic Map of the Oregon City Quadrangle, Clackamas County, Oregon" (Madin, in press);

f. Landslide Hazards Land Use Guide for Oregon Communities (October 2019), prepared by the State of Oregon Department of Geology and Mineral Industries (DOGAMI) and the Oregon Department of Land Conservation and Development (DLCD);

g. Landslide hazard and risk study of northwestern Clackamas County, Oregon: Oregon Department of Geology and Mineral Industries, Open-File Report O-13-08, 74 map plates; Burns, W.J., Mickelson, K.A., Jones, C.B., Pickner, S.G., Hughes, K.L., Sleeter, R., 2013.

h. Mapped landslide data shall be from the city's maps as a minimum but may be supplemented with maps from items a through f above.

2. Information and recommendations regarding existing local drainage, proposed permit activity impacts on local drainage, and mitigation to address adverse impacts;
3. Comprehensive information about site topography;
4. Opinion as to the adequacy of the proposed development from an engineering standpoint;
5. Opinion as to the extent that instability on adjacent properties may adversely affect the project;
6. Description of the field investigation and findings, including logs of subsurface conditions and laboratory testing results;
7. Conclusions regarding the effect of geologic conditions on the proposed development, tree removal, or grading activity;
8. Specific requirements and recommendations for plan modification, corrective grading, and special techniques and systems to facilitate a safe and stable site;

9. Recommendations and types of considerations as appropriate for the type of proposed development:
    a. General earthwork considerations, including recommendations for temporary and permanent cut and fill slopes and placement of structural fill;
    b. Location of residence on lot;
    c. Building setbacks from slopes;
    d. Erosion control techniques applicable to the site;
    e. Surface drainage control to mitigate existing and potential geologic hazards;
    f. Subsurface and/or management of groundwater seepage;
    g. Foundations;
    h. Embedded/retaining walls;
    i. Management of surface water and irrigation water; and
    j. Impact of the development on the slope stability of the lot and the adjacent properties.
    k. Construction phasing and implementation schedule as it relates to foundation excavation, allowance for stockpiles, imported backfill, site subsurface drainage or dewatering, provision for off season site protections;
    l. Stormwater management; and
    m. Construction methods.
10. Scaled drawings that describe topography and proposed site work, including:
    a. Natural physical features, topography at two or ten-foot contour intervals locations of all test excavations or borings, watercourses both perennial and intermittent, ravines and all existing and man-made structures or features all fully dimensioned, trees six-inch caliper or greater measured four feet from ground level, rock outcroppings and drainage facilities;
    b. All of the features and detail required for the site plan above, but reflecting preliminary finished grades and indicating in cubic yards whether and to what extent there will be a net increase or loss of soil.
    c. A cross-section diagram, indicating depth, extent and approximate volume of all excavation and fills.
11. For properties greater than one acre and any property that has any portion of its property existing within a mapped landslide, where the activity is not exempted by Section 17.44.035, a preliminary hydrology report, prepared by a suitably qualified and experienced hydrology expert, addressing the effect upon the watershed in which the proposed development is located; the effect upon the immediate area's stormwater drainage pattern of flow, the impact of the proposed development upon downstream

areas and upon wetlands and water resources; and the effect upon the groundwater supply.

Applicant's Response:
Please see the geotechnical report prepared by Terracon, dated September 22, 2022, in Appendix G. Cypress Equities has acquired the geotechnical report from a previous development application by the Wolff Company LLC and has coordinated with Terracon for a formal update to accompany the proposed construction plans for proposed DDP rough grading. Based on Cypress' coordination with Terracon, the recommendations for Cypress will be the same as with Wolff (which were the same as previous development attempts on the project). The report includes a description of site conditions, prior geotechnical reports, engineering geology update, seismic considerations, slope stability, geotechnical overview, earthworks, shallow foundations, floor slabs, lateral earth pressures, soldier pile walls, and pavements.

Key recommendations of the geotechnical report include a 35-foot geologic hazard setback from the top of the steep slope as well as specific retaining wall recommendations addressing slope stability vs historical landslides. The geologic hazard setback is included on the proposed GDP and DDP plans. The retaining walls mentioned in the report will be a part of the DDP and construction plans for Parcel B following the current GDP/DDP application.

B. Review procedures and approvals require the following:

1. Examination to ensure that:
    a. Required application requirements are completed;
    b. Geologic assessment and geotechnical report procedures and assumptions are generally accepted; and
    c. All conclusions and recommendations are supported and reasonable.
2. Conclusions and recommendations stated in an approved assessment or report shall then be directly incorporated as permit conditions or provide the basis for conditions of approval for the regulated activity.
3. All geologic assessments and geotechnical reports shall be reviewed by an engineer certified for expertise in geology or geologic engineering and geotechnical engineering, respectively, as determined by the city. The city will prepare a list of prequalified consultants for this purpose. The cost of review by independent review shall be paid by the applicant.

C. The city engineer may waive one or more requirements of subsections A and B of this section if the city engineer determines that site conditions, size or type or development of grading requirements do not warrant such detailed information. If one or more requirements are waived, the city engineer shall, in the staff report or decision, identify the waived provision(s), explain the reasons for the waiver, and state that the waiver may be challenged on appeal and may be denied by a subsequent review authority.

Applicant's Response:
The applicant acknowledges the review procedures of this section.

17.44.060 Development standards.

Notwithstanding any contrary dimensional or density requirements of the underlying zone, the following standards shall apply to the review of any development proposal subject to this chapter. Requirements of this chapter are in addition to other provision of the Oregon City Municipal Code. Where provision of this chapter conflict with other provision of the Oregon City Municipal Code, the provisions that are more restrictive of regulated development activity shall govern.

A. All developments shall be designed to avoid unnecessary disturbance of natural topography, vegetation and soils. To the maximum extent practicable as determined by the review authority, tree and ground cover removal and fill and grading for residential development on individual lots shall be confined to building footprints and driveways, to areas required for utility easements and for slope easements for road construction, and to areas of geotechnical remediation.

Applicant's Response:

Key recommendations of the geotechnical report include a 35-foot geologic hazard setback from the top of the steep slope as well as specific retaining wall recommendations addressing slope stability vs historical landslides. The project proposes a pedestrian pathway through this setback area and the remainder of the setback area will be utilized for NROD mitigation and tree removal mitigation.

B. All grading, drainage improvements, or other land disturbances shall only occur from May 1 to October 31. "Land disturbance" is defined as any movement of earth, placement of earth, or movement of heavy trucks on earth, not including the right-of-way. Erosion control measures shall be installed and functional prior to any disturbances. Erosion control measures shall also be functioning and in a winterized stable condition once all land disturbance work has ceased for the year. The city engineer may allow grading, drainage improvements or other land disturbances to begin before May 1 (but no earlier than March 16) and end after October 31 (but no later than November 30), based upon weather conditions and the recommendation and direction of the project's geotechnical engineer. The city engineer may use the expertise of a city contracted geotechnical consultant to make the decision to allow any work before May 1 or after October 31. The city engineer has full authority to not allow any extension of work before May 1 or after October 31. In no case shall the applicant be allowed to begin work before May 1 or complete work after October 31 if the average monthly rainfall in any individual month between September and April is exceeded.

When allowed by the city engineer, the modification of dates shall be the minimum necessary, based upon the evidence provided by the applicant, to accomplish the necessary project goals. Temporary protective fencing shall be established around all trees and vegetation designed for protection prior to the commencement of grading or other soil disturbance.

Applicant's Response:

The applicant acknowledges the construction timing provisions of this section. Pedestrian pathway work within the 35-ft geologic hazard setback can occur within the above construction timeframe. The soldier pile wall recommendation is made to allow fill for Parcel B parking lot construction to occur outside of the geologic hazard impact. The soldier pile wall system was selected to extend into bedrock to provide proper slope stability.

C. Designs shall minimize the number and size of cuts and fills.

D. Cut and fill slopes greater than seven feet in height (as measured vertically) shall be terraced. Faces on a terraced section shall not exceed five feet. Terrace widths shall be a minimum of three feet and shall be vegetated. Total cut and fill slopes shall not exceed a vertical height of fifteen feet. Except in connection with geotechnical remediation plans approved in accordance with the chapter, cuts shall not remove the toe of any slope that contains a known landslide or is greater than twenty-five percent slope. The top of cut or fill slopes not utilizing structural retaining walls shall be located a minimum of one-half the height of the cut slope from the nearest property line.

Applicant's Response:

The proposed retaining wall west of the geologic hazard setback is located outside of the geologic hazard area as shown on the attached GDP/DDP plans, and not subject to the height limitations of this section. The soldier pile wall system was selected to extend into bedrock to provide proper slope stability.

E. Any structural fill shall be designed by a suitably qualified and experienced civil or geotechnical engineer licensed in Oregon in accordance with standard engineering practice. The applicant's engineer shall certify that the fill has been constructed as designed in accordance with the provisions of this chapter. The structural fill design must be provided prior to any fill being placed onsite. The structural fill design must contain the stamp and signature of a professional engineer licensed in the state of Oregon.

F. Retaining walls shall be constructed in accordance with the Oregon Structural Specialty Code adopted by the state of Oregon.

1. Retaining walls that are four feet or greater in height, tiered walls with a total height four feet or greater, and walls on slopes steeper than 2:1 must be designed by a professional engineer licensed in the State of Oregon which includes a stamped and signed set of plans.
2. The construction of the wall must be inspected by the professional engineer responsible for the design and must be certified prior to the structure receiving temporary occupancy. The certification must contain the stamp and signature of a professional engineer licensed in the state of Oregon.
3. All retaining walls required to be designed by a professional engineer shall be reviewed by the city, when expertise exists on staff, or by the city's consultant. When reviewed by the city's consultant, the applicant shall reimburse the city for time spent by the city's consultant to review the design.

Applicant's Response:

The applicant acknowledges the above design requirements. Detailed design will occur following a decision on the proposed GDP/DDP application.

G. Roads shall be the minimum width necessary to provide safe vehicle and emergency access, minimize cut and fill and provide positive drainage control. The review authority may grant a variance from the city's required road standards upon findings that the variance would provide safe vehicle and emergency access and is necessary to comply with the purpose and policy of this chapter.

Applicant's Response:
Roads proposed with this application represent the minimum width necessary to address the elements of this section. Please see the proposed grading, drainage and utility plans, Shts DDP-C1.3, C1.4, C2.0, and C3.0.

H. Density shall be determined as follows:

1. Slope.
    a. For those areas with slopes less than twenty-five percent between grade breaks, the allowed density shall be that permitted by the underlying zoning district, unless further limited by the following code section;
    b. For those areas with slopes of twenty-five to thirty-five percent between grade breaks, the density shall not exceed two dwelling units per acre except as otherwise provided in subsection I of this section;
    c. For those areas with slopes over thirty-five percent between grade breaks, development shall be prohibited except as otherwise provided in subsection I.4 of this section.
2. Existing landslide (as shown in the geologic hazard overlay zone)
    a. For those areas with historic landslides where the structure or ground disturbance will be located within any portion of the mapped landslide or buffer zone, the density shall not exceed two dwelling units per acre except as otherwise provided in subsection I of this section;

Applicant's Response:
The proposed GDP/DDP application does not propose construction activity in slopes within the geologic hazard area in excess of 25% and does not propose construction activity in existing landslides.

I. For properties with slopes of twenty-five to thirty-five percent between grade breaks or are located within any portion of a mapped landslide and buffer zone:

1. For those portions of the property with slopes of twenty-five to thirty-five percent or located within any portion of a mapped landslide and buffer zone, the maximum residential density shall be limited to two dwelling units per acre; provided, however, that where the entire site is less than one-half acre in size, a single dwelling shall be allowed on a lot or parcel existing as of January 1, 1994 and meeting the minimum lot size requirements of the underlying zone;
2. An individual lot or parcel with slopes between twenty-five and thirty-five percent or located within any portion of a mapped landslide and buffer zone, shall have no more than fifty percent or four thousand square feet of the surface area, whichever is smaller, graded or stripped of vegetation or covered with structures or impermeable surfaces.
3. No cut into a slope of twenty-five to thirty-five percent or located within any portion of a mapped landslide and buffer zone, for the placement of a housing unit shall exceed a maximum vertical height of fifteen feet for the individual lot or parcel.

4. For those portions of the property with slopes over thirty-five percent between grade breaks:

    a. Notwithstanding any other city land use regulation, development other than roads, utilities, public facilities and geotechnical remediation shall be prohibited; provided, however, that the review authority may allow development upon such portions of land upon demonstration by an applicant that failure to permit development would deprive the property owner of all economically beneficial use of the property. This determination shall be made considering the entire parcel in question and contiguous parcels in common ownership on or after January 1, 1994, not just the portion where development is otherwise prohibited by this chapter. Where this showing can be made on residentially zoned land, development shall be allowed and limited to one single-family residence. Any development approved under this chapter shall be subject to compliance with all other applicable city requirements as well as any applicable state, federal or other requirements;

    b. To the maximum extent practicable as determined by the review authority, the applicant shall avoid locating roads, utilities, and public facilities on or across slopes exceeding thirty-five percent.

Applicant's Response:
The proposed GDP/DDP application does not propose construction activity in slopes within the geologic hazard area in excess of 25% and does not propose construction activity in existing landslides.

J. The geotechnical engineer of record shall review final grading, drainage, and foundation plans and specifications and confirm in writing that they are in conformance with the recommendations provided in their report.

K. At the city's discretion, peer review shall be required for the geotechnical evaluation/investigation report submitted for the development and/or lot plans. The peer reviewer shall be selected by the city. The applicant's geotechnical engineer shall respond to written comments provided by the city's peer reviewer prior to issuance of building permit.

L. The review authority shall determine whether the proposed methods of rendering a known or potential hazard site safe for construction, including proposed geotechnical remediation methods, are feasible and adequate to prevent landslides or damage to property and safety. The review authority shall consult with the city's geotechnical engineer in making this determination. Costs for such consultation shall be paid by the applicant. The review authority may allow development in a known or potential hazard area as provided in this chapter if specific findings are made that the specific provisions in the design of the proposed development will prevent landslides or damage. The review authority may impose any conditions, including limits on type or intensity of land use, which it determines are necessary to assure that landslides or property damage will not occur.

Applicant's Response:
The applicant acknowledges the geotechnical engineer of record's review of the proposed grading, drainage and foundation plans, as well as the city's review authority. This review will be in concert with

construction plan preparation of the proposed improvements prior to initial submittal of the construction plans. Final review by the geotechnical engineer of record will occur prior to final approval of the construction plans.

17.44.070 Access to property.

A. Shared private driveways may be required if the city engineer or principal planner determines that their use will result in safer location of the driveway and lesser amounts of land coverage than would result if separate private driveways are used.
B. Innovations in driveway design and road construction shall be permitted in order to keep grading and cuts or fills to a minimum and to achieve the purpose and policy of this chapter.
C. Points of access to arterials and collectors shall be minimized.
D. The city engineer or principal planner shall verify that adequate emergency services can be provided to the site.

Applicant's Response:
The easterly access to Parcel B occurs well outside the geologic hazard setback. This driveway is necessary to provide a secondary fire department access to the multi-family use. The proposed stormwater management facilities will be lined with impermeable materials as recommended by the geotechnical engineer to avoid introducing water in the vicinity of the top of the slope at the geologic hazard area.

17.44.080 Utilities.
All new utilities (storm sewer, sanitary sewer, potable water, and gas), both on-site and off-site, shall be placed underground and under roadbeds where practicable. All other service utilities (including, but not limited to, electric, telephone, telecom, cable, fiberoptic) shall be placed above ground on existing poles if poles exist. If no poles exist, the service lines shall be placed underground. Every effort shall be made to minimize the impact of utility construction. Underground utilities require the geologic hazards permitting and review prescribed herein when applicable.

Applicant's Response:
Utilities proposed with this GDP/DDP application are not located within the geologic hazard setback. The public sanitary sewer extension through Parcel B lies outside the geologic hazard setback except where it diverts to the northeast corner of the property so it can be extended to the Hilltop Ave sanitary sewer pump station by others in the future. The geotechnical engineer of record will review the sanitary sewer extension through the geologic hazard setback as a part of Parcel B construction plan preparation.

17.44.090 Stormwater drainage.
The applicant shall submit a permanent and complete stormwater control plan. The program shall include, but not be limited to the following items as appropriate: Curbs, gutters, inlets, catch basins, detention facilities and stabilized outfalls. Detention facilities shall be designed to city standards as set out in the city's drainage master plan and design standards. The review authority may impose conditions to ensure that waters are drained from the development so as to limit degradation of water quality

consistent with Oregon City's Title III section of the Oregon City Municipal Code Chapter 17.49 and the Oregon City Stormwater and Grading Design Standards or other adopted standards subsequently adopted by the city commission. The review authority may also impose conditions to limit the volume, velocity, or flow rate of water such that it does not negatively impact the underlying drainageway cross section. Drainage design shall be approved by the city engineer before construction, including grading or other soil disturbance, has begun.

A geotechnical report must include analysis and solutions for infiltration facilities located in areas where these facilities could impact nearby slopes of greater than ten percent. Infiltration shall be minimized as practicable for any site located within a geologic hazard overlay. Infiltration is not allowed for any site located in areas greater than twenty-five percent.

The project's civil or geotechnical engineer shall inspect any stormwater management feature and must certify that the stormwater management feature was constructed per plan and with the recommendations of the geotechnical engineer prior to receiving temporary occupancy. The certification must contain the stamp and signature of a professional engineer licensed in the state of Oregon.

Applicant's Response:

The proposed stormwater management facilities will be lined with impermeable materials as recommended by the geotechnical engineer to avoid introducing water in the vicinity of the top of the slope at the geologic hazard area. The applicant acknowledges the requirement for the geotechnical engineer of record to observe and certify construction of the stormwater management facilities that could impact the geologic hazard area.

17.44.100 Construction standards.

During construction on land subject to this chapter, the following standards shall be implemented by the developer:

A. All development activity shall minimize vegetation removal and soil disturbance and shall provide positive erosion prevention measures in conformance with OCMC Chapter 17.47—Erosion and Sediment Control.

B. No grading, clearing or excavation of any land shall be initiated prior to approval of the grading plan, except that the city engineer shall authorize the site access, brush to be cleared and the location of the test pit digging prior to approval of such plan to the extent needed to complete preliminary and final engineering and surveying. The grading plan shall be approved by the city engineer as part of the city's review under this chapter. The developer shall be responsible for the proper execution of the approved grading plan.

Measures shall be taken to protect against landslides, mudflows, soil slump and erosion. Such measures shall include sediment fences, straw bales, erosion blankets, temporary sedimentation ponds, interceptor dikes and swales, undisturbed buffers, grooving and stair stepping, check dams, etc. The applicant shall comply with the measures described in the Oregon City Public Works Standards for Erosion and Sedimentation Control (Ordinance No. 99-1013). Erosion control measures shall be in place at all times during construction to the maximum extent practicable.

C. All disturbed vegetation shall be replanted with suitable vegetation upon completion of the grading of the steep slope area.

D. Existing vegetative cover shall be maintained to the maximum extent practicable. No grading, compaction or change in ground elevation, soil hydrology and/or site drainage shall be permitted within the drip line of trees designated for protection, unless approved by the city.

E. Existing perennial and intermittent watercourses shall not be disturbed unless specifically authorized by the review authority. This includes physical impacts to the stream course as well as siltation and erosion impacts. The city, at its discretion, is not required to but may request the examination and assessment by other state agencies to determine if impacts are acceptable.

F. All soil erosion and sediment control measures shall be maintained during construction and for one year after development is completed, or until soils are stabilized by revegetation or other measures to the satisfaction of the city engineer. Such maintenance shall be the responsibility of the developer. If erosion or sediment control measures are not being properly maintained or are not functioning properly due to faulty installation or neglect, the city may order work to be stopped.

G. All newly created lots, either by subdivision or partition, shall contain building envelopes with a slope of thirty-five percent or less.

H. The applicant's geotechnical engineer shall provide special inspection during construction to confirm that the subsurface conditions and assumptions made as part of their geotechnical evaluation/investigation are appropriate. This will allow for timely design changes if site conditions are encountered that are different from those anticipated. Inspection is required on a daily basis for any day that earth disturbance is occurring or after any rainfall event of one-half inch or greater.

I. Prior to issuing an occupancy permit, the geotechnical engineer shall prepare a summary letter stating that the soils- and foundation-related project elements were accomplished in substantial conformance with their recommendations. The summary letter must contain the stamp and signature of a professional engineer licensed in the State of Oregon.

Applicant's Response:

The applicant acknowledges the above design requirements. Detailed construction plans for the proposed DDP application will be prepared following the above requirements, as well as other applicable requirements of the OCMC and Public works Design Standards.

17.44.110 Approval of development.

The city engineer shall review the application and verify, based on the applicant's materials and the land use record, whether the proposed development constitutes a hazard to life, property, natural resources or public facilities. If, in the city engineer's opinion, a particular development poses such a hazard, the city engineer shall recommend to the review authority permit conditions designed to reduce or eliminate the hazard. These conditions may include, but are not limited to, prohibitions on construction activities between November 1st and April 30th.

Applicant's Response:

The applicant acknowledges the above review and approval authority.

17.44.120 Liability.
Approval of an application for development on land subject to this chapter shall not imply any liability on the part of the city for any subsequent damage due to earth slides. Prior to the issuance of a building permit, a waiver of damages and an indemnity and hold harmless agreement shall be required which releases the city from all liability for any damages resulting from the development approved by the city's decision. The indemnity and hold harmless agreement shall be recorded on the property and run with the property.

Applicant's Response:
The applicant acknowledges the liability statement of this section.

17.44.130 Compliance.
Nothing contained in this chapter shall relieve the developer of the duty to comply with any other provision of law. In the case of a conflict, the more restrictive regulation shall apply.

Applicant's Response:
The applicant acknowledges the compliance requirements of this section.

17.44.140 Appeal.
The review authority's decision may be appealed in the manner set forth in Chapter 17.50.

Applicant's Response:
The applicant acknowledges the appeal procedure of this section.

CHAPTER 17.47 EROSION AND SEDIMENT CONTROL

17.47.030 - Applicability.

A. This chapter, which may also be referred to as "erosion control" in this Code, applies to development that may cause visible or measurable erosion on any property within the city limits of Oregon City.
B. This chapter does not apply to work necessary to protect, repair, maintain or replace existing structures, utility facilities, roadways, driveways, accessory uses and exterior improvements in response to emergencies, provided that after the emergency has passed, adverse impacts are mitigated in accordance with applicable standards.

Applicant's Response:
The applicant acknowledges the applicability of this chapter.

17.47.070 - Erosion and sediment control plans.

A. An application for an erosion and sediment control permit shall include an erosion and sediment control plan, which contains methods and interim measures to be used during and following construction to prevent or control erosion prepared in compliance with City of Oregon City public works standards for erosion and sediment control. These standards are incorporated herein and made a part of this title and are on file in the office of the city recorder.

B. Approval Standards. An erosion and sediment control plan shall be approved only upon making the following findings:

1. The erosion and sediment control plan meets the requirements of the City of Oregon City public works standards for erosion and sediment control incorporated by reference as part of this chapter;
2. The erosion and sediment control plan indicates that erosion and sediment control measures will be managed and maintained during and following development. The erosion and sediment control plan indicates that erosion and sediment control measures will remain in place until disturbed soil areas are permanently stabilized by landscaping, grass, approved mulch or other permanent soil stabilizing measures.

C. The erosion and sediment control plan shall be reviewed in conjunction with the requested development approval. If the development does not require additional review, the manager may approve or deny the permit with notice of the decision to the applicant.

D. The city may inspect the development site to determine compliance with the erosion and sediment control plan and permit.

E. Erosion that occurs on a development site that does not have an erosion and sediment control permit, or that results from a failure to comply with the terms of such a permit, constitutes a violation of this chapter.

F. If the manager finds that the facilities and techniques approved in an erosion and sediment control plan and permit are not sufficient to prevent erosion, the manager shall notify the owner or his/her designated representative. Upon receiving notice, the owner or his/her designated representative shall

immediately install interim erosion and sediment control measures as specified in the City of Oregon City public works standards for erosion and sediment control. Within three days from the date of notice, the owner or his/her designated representative shall submit a revised erosion and sediment control plan to the city. Upon approval of the revised plan and issuance of an amended permit, the owner or his/her designated representative shall immediately implement the revised plan.

G. Approval of an erosion and sediment control plan does not constitute an approval of permanent road or drainage design (e.g., size and location of roads, pipes, restrictors, channels, retention facilities, utilities, etc.).

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. A preliminary erosion control plan is included in this DDP plan set that demonstrates general compliance with the city's erosion control requirements; however, this is a planning level document and not intended to be a detailed construction plan. This DDP erosion control plan shows overall site rough grading and indicated general erosion control measures anticipated to be needed such as construction exits/entrances, sediment fences, diversion ditches, sediment ponds, inlet protection and general seeding areas. A detailed erosion control plan will be included with the construction plan submittal.

Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

17.47.080 - Plan implementation.
An approved erosion control and sediment control plan shall be implemented and maintained as follows:
A. Plan approval, where required, shall be obtained prior to clearing or grading. No grading, clearing or excavation of land requiring a plan shall be undertaken prior to approval of the plan.

B. The erosion and sediment control facilities shall be constructed prior to any clearing and grading activities, and maintained in such a manner as to ensure that sediment laden water does not enter the drainage system or violate applicable water standards.

C. The implementation of an erosion and sediment control plan and the construction, maintenance, replacement, and upgrading of erosion and sediment control facilities is the responsibility of the owner or his/her designated representative until all construction is completed and approved, and vegetation, landscaping or approved finished surfaces is established.

D. The erosion and sediment control facilities herein are the minimum requirements for anticipated site conditions. During the construction period, these erosion and sediment control facilities shall be upgraded as needed for unexpected storm events and to ensure that sediment-laden water does not leave the site.

E. Any observation of visible or measurable erosion, or an observation of more than a ten-percent increase in downstream channel turbidities, will result in an enforcement action by the city.

F. The owner or his/her designated representative shall implement the measures and construct facilities as provided for and according to the implementation schedule in the approved plan. The manager shall be allowed reasonable access to the development site for inspection purposes.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. A preliminary erosion control plan is included in this DDP plan set that demonstrates general compliance with the city's erosion control requirements; however, this is a planning level document and not intended to be a detailed construction plan. This DDP erosion control plan shows overall site rough grading and indicated general erosion control measures anticipated to be needed such as construction exits/entrances, sediment fences, diversion ditches, sediment ponds, inlet protection and general seeding areas. A detailed erosion control plan will be included with the construction plan submittal.

Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

17.47.090 – Plan performance guarantee and security.
After the plan is approved by the manager and prior to construction or grading, the owner shall provide a financial guarantee. Erosion and sediment control shall be included in the cost estimate for the primary project, such as land division or site plan, and included in that project's performance guarantee.

Applicant's Response:
The applicant acknowledges the financial guarantee provisions of this section.

CHAPTER 17.49 NATURAL RESOURCES OVERLAY DISTRICT

17.49.010 Purpose.
The natural resource overlay district designation provides a framework for protection of Metro Titles 3 and 13 lands, and Statewide Planning Goal 5 resources within Oregon City. The natural resource overlay district (NROD) implements the Oregon City Comprehensive Plan Natural Resource Goals and Policies, as well as Federal Clean Water Act requirements for shading of streams and reduction of water temperatures, and the recommendations of the Metro ESEE Analysis. It is intended to resolve conflicts between development and conservation of habitat, stream corridors, wetlands, and floodplains identified in the city's maps. The NROD contributes to the following functional values:

A. Protect and restore streams and riparian areas for their ecologic functions and as an open space amenity for the community.

B. Protect floodplains and wetlands, and restore them for improved hydrology, flood protection, aquifer recharge, and habitat functions.

C. Protect upland habitats and enhance connections between upland and riparian habitat.

D. Maintain and enhance water quality and control erosion and sedimentation through the revegetation of disturbed sites and by placing limits on construction, impervious surfaces, and pollutant discharges.

E. Conserve scenic, recreational, and educational values of significant natural resources.

The NROD ecological functions listed above are planned for integration with existing neighborhoods, new residential and commercial developments. The long-term goal of the NROD is to restore and enhance stream corridors, wetlands, and forests to more natural vegetated conditions, recognizing that existing homes and other existing uses will continue in the district. This chapter does not regulate the development within the identified water resource. Separate permits from the Division of State Lands and the Army Corp of Engineers may be required for work within a stream or wetland.

Applicant's Response:
The applicant acknowledges the purpose of this chapter.

17.49.015 Natural resources committee.
The applicant is encouraged to contact the Oregon City Natural Resources Committee for input and advice on ways to further the purpose of the natural resources overlay district, whether or not a development application is proposed within the natural resources overlay district. Any advice given by the natural resources committee is non-binding on the applicant and the natural resources committee, and shall not relieve an applicant from compliance with this chapter.

Applicant's Response:
The applicant acknowledges this section.

17.49.020 NROD identifying documents.

A. The NROD protects as one connected system the habitats and associated functions of the streams, riparian corridors, wetlands and the regulated upland habitats found in Oregon City. These habitats and functions are described in the following documents upon which the NROD is based:

1. *The 1999 Oregon City Local Wetland Inventory.*
2. *The Oregon City Water Quality Resource Area Map (Ord. No. 99-1013).*
3. *2004 Oregon City slope data and mapping (LIDAR).*
4. *Metro Regionally Significant Habitat Map (Aerial Photos taken 2002).*
5. *National Wetland Inventory (published 1992).*
6. *Beavercreek Road Concept Plan (adopted September 2008).*
7. *Park Place Concept Plan (adopted April 2008).*
8. *South End Concept Plan (adopted April 2014).*

The NROD provisions apply only to properties within the NROD as shown on the NROD Map, as amended.

The intent of these regulations is to provide applicants the ability to choose a clear and objective review process or a discretionary review process. The NROD provisions do not affect existing uses and development, or the normal maintenance of existing structures, driveways/parking areas, public facilities, farmland and landscaped areas. New public facilities such as recreation trails, planned road and utility line crossings and stormwater facilities, are allowed within the overlay district under prescribed conditions as described in OCMC 17.49.090. In addition, provisions to allow a limited portion of the NROD to be developed on existing lots of record that are entirely or mostly covered by the NROD ("highly constrained") are described in OCMC 17.49.120.

Applicant's Response:

The NROD area affecting the site is limited to a portion of the proposed public street through TL 500 in the vicinity of the stormwater point of connection. An NROD memo was prepared by Environmental Science & Assessment, LLC, dated August 6, 2012, and is included in Appendix L. This report identified an NROD boundary based on a 50' buffer from the water resource within the drainage channel. Langan field verified the wetland and water resource boundaries with this current GDP/DDP application (see Appendix M), and the resource boundaries have essentially remained the same. However, the current version of OCMC Table 17.49.110 indicates that the NROD boundary should begin at the top of bank leading down to the channel, not at the channel itself (ordinary high water mark). This results in a greater NROD buffer impact than shown on the 2012 NROD report. The new NROD buffer location and associated impacts are shown on Sht DDP-C1.3.

The conclusions of the 2012 NROD report and planting recommendations remain valid, though there are increased plantings necessary as a result of the updated NROD buffer boundary.

17.49.030 Map as reference.

1. This chapter applies to all development within the natural resources overlay district as shown on the NROD Map, which is a regulatory boundary mapped ten feet beyond the required vegetated corridor width specified in OCMC 17.49.110. The mapped NROD boundary is based on a GIS-supported application of the adopted documents, plans and maps listed in OCMC 17.49.020.A.1—17.49.020.A.8, however the adopted map may not indicate the true location of protected features.

2. Notwithstanding changing field conditions or updated mapping approved by the City (and processed as a Type I Verification per OCMC 17.49.255), the applicant may choose to either accept the adopted NROD boundary or provide a verifiable delineation of the true location of the natural resource feature pursuant to the Type I or Type II procedure in accordance with this chapter.

3. The NROD boundary shall be shown on all development permit applications.

4. The official NROD map can only be amended by the City commission.

5. Verification of the map shall be processed pursuant to OCMC 17.49.250.

Applicant's Response:
The NROD boundary in the 2012 report was based on a field delineation of the resource, which then determined the NROD boundary, rather than relying on a GIS-based map. As noted above, Langan field verified the wetland and water resource boundaries with this current GDP/DDP application (see Appendix M), and the resource boundaries have essentially remained the same. However, the current version of OCMC Table 17.49.110 indicates that the NROD boundary should begin at the top of bank leading down to the channel, not at the channel itself. This results in a greater NROD buffer impact than shown on the 2012 NROD report. The new NROD buffer location and associated impacts are shown on Sht DDP-C1.3.

17.49.035 Addition of wetlands to map following adoption.
The NROD boundary shall be expanded to include a wetland identified during the course of a development permit review if it is within or partially within the mapped NROD boundary and meets the state of Oregon's definition of a "Locally Significant Wetland." In such cases, the entire wetland and its required vegetated corridor as defined in Table 17.49.110 shall be regulated pursuant to the standards of this chapter. The amended NROD boundary may be relied upon by the Community Development Director for the purposes of subsequent development review.

Applicant's Response:
The proposed development does not impact a wetland. Instead, the public street connection to Beavercreek Rd impacts the NROD buffer as shown on Sht DDP-C1.3.

17.49.040 - NROD permit and review process.
An NROD permit is required for those uses regulated under OCMC 17.49.090, Uses Allowed under Prescribed Conditions. An NROD permit shall be processed under the Type II development permit procedure unless an adjustment of standards pursuant to OCMC 17.49.200 is requested or the application is being processed in conjunction with a concurrent application or action requiring a Type III or Type IV development permit.

Applicant's Response:
The applicant acknowledges this section.

17.49.050 - Emergencies.

The provisions of this chapter do not apply to work necessary to protect, repair, maintain, or replace existing structures, utility facilities, roadways, driveways, accessory uses and exterior improvements in response to emergencies. After the emergency has passed, any disturbed native vegetation areas shall be replanted with similar vegetation found in the Oregon City Native Plant List pursuant to the mitigation standards of OCMC 17.49.180. For purposes of this section emergency shall mean any man-made or natural event or circumstance causing or threatening loss of life, injury to person or property, and includes, but is not limited to fire, explosion, flood, severe weather, drought, earthquake, volcanic activity, spills or releases of oil or hazardous material, contamination, utility or transportation disruptions, and disease.

Applicant's Response:
The proposed Masterplan GDP/DDP application does not constitute an emergency as described in this section.

17.49.060 - Consistency and relationship to other regulations.

A. Where the provisions of the NROD are less restrictive or conflict with comparable provisions of the OCMC, other City requirements, regional, state or federal law, the provisions that provides the greater protection of the resource shall govern.

Applicant's Response:
The applicant acknowledges this section.

B. Compliance with Federal and State Requirements.

1. If the proposed development requires the approval of any other governmental agency, such as the Division of State Lands or the U.S. Army Corps of Engineers, the applicant shall make an application for such approval prior to or simultaneously with the submittal of its development application to the City. The planning division shall coordinate City approvals with those of other agencies to the extent necessary and feasible. Any permit issued by the City pursuant to this chapter shall not become valid until other agency approvals have been obtained or those agencies indicate that such approvals are not required.

Applicant's Response:
The proposed project does not impact a wetland regulated by the Department of State Lands or the US Army Corps of Engineers. The project does impact the NROD buffer area with the proposed road connecting the main site with Beavercreek Rd and mitigation is proposed as required by this chapter.

2. The requirements of this chapter apply only to areas within the NROD and to locally significant wetlands that may be added to the boundary during the course of development review pursuant to OCMC 17.49.035. If, in the course of a development review, evidence suggests that a property outside the NROD may contain a wetland or other protected water resource, the provisions of this chapter shall not be applied to that development review. However, the omission shall not excuse the applicant from satisfying any state and federal wetland requirements which are otherwise applicable. Those requirements apply in addition to, and apart from the requirements of the City's comprehensive plan and this code.

Applicant's Response:
The applicant acknowledges this section.

17.49.070 - Prohibited uses.
The following development and activities are not allowed within the NROD:

A. Any new gardens, lawns, structures, development, other than those allowed outright (exempted) by the NROD or that is part of a regulated use that is approved under prescribed conditions. Note: Gardens and lawns within the NROD that existed prior to the time the overlay district was applied to a subject property are allowed to continue but cannot expand further into the overlay district.

B. New lots that would have their buildable areas for new development within the NROD are prohibited.

C. The dumping of materials of any kind is prohibited except for placement of fill as provided in subsection D. below. The outside storage of materials of any kind is prohibited unless they existed before the overlay district was applied to a subject property. Uncontained areas of hazardous materials as defined by the Oregon Department of Environmental Quality (ORS 466.005) are also prohibited.

D. Grading, the placement of fill in amounts greater than ten cubic yards, or any other activity that results in the removal of more than ten percent of the existing native vegetation on any lot within the NROD is prohibited, unless part of an approved development activity.

Applicant's Response:
The applicant does not propose any of the prohibited uses identified in this section. The proposed NROD buffer impact is made as a part of the proposed Masterplan GDP/DDP application.

17.49.080 - Uses allowed outright (exempted).
The following uses are allowed within the NROD and do not require the issuance of an NROD permit:

A. Stream, wetland, riparian, and upland restoration or enhancement projects as authorized by the City.

B. Farming practices as defined in ORS 215.203 and farm uses, excluding buildings and structures, as defined in ORS 215.203.

C. Utility service using a single utility pole.

D. Boundary and topographic surveys leaving no cut scars greater than three inches in diameter on live parts of native plants listed in the Oregon City Native Plant List.

E. Soil tests, borings, test pits, monitor well installations, and other minor excavations necessary for geotechnical, geological or environmental investigation, provided that disturbed areas are restored to pre-existing conditions as approved by the Community Development Director.

F. Trails meeting all of the following:

1. Construction shall take place between May 1 and October 30 with hand held equipment;
2. Widths shall not exceed forty-eight inches and trail grade shall not exceed twenty percent;
3. Construction shall leave no scars greater than three inches in diameter on live parts of native plants;
4. Located no closer than twenty-five feet to a wetland or the top of banks of a perennial stream, or no closer than ten feet of an intermittent stream;
5. No impervious surfaces; and
6. No native trees greater than one-inch in diameter may be removed or cut, unless replaced with an equal number of native trees of at least two-inch diameter and planted within ten feet of the trail.

G. Land divisions provided they meet the following standards, and indicate the following on the final plat:

1. Lots shall have their building sites (or buildable areas) entirely located at least five feet from the NROD boundary shown on the City's adopted NROD map. For the purpose of this subparagraph, "building site" means an area of at least three thousand five hundred square feet with minimum dimensions of forty feet wide by forty feet deep;
2. All public and private utilities (including water lines, sewer lines or drain fields, and stormwater disposal facilities) are located outside the NROD;
3. Impervious streets, driveways and parking areas shall be located at least ten feet from the NROD; and
4. The NROD portions of all lots are protected by:
a. A conservation easement; or
b. A lot or tract created and dedicated solely for unimproved open space or conservation purposes.

H. Site plan and design review applications where all new construction is located outside of the NROD boundary shown on the City's adopted NROD map, and the NROD area is protected by a conservation easement approved in form by the City.

I. Routine repair and maintenance of existing structures, roadways, driveways and utilities.

J. Replacement, additions, alterations and rehabilitation of existing structures, roadways, utilities, etc., where the ground level impervious surface area is not increased.

K. Measures approved by the City of Oregon City to remove or abate nuisances or hazardous conditions.

L. Tree Removal. The Community Development Director may permit the removal of any tree determined to be a dead, hazardous, or diseased tree as defined in OCMC 17.04. Any tree that is removed in accordance with this subsection L shall be replaced with a new tree of at least one-half-inch caliper or at least six foot overall height. An exception to this requirement may be granted if the applicant demonstrates that a replacement tree has already been planted in anticipation of tree removal, or if the existing site conditions otherwise preclude tree replacement (due to existing dense canopy coverage or other ecological reasons).

The replacement tree(s) shall be located in the general vicinity of the removed tree(s), somewhere within NROD on the property. The replacement tree(s) shall be identified on the Oregon City Native Plant List or other locally adopted plant list (e.g. Metro or Portland). The property owner shall ensure that the replacement tree(s) survives at least two years beyond the date of its planting.

M. Planting of native vegetation and the removal of non-native, invasive vegetation (as identified on the Oregon City Native Plant List or other locally adopted plant list (e.g. Metro or Portland), or as recommended by an environmental professional with experience and academic credentials in one or more natural resource areas such as ecology, arboriculture, horticulture, wildlife biology, botany, hydrology or forestry), and removal of refuse and fill, provided that:

1. *All work is done using hand-held equipment;*
2. *No existing native vegetation is disturbed or removed; and*
3. *All work occurs outside of wetlands and the top-of-bank of streams.*

N. Activities in which no more than one hundred square feet of ground surface is disturbed outside of the bank-full stage of water bodies and where the disturbed area is restored to the pre-construction conditions, notwithstanding that disturbed areas that are predominantly covered with invasive species shall be required to remove the invasive species from the disturbance area and plant trees and native plants pursuant to this chapter.

O. New fences meeting all of the following:

1. *No taller than three and a half feet and of split rail or similar open design;*
2. *Two feet width on both sides of fence shall be planted or seeded with native grasses, shrubs, herbs, or trees to cover any bare ground;*
3. *Six inches of clearance from ground level;*
4. *Fence posts shall be placed outside the top-of-bank of streams and outside of delineated wetlands.*

P. Gardens, fences and lawns within the NROD that existed prior to the time the overlay district was applied to a subject property are allowed to be maintained but cannot expand further into the overlay district.

Applicant's Response:
The applicant acknowledges the allowed uses identified in this section. The project proposes to construct a public street within the NROD buffer as shown on the enclosed DDP plan sheets, and more specifically Sht DDP-C1.3, which will require NROD permit approval.

17.49.090 - Uses allowed under prescribed conditions.
The following uses within the NROD are subject to the applicable standards listed in OCMC 17.49.100 through 17.49.190 pursuant to a Type II process:

A. Alteration to existing structures within the NROD when not exempted by OCMC 17.49.080, subject to OCMC 17.49.130.

B. A single-family detached residential unit or duplex on a highly constrained vacant lot of record that has less than three thousand square feet of buildable area, with minimum dimensions of fifty feet by fifty

feet, remaining outside the NROD portion of the property, subject to the maximum disturbance allowance prescribed in OCMC 17.49.120.A.

C. A land division that would create a new lot for an existing residence currently within the NROD, subject to OCMC 17.49.160.

D. Land divisions when not exempted by OCMC 17.49.080, subject to the applicable standards of OCMC 17.49.160.

E. Trails/pedestrian paths when not exempted by OCMC 17.49.080, subject to OCMC 17.49.170 (for trails) or OCMC 17.49.150 (for paved pedestrian paths).

F. New roadways, bridges/creek crossings, utilities or alterations to such facilities when not exempted by OCMC 17.49.080.

G. Roads, bridges/creek crossings subject to OCMC 17.49.150.

H. Utility lines subject to OCMC 17.49.140.

I. Stormwater detention or pre-treatment facilities subject to OCMC 17.49.155.

J. Institutional, industrial or commercial development on a vacant lot of record situated in an area designated for such use that has more than seventy-five percent of its area covered by the NROD, subject to OCMC 17.49.120.B.

K. City, county and state capital improvement projects, including sanitary sewer, water and stormwater facilities, water stations, and parks and recreation projects.

L. Non-hazardous tree removal that is not exempted pursuant to OCMC 17.49.080.K.

M. Fences that do not meet the standards for exemption pursuant to OCMC 17.49.080.O.4.

Applicant's Response:
The applicant acknowledges the allowed uses identified in this section. The project proposes to construct a public street and associated utilities, retaining wall, and a guard rail within the NROD buffer as shown on the enclosed DDP plan sheets, and more specifically Sht DDP-C1.3, which will require NROD permit approval.

17.49.100 - General development standards.
The following standards apply to all uses allowed under prescribed conditions within the NROD with the exception of rights-of-way (subject to OCMC 17.49.150), trails (subject to OCMC 17.49.170), utility lines (subject to OCMC 17.49.140), land divisions (subject to OCMC 17.49.160), and mitigation projects (subject to OCMC 17.49.180 or 17.49.190):

A. Native trees shall be preserved unless they are located within ten feet of any proposed structures or within five feet of new driveways, or if deemed not wind-safe by a certified arborist. Trees listed on the Oregon City Nuisance Plant List or Prohibited Plant List are exempt from this standard and may be removed. A protective covenant shall be required for any native trees that remain;

B. The Community Development Director may allow the landscaping requirements of the base zone, other than landscaping required for parking lots, to be met by preserving, restoring and permanently protecting habitat on development sites in the natural resource overlay district;

C. All vegetation planted in the NROD shall be native and listed on the Oregon City Native Plant List or other locally adopted plant list (e.g. Metro or Portland), or as recommended by an environmental professional with experience and academic credentials in one or more natural resource areas such as ecology, arboriculture, horticulture, wildlife biology, botany, hydrology or forestry);

D. Grading is subject to installation of erosion control measures required by the City;

E. The minimum front, street, or garage setbacks of the base zone may be reduced to any distance between the base zone minimum and zero in order to minimize the disturbance area within the NROD portion of the lot;

F. Any maximum required setback in any zone, such as for multi-family, commercial or institutional development, may be increased to any distance between the maximum and the distance necessary to minimize the disturbance area within the NROD portion of the lot;

G. Fences in compliance with OCMC 17.49.080.N;

H. Exterior lighting shall be placed or shielded so that they do not shine directly into resource areas;

I. If development will occur within the one hundred-year floodplain, the standards of OCMC 17.42 shall be met; and

J. Mitigation of impacts to the regulated buffer is required, subject to OCMC 17.49.180 or 17.49.190.

Applicant's Response:
The project proposes to construct a public street and associated utilities, retaining wall (with fence on top for safety), and a guard rail within the NROD buffer as shown on the enclosed DDP plan sheets, and more specifically Sht DDP-C1.3, which will require NROD permit approval. Construction activity impacting the wetland or water resource is not proposed. The development standards of OCMC 17.49.150 govern the development of the proposed street improvements.

Nonetheless, the following discussion addresses the above concerns so the project can comply with as many of the requirements in this section as possible. The proposed masterplan development does not rely on NROD mitigation for meeting the project's landscape requirements. The project proposes mitigation vegetation both in the temporary impacts area shown on Sht DDP-C1.3 and the larger mitigation area within the Geologic Hazard setback. Erosion control measures are proposed to

protect the NROD resource as should on DDP-C0.1. These erosion control measures will be finalized with the final design and construction plan preparation following GDP/DDP approval. Minimum/maximum setbacks are not applicable with the proposed roadway improvements. The proposed fence on top of the retaining wall is considered a safety fence and is not proposed to be split-rail as indicated in OCMC 17.49.080.O. Street lighting is located on the west side of the proposed road to minimize lighting impacts to the NROD resource while still providing adequate light levels for the street and accompanying sidewalk. If final design indicates shields are necessary to avoid directly shining into the resource area they can be provided if doing so still enables the project to meet required street and pedestrian light levels. Development will not occur within the 100-yr floodplain of this tributary. While the ravine containing the NROD resource does not include a mapped 100-yr floodplain, the lowest level of the proposed retaining wall lies 11'-12' above the resource and the ravine capacity far exceeds the capacity of the storm pipe discharging into the ravine. Mitigation to the NROD buffer is as proposed on the 2012 NROD memo, as modified on Sht DDP-C1.3 to reflect an updated buffer location/impact, and as described in our responses to this chapter.

17.49.110 - Width of vegetated corridor.

A. Calculation of Vegetated Corridor Width within City Limits. The NROD consists of a vegetated corridor measured from the top of bank or edge of a protected habitat or water feature. The minimum required width is the amount of buffer required on each side of a stream, or on all sides of a feature if non-linear. The width of the vegetated corridor necessary to adequately protect the habitat or water feature is specified in Table 17.49.110.

Table 17.49.110

Protected Water Feature Type (see definitions)	***Slope Adjacent to Protected Water Feature***	***Starting Point for Measurements from Water Feature***	***Width of Vegetated Corridor (see Note 1)***
Anadromous fish-bearing streams	*Any slope*	*• Edge of bankfull flow*	*200 feet*
Intermittent streams with slopes less than 25 percent and which drain less than 100 acres	*< 25 percent*	*• Edge of bankfull flow*	*15 feet*
All other protected water features	*< 25 percent*	*•Edge of bankfull flow • Delineated edge of Title 3 wetland*	*50 feet*
	≥25 percent for 150 feet or more (see Note 2)		*200 feet*
	≥25 percent for less than 150 feet (see Note 2)		*Distance from starting point of measurement to top of ravine (break in ≥25 percent slope) (See Note 3) plus 50 feet.*

Notes:

1. Required width (measured horizontally) of vegetated corridor unless reduced pursuant to the provisions of OCMC 17.49.120.
2. Vegetated corridors in excess of fifty feet apply on steep slopes only in the uphill direction from the protected water feature.
3. Where the protected water feature is confined by a ravine or gully, the top of the ravine is the break in the ≥25 percent slope.

Applicant's Response:
Based on the 2012 NROD report, anadromous fish are not present in the immediate downstream drainage. The existing stream channel is not considered intermittent. The existing slope adjacent to the protected wetland/water resource varies in slope with the vast majority of the adjacent slope ≥25 percent for less than 150 feet. The width of the vegetated corridor (NROD Buffer) is governed by Note #3 in Table 17.49.110, which requires a 50-ft buffer outside of the top of the ravine. This is shown on Sht DDP-C1.3

B. Habitat Areas within City Parks. For habitat and water features identified by Metro as regionally significant which are located within city parks, the NROD Boundary shall correspond to the Metro Regionally Significant Habitat Map.

Applicant's Response:
The existing NROD impact area is not located within a city park.

C. Habitat Areas outside City limit/within UGB. For habitat and water features identified by Metro as regionally significant which are located outside of the City limits as of the date of adoption of the ordinance codified in this chapter, the minimum corridor width from any non-anadromous fish bearing stream or wetland shall be fifty feet.

Applicant's Response:
The existing NROD impact area is located within the city limits.

<u>17.49.120 - Maximum disturbance allowance for highly constrained lots of record.</u>
In addition to the General Development Standards of OCMC 17.49.100, the following standards apply to a vacant lot of record that is highly constrained by the NROD, per OCMC 17.49.090.B and 17.49.090.F:

A. Standard for Residential Development. In the NROD where the underlying zone district is zoned Residential (R-10, R-8, R-6, R-5, R-3.5): The maximum disturbance area allowed for new residential development within the NROD area of the lot is three thousand square feet.

Applicant's Response:
The proposed NROD disturbance is not located within the above-referenced residential zones.

B. Standard for all developments not located in R-10, R-8, R-6, R-5, and R-3.5. For all other underlying zone districts, the maximum disturbance area allowed for a vacant, constrained lot of record development within the NROD is that square footage which when added to the square footage of the lot lying outside the NROD portion equals twenty-five percent of the total lot area.

1. Lots that are entirely covered by the NROD will be allowed to develop twenty-five percent of their area.
2. This can be determined by:
a. Multiplying the total square footage of the lot by .25; or
b. Subtracting from that amount the square footage of the lot that is located outside the NROD.
The result is the maximum square footage of disturbance to be allowed in the NROD portion of the lot. If the result is < or = to 0, no disturbance is permitted and the building shall be located outside of the boundary.

Applicant's Response:
While the remainder of TL 500 is vacant, it does not qualify as being highly constrained per OCMC 17.49.090.B or F. Accordingly, this section does not apply.

C. In all areas, the disturbance area of a vacant, highly constrained lot of record within the NROD shall be set back at least fifty feet from the top of bank on Abernethy Creek, Newell Creek, or Livesay Creek or twenty-five feet from the top of bank of any tributary of the aforementioned creeks, other water body or from the delineated edge of a wetland located within the NROD area.

Applicant's Response:
While the remainder of TL 500 is vacant, it does not qualify as being highly constrained per OCMC 17.49.090.B or F. Accordingly, this section does not apply.

D. If the highly constrained lot of record cannot comply with the above standards, a maximum 1,500 square foot disturbance within the NROD area may be allowed.

Applicant's Response:
While the remainder of TL 500 is vacant, it does not qualify as being highly constrained per OCMC 17.49.090.B or F. Accordingly, this section does not apply.

17.49.130 - Existing development standards.
In addition to the General Development Standards of OCMC 17.49.100, the following standards apply to alterations and additions to existing development within the NROD, except for trails, rights of way, utility lines, land divisions and mitigation projects. As of June 1, 2010, applicants for alterations and additions to existing development that are not exempt pursuant to OCMC 17.49.080.J. shall submit a Type II or Type III application pursuant to this section.

Mitigation is required, subject to OCMC 17.49.180 or 17.49.190.

Applicant's Response:
TL 500 has been altered over time by various gravel maintenance drives and equipment storage. That prior activity has impacted a portion of the NROD buffer/vegetated corridor. The currently proposed Masterplan development represents formal impact to the NROD buffer by virtue of the proposed masterplan improvements and is being processed as a Type II application.

17.49.140 - Standards for utility lines.
The following standards apply to new utilities, private connections to existing or new utility lines, and upgrades of existing utility lines within the NROD:

A. The disturbance area for private connections to utility lines shall be no greater than ten feet wide;

Applicant's Response:
The project proposes both street and utility improvements, which are governed by OCMC 17.49.150.

B. The disturbance area for the upgrade of existing utility lines shall be no greater than fifteen feet wide;

Applicant's Response:
The project proposes both street and utility improvements, which are governed by OCMC 17.49.150.

C. New utility lines shall be within the right-of-way, unless reviewed under subsection D.

Applicant's Response:
The project proposes both street and utility improvements, which are governed by OCMC 17.49.150. New utilities are located within he proposed right-of-way.

D. New utility lines that cross above or underneath a drainage way, wetland, stream, or ravine within the NROD but outside of a right-of-way shall be processed as a Type III permit pursuant to OCMC 17.49.200, Adjustment from Standards.

Applicant's Response:
The project does not propose to cross or go underneath a drainage way.

E. No fill or excavation is allowed within the ordinary high water mark of a stream without the approval of the Division of State Lands and/or the U.S. Army Corps of Engineers;

Applicant's Response:
The project does not propose cuts or fills within the ordinary high-water mark of the existing channel.

F. The Division of State Lands must approve any work that requires excavation or fill in a wetland;

Applicant's Response:
The project does not propose filling any wetlands.

G. Native trees more than ten inches in diameter shall not be removed unless it is shown that there are no feasible alternatives; and

Applicant's Response:
The project does not propose to remove any native trees within the NROD buffer area.

H. Each six to ten-inch diameter native tree cut shall be replaced at a ratio of three trees for each one removed. Each eleven-inch or greater diameter native tree shall be replaced at a ratio of five trees for each removed. The replacement trees shall be a minimum one-half inch diameter and selected from the Oregon City Native Plant List. All trees shall be planted within the NROD on the subject property. Where a utility line is approximately parallel with the stream channel, at least half of the replacement trees shall be planted between the utility line and the stream channel.

Applicant's Response:
The project does not propose to remove any native trees within the NROD buffer area.

I. Mitigation is required, subject to OCMC 17.49.180 or 17.49.190.

Applicant's Response:
The project proposes mitigation for roadway and utility impacts to the NROD buffer through a combination of plantings within the temporary impact area shown on DDP-C1.3 and the remainder of the mitigation plantings occurring within the proposed 35' Geologic Hazard setback area on the east side of Parcel B. Please see our responses to OCMC 17.49.180 & 17.49.190. The proposed roadway impact is limited to the NROD buffer area as shown on DDP-C1.3, and not to the wetland or water resource.

17.49.150 - Standards for vehicular or pedestrian paths and roads.
The following standards apply to public rights-of-way and private roads within the NROD, including roads, bridges/stream crossings, driveways and pedestrian paths with impervious surfaces:

A. Stream crossings shall be limited to the minimum number and width necessary to ensure safe and convenient pedestrian, bicycle and vehicle connectivity, and shall cross the stream at an angle as close to perpendicular to the stream channel as practicable. Bridges shall be used instead of culverts wherever practicable.

Applicant's Response:
The proposed roadway impact is limited to the NROD buffer area as shown on DDP-C1.3, and not to the wetland or water resource. No stream crossing is proposed.

B. Where the right-of-way or private road crosses a stream the crossing shall be by bridge or a bottomless culvert;

Applicant's Response:
The proposed roadway impact is limited to the NROD buffer area as shown on DDP-C1.3, and not to the wetland or water resource. No stream crossing is proposed.

C. No fill or excavation shall occur within the ordinary high water mark of a stream without the approval of the Division of State Lands and/or the U.S. Army Corps of Engineers;

Applicant's Response:
The proposed roadway impact is limited to the NROD buffer area as shown on DDP-C1.3, and not to the wetland or water resource. No stream crossing is proposed.

D. If the Oregon Department of State Lands (DSL) has jurisdiction over any work that requires excavation or fill in a wetland, required permits or authorization shall be obtained from DSL prior to release of a grading permit;

Applicant's Response:
The proposed roadway impact is limited to the NROD buffer area as shown on DDP-C1.3, and not to the wetland or water resource. No wetland impact is proposed.

E. Any work that will take place within the banks of a stream shall be conducted between June 1 and August 31, or shall be approved by the Oregon Department of Fish and Wildlife; and

Applicant's Response:
The proposed roadway impact is limited to the NROD buffer area as shown on DDP-C1.3, and not to the wetland or water resource. No stream impact is proposed.

F. Mitigation is required, subject to OCMC 17.49.180 or 17.49.190.

Applicant's Response:
The project proposes mitigation for roadway and utility impacts to the NROD buffer through a combination of plantings within the temporary impact area shown on DDP-C1.3 and the remainder of the mitigation plantings occurring within the proposed 35' Geologic Hazard setback area on the east side of Parcel B. Please see our responses to OCMC 17.49.180 & 17.49.190. The proposed roadway impact is limited to the NROD buffer area as shown on DDP-C1.3, and not to the wetland or water resource.

17.49.155 - Standards for stormwater facilities.
Approved facilities that infiltrate stormwater on-site in accordance with public works low-impact development standards, including but not limited to; vegetated swales, rain gardens, vegetated filter strips, and vegetated infiltration basins, and their associated piping, may be placed within the NROD boundary pursuant to the following standards:

A. The forest canopy within the driplines of existing trees shall not be disturbed.

Applicant's Response:
The project does not propose installation of stormwater facilities as described in this criterion. The project's piped stormwater connection point to the existing storm line is located within the proposed public road alignment but no surface stormwater treatment facility is proposed within the NROD boundary or required buffer.

B. Only vegetation from the Oregon City Native Plant List shall be planted within these facilities.

Applicant's Response:
The project does not propose installation of stormwater facilities as described in this criterion. The project's piped stormwater connection point to the existing storm line is located within the proposed public road alignment but no surface stormwater treatment facility is proposed within the NROD boundary or required buffer.

C. Mitigation is required, subject to OCMC 17.49.180 or 17.49.190.

Applicant's Response:
The project does not propose installation of stormwater facilities as described in this criterion. The project's piped stormwater connection point to the existing storm line is located within the proposed public road alignment but no surface stormwater treatment facility is proposed within the NROD boundary or required buffer.

D. The stormwater facility may encroach up to one-half the distance of the NROD corridor.

Applicant's Response:
The project does not propose installation of stormwater facilities as described in this criterion. The project's piped stormwater connection point to the existing storm line is located within the proposed public road alignment but no surface stormwater treatment facility is proposed within the NROD boundary or required buffer.

E. The stormwater facility shall not impact more than one thousand square feet of the NROD. Impacts greater than one thousand square feet shall be processed as a Type III application.

Applicant's Response:
The project does not propose installation of stormwater facilities as described in this criterion. The project's piped stormwater connection point to the existing storm line is located within the proposed public road alignment but no surface stormwater treatment facility is proposed within the NROD boundary or required buffer.

F. The Community Development Director may allow landscaping requirements of the base zone, other than landscaping required for parking lots, to be met by preserving, restoring and permanently protecting habitat on development sites within the natural resource overlay district.

Applicant's Response:
The project does not propose installation of stormwater facilities as described in this criterion. The project's piped stormwater connection point to the existing storm line is located within the proposed public road alignment but no surface stormwater treatment facility is proposed within the NROD boundary or required buffer.

G. The design of the stormwater facility shall be subject to OCMC 13.12.

Applicant's Response:
The project does not propose installation of stormwater facilities as described in this criterion. The project's piped stormwater connection point to the existing storm line is located within the proposed public road alignment but no surface stormwater treatment facility is proposed within the NROD boundary or required buffer.

17.49.160 - Standards for land divisions.
Other than those land divisions exempted by OCMC 17.49.070.G., new residential lots created within the NROD shall conform to the following standards:

A. For a lot for an existing residence currently within the NROD. This type of lot is allowed within the NROD for a residence that existed before the NROD was applied to a subject property. A new lot for an existing house may be created through a partition or subdivision process when all of the following are met:

1. There is an existing house on the site that is entirely within the NROD area; and

Applicant's Response:
The project does not propose to create a new residential lot within the NROD boundary or required buffer.

2. The existing house will remain; and

Applicant's Response:
The project does not propose to create a new residential lot within the NROD boundary or required buffer.

3. The new lot is no larger than required to contain the house, minimum required side setbacks, garage, driveway and a twenty-foot deep rear yard, with the remaining NROD area beyond that point protected by a conservation easement, or by dedicating a conservation tract or public open space.

Applicant's Response:
The project does not propose to create a new residential lot within the NROD boundary or required buffer.

B. Protection and ownership of NROD areas in land divisions:

1. New partitions shall delineate the NROD area either as a separate tract or conservation easement that meets the requirements of subsection 2. of this section.

Applicant's Response:
The project does not propose to create a new residential lot within the NROD boundary or required buffer.

2. Prior to final plat approval, ownership and maintenance of the NROD area shall be identified to distinguish it from the buildable areas of the development site. The NROD area may be identified as any one of the following:

a. A tract of private open space held by the homeowners association;
b. For residential land divisions, a tract of private open space held by a homeowner's association subject to an easement conveying stormwater and surface water management rights to the City and preventing the owner of the tract from activities and uses inconsistent with the purpose of this document;
c. Public open space where the tract has been dedicated to the City or other governmental unit;
d. Conservation easement area pursuant to OCMC 17.49.180.G and approved in form by the Community Development Director;
e. Any other ownership proposed by the owner and approved by the Community Development Director; or
f. NROD tracts shall be exempt from minimum frontage requirements, dimensional standards of the zoning designation, street frontage requirements, or flag lot standards pursuant to OCMC 16.08.053.

Applicant's Response:
The project does not propose to create a new residential lot within the NROD boundary or required buffer.

17.49.170 - Standards for trails.
All trails that are not exempt pursuant to OCMC 17.49.80.F shall be processed through a Type II or Type III process pursuant to this chapter; and shall provide mitigation, subject to OCMC 17.49.180 or 17.49.190.

Applicant's Response:
The project does not propose to locate a trail within the NROB boundary or required buffer.

17.49.180 - Mitigation standards.
The following standards (or the alternative standards of OCMC 17.49.190) apply to required mitigation:

A. Mitigation shall occur at a two-to-one ratio of mitigation area to proposed NROD disturbance area. Mitigation of the removal or encroachment of a wetland or stream shall not be part of this chapter and will be reviewed by the Division of State Lands or the Army Corp of Engineers during a separate review process.

Applicant's Response:
As shown on Sht DDP-C1.3 impacts to the NROD buffer are as follow:

- **Temporary Impacts: 790 sf**
- **Permanent Impacts: 3,346 sf**
- **Existing Impacts: 2,040 sf**

The existing impact is excluded from mitigation since it's a pre-existing encroachment into the NROD buffer. As noted in the 2012 NROD report, the applicant does not have access to the remainder of TL 500 for any mitigation other than the temporary mitigation area. This continues to be the case with this application. The 2012 NROD report proposed a 3:1 mitigation ratio, with mitigation to occur within the 35-ft Geologic Hazard setback. This project proposes to maintain that 3:1 mitigation area due to the mitigation area being detached from the NROD resource as identified in the 2012 report. With a 3,346-sf permanent impact, proposed mitigation at a 3:1 ratio results in a mitigation area of 10,038 sf.

B. Mitigation shall occur on the site where the disturbance occurs, pursuant to the following:

1. The mitigation required for disturbance associated with a right-of-way or utility in the right-of way shall be located as close to the impact area as possible within the NROD;

2. If not possible to locate mitigation on the same site, the mitigation shall occur first on the same stream tributary, secondly in the Abernethy, Newell or Livesay Creek or a tributary thereof, or thirdly as close to the impact area as possible within the NROD; and

3. An easement that allows access to the mitigation site for monitoring and maintenance shall be provided as part of the mitigation plan.

Applicant's Response:
As identified in the 2012 NROD report, the area of NROD encroachment cannot be adequately off-set adjacent to the waterway resource within the TL 500 waterway ravine. TL 500 is still highly constrained by steep slopes and the expansion and enhancement of existing NROD buffer area on TL 500 will further constrain access to TL 500 making it more difficult to develop in the future. The 2012 NROD report goes on to say that regardless of current proposed roadway improvements, any future development proposed on TL 500 will have to address existing and proposed NROD encroachment with a mitigation plan. Adding to the NROD area on TL 500 via this project's proposed mitigation further encumbers any future site development options.

C. Mitigation shall occur within the NROD area of a site unless it is demonstrated that this is not feasible because of a lack of available and appropriate area. In such cases, the proposed mitigation area shall be contiguous to the existing NROD area so the NROD boundary can be easily extended in the future to include the new resource site.

Applicant's Response:
The proposed mitigation site is located along the edge of a mature mixed forest of big-leaf maple and Douglas fir that extends down the steep slope to the east, into the adjacent open space parcel (2012 Report, Photo 4). The forest community to the east transitions into a mixed riparian community at the base of the slope and further east, NROD overlays are mapped on tributaries to Newell Creek (2012 Report, Figure 2).

The understory along the edge of the existing forest habitat in the proposed mitigation area has been impacted by past site grading. Fill material has been pushed up to the top of slope, piled into a narrow berm ranging from 2-3 feet high, extending along the entire eastern edge of the site. As a result of this disturbance, invasive weedy species are the dominant understory vegetative cover (2012 Report, Photos 5-6). The geotech consultant recommends a 35-foot setback from the top of bank along the

eastern edge of the site for built structures, so this area would not otherwise be improved with the proposed development (2012 Report, Figure 6).

Mitigation will be provided by pulling out the top 2-3 feet of fill material down to the native soil, which will be more conducive to a native plant community. The existing understory strata of the forest community will be restored by the installation of native tree and shrub plantings seeded with native groundcover species.

While the proposed mitigation area is not directly adjacent to the impacted NROD, the proposed mitigation will achieve a larger habitat enhancement area, providing a 3:1 ratio of mitigation to encroachment. Additionally, the expansion of the riparian forest along the eastern edge of the site will allow for a larger native plant community along the existing forest habitat at that location than would otherwise be completed under the existing site plan (2012 Report, Figure 5).

When looking at NROD mitigation options, it was determined that the area of NROD encroachment from the off-site access cannot be adequately off-set adjacent to the waterway resource within the off-site roadway. The site is currently highly constrained by steep slopes and the expansion and enhancement of existing NROD buffer area on the off-site parcel will further constrain access from Beavercreek to the site and make the site more difficult to develop. Regardless of current proposed roadway improvements, any future development proposed the off-site parcel will have to address existing and proposed NROD encroachment with a mitigation plan. Adding to the NROD area on the off-site lot further encumbers any future site development options.

Therefore, instead of providing NROD mitigation on the off-site parcel, the applicant proposes to provide 10,038 square feet of forested habitat enhancement along the eastern edge of the proposed shopping center development (2012 Report, Figure 6). While the NROD buffer cannot be enhanced or expanded adjacent to the tributary on the off-site parcel, the larger mitigation area habitat enhancement adjacent to the mostly intact, mature forest on site provides additional buffer functions not achievable at the impact location.

All temporary impacts will be mitigated in place. Due to the confined nature of the drainage adjacent to the temporary impacts and that no increase in surface discharge is anticipated from the project there are no detrimental impacts anticipated to the areas designated to be left undisturbed.

Based on the 2012 NROD report, anadromous fish are not present in the immediate downstream drainage. The project does not propose impacts to the stream channel, wetlands or other water bodies. Therefore, no detrimental impact related to the migration, rearing, feeding or spawning of fish are anticipated

D. Invasive and nuisance vegetation shall be removed within the mitigation area;

Applicant's Response:
As noted in the 2012 NROD report, invasive species and nuisance vegetation will be removed in the NROD mitigation area.

E. Required Mitigation Planting. An applicant shall meet Mitigation Planting Option 1 or 2 below, whichever option results in more tree plantings, except that where the disturbance area is one acre or more, Mitigation Option 2 shall be required. All trees, shrubs and ground cover shall be selected from the Oregon City Native Plant List.

Applicant's Response:
The proposed NROD impacts do not remove existing trees. Accordingly, Mitigation Planting Option 2 will be utilized.

NOTE: Applications on sites where no trees are present or which are predominantly covered with invasive species shall be required to mitigate the site, remove the invasive species and plant trees and native plants pursuant to Option 2.

1. Mitigation Planting Option 1.

a. Planting Quantity. This option requires mitigation planting based on the number and size of trees that are removed from the site pursuant to Table 17.49.180E.1.a.

Table 17.49.180E.1.a.—Required Planting

Size of Tree to be Removed (DBH)	***Number of Trees and Shrubs to be Replanted***
6 to 12"	*2 trees and 3 shrubs*
13 to 18"	*3 trees and 6 shrubs*
19 to 24"	*5 trees and 12 shrubs*
25 to 30"	*7 trees and 18 shrubs*
Over 30"	*10 trees and 30 shrubs*

Applicant's Response:
The proposed NROD impacts do not remove existing trees. Accordingly, Mitigation Planting Option 2 will be utilized.

b. Plant Size. Replacement trees shall be at least one-half inch in caliper on average, measured at six inches above the ground level for field grown trees or above the soil line for container grown trees. Oak, madrone, ash or alder may be one gallon size. Conifers shall be a minimum of six feet in height. Shrubs shall be at least one-gallon container size or the equivalent in ball and burlap and shall be at least twelve inches in height at the time of planting. All other species shall be a minimum of four-inch pots;

Applicant's Response:
The proposed NROD impacts do not remove existing trees. Accordingly, Mitigation Planting Option 2 will be utilized.

c. Plant Spacing. Except for the outer edges of mitigation areas, trees and shrubs shall be planted in a non-linear fashion. Plant spacing for new species shall be measured from the driplines of existing trees when present. Trees shall be planted on average between eight

and twelve feet on center, and shrubs shall be planted on average between four and five feet on center, or clustered in single species groups of no more than four plants, with each cluster planted on average between eight and ten feet on center.

Applicant's Response:
The proposed NROD impacts do not remove existing trees. Accordingly, Mitigation Planting Option 2 will be utilized.

d. Mulching and Irrigation. Mulch new plantings a minimum of three inches in depth and eighteen inches in diameter. Water new plantings one inch per week from June 30th to September 15th, for the three years following planting.

Applicant's Response:
The proposed NROD impacts do not remove existing trees. Accordingly, Mitigation Planting Option 2 will be utilized.

e. Plant Species. Shrubs shall consist of at least two different species. If ten trees or more are planted, no more than one-half of the trees may be of the same genus. Conifers shall be replaced with conifers. Bare ground shall be planted or seeded with native grasses and ground cover species.

Applicant's Response:
The proposed NROD impacts do not remove existing trees. Accordingly, Mitigation Planting Option 2 will be utilized.

2. Mitigation Planting Option 2.

a. Planting Quantity. In this option, the mitigation requirement is calculated based on the size of the disturbance area within the NROD. Native trees and shrubs are required to be planted at a rate of five trees and twenty-five shrubs per every five hundred square feet of disturbance area (calculated by dividing the number of square feet of disturbance area by five hundred, and then multiplying that result times five trees and twenty-five shrubs, and rounding all fractions to the nearest whole number of trees and shrubs; for example, if there will be three hundred thirty square feet of disturbance area, then three hundred thirty divided by five hundred equals .66, and .66 times five equals 3.3, so three trees shall be planted, and .66 times twenty-five equals 16.5, so seventeen shrubs shall be planted). Bare ground shall be planted or seeded with native grasses or herbs. Non-native sterile wheat grass may also be planted or seeded, in equal or lesser proportion to the native grasses or herbs.

Applicant's Response:
To mitigate the impacts for the permanent impacts (3,346 sf) a total of 33 trees and 167 shrubs will be planted within the 10,038 sf area in the Geologic Hazard Area. Within the temporary impact area (790 sf) a total of 7 trees and 39 shrubs will be planted. As identified in the 2012 NROD report, the Enhancement/Mitigation Area will be seeded with the seed mix provided in Table 1. Plantings at the Enhancement/Mitigation Area will be completed using container plant size and plant spacing

identified in Table 2 and 3. The total number of plants have been updated below for the current encroachment areas.

Plant List for Enhancement/NROD Mitigation Area (3346 sf)				
Common Name	**Scientific Name**	**Plant Form/Size[1]**	**Plant Spacing (ft on center)**	**Total Number of Plants**
NROD ENHANCEMENT				
Trees				
Big-leaf maple	*Acer macrophyllum*	1 gal/24”	10 ft. O.C.	11
Bitter cherry	*Prunus emarginata*	1 gal/24”	10 ft. O.C.	11
Douglas fir	*Pseudotsuga menziesii*	1 gal/24”	10 ft. O.C.	11
			Subtotal	**33**
Shrubs				
Nookta rose	*Rosa nutkana*	1 gal/18”	Clusters of 3-4 plants; 8 ft O.C.	34
Mock orange	*Philadelphus lewisii*	1 gal/18”	Clusters of 3-4 plants; 8 ft O.C.	25
Red-flowering currant	*Ribes sanguineum*	1 gal/18”	Clusters of 3-4 plants; 8 ft O.C.	25
Snowberry	*Symphoricarpos albus*	1 gal/18”	Clusters of 3-4 plants; 8 ft O.C.	29
Kinnikinnick	*Arctostaphylos uva-ursi*	1 gal/18”	Clusters of 3-4 plants; 8 ft O.C.	25
Tall Oregon grape	*Mahonia aquifolium*	1 gal/18”	Clusters of 3-4 plants; 8 ft O.C.	29
			Subtotal	**167**
			Total	**200**

[1]Recommended plant form and size. Suitable replacement may be used based on availability.

Plant List for Temporary Impacts/ In Place Mitigation Area (790 sf)				
Common Name	**Scientific Name**	**Plant Form/Size**	**Plant Spacing (ft on center)**	**Total Number of Plants**
NROD ENHANCEMENT				
Trees				
Big-leaf maple	*Acer macrophyllum*	1 gal/24”	10 ft. O.C.	3
Douglas fir	*Pseudotsuga menziesii*	1 gal/24”	10 ft. O.C.	4
			Subtotal	**7**
Shrubs				
Oceanspray	*Holodiscus discolor*	1 gal/18”	8 ft O.C.	9
Red-flowering currant	*Ribes sanguineum*	1 gal/18”	Clusters of 3-4 plants; 8 ft O.C.	9
Snowberry	*Symphoricarpos albus*	1 gal/18”	Clusters of 3-4 plants; 8 ft O.C.	11

Tall Oregon grape	*Mahonia aquifolium*	1 gal/18"	Clusters of 3-4 plants; 8 ft O.C.	10
			Subtotal	**39**
			Total	**46**

[1]Recommended plant form and size. Suitable replacement may be used based on availability.

b. Plant Size. Plantings may vary in size dependent on whether they are live cuttings, bare root stock or container stock, however, no initial plantings may be shorter than twelve inches in height.

Applicant's Response:
See tables above for recommended plant form and size.

c. Plant Spacing. Trees shall be planted at average intervals of seven feet on center. Shrubs may be planted in single-species groups of no more than four plants, with clusters planted on average between eight and ten feet on center.

Applicant's Response:
See tables above for recommended plant spacing.

d. Mulching and Irrigation shall be applied in the amounts necessary to ensure eighty percent survival at the end of the required five-year monitoring period.

Applicant's Response:
The applicant acknowledges this criterion and will address mulching and irrigation on the final construction plans.

e. Plant Diversity. Shrubs shall consist of at least three different species. If twenty trees or more are planted, no more than one-third of the trees may be of the same genus.

Applicant's Response:
The ratio of plantings for each species in the Enhancement/NROD Mitigation Area from the 2012 NROD report was adjusted to ensure no genus of trees accounted for more than one-third of the trees.

F. An alternative planting plan using native plants may be approved in order to create a new wetland area, if it is part of a wetlands mitigation plan that has been approved by the DSL or the U.S. Army Corps of Engineers (USACE) in conjunction with a wetland joint removal/fill permit application.

Applicant's Response:
An alternative planting plan is not proposed for the creation of new wetlands.

G. Monitoring and Maintenance. The mitigation plan shall provide for a five-year monitoring and maintenance plan with annual reports in a form approved by the Community Development Director.

Monitoring of the mitigation site is the on-going responsibility of the property owner, assign, or designee, who shall submit said annual report to the planning division, documenting plant survival rates of shrubs and trees on the mitigation site. Photographs shall accompany the report that indicate the progress of the mitigation. A minimum of eighty percent survival of trees and shrubs of those species planted is required at the end of the five-year maintenance and monitoring period. Any invasive species shall be removed and plants that die shall be replaced in kind to meet the eighty percent survival requirement. Bare spots and areas of invasive vegetation larger than ten square feet that remain at the end the five-year monitoring period shall be replanted or reseeded with native grasses and/or ground cover species.

Applicant's Response:
The applicant acknowledges the monitoring and maintenance requirements of this section.

H. Covenant or Conservation Easement. The applicant shall record a restrictive covenant or conservation easement, in a form provided by the City, requiring the owners and assigns of properties subject to this section to comply with the applicable mitigation requirements of this section. Said covenant shall run with the land, and permit the City to complete mitigation work in the event of default by the responsible party. Costs borne by the City for such mitigation shall be borne by the owner.

Applicant's Response:
The applicant acknowledges the easement requirements of this section.

I. Financial Guarantee. A financial guarantee for establishment of the mitigation area, in a form approved by the City, shall be submitted before development within the NROD disturbance area commences. The City will release the guarantee at the end of the five-year monitoring period, or before, upon its determination that the mitigation plan has been satisfactorily implemented pursuant to this section.

Applicant's Response:
The applicant acknowledges the financial guarantee requirements of this section.

17.49.190 - Alternative mitigation standards.
In lieu of the above mitigation standards of OCMC 17.49.180, the following standards may be used. Compliance with these standards shall be demonstrated in a mitigation plan report prepared by an environmental professional with experience and academic credentials in one or more natural resource areas such as ecology, wildlife biology, botany, hydrology or forestry. At the applicant's expense, the City may require the report to be reviewed by an environmental consultant.

A. The report shall document the existing condition of the vegetated corridor as one of the following categories:

Good Existing Corridor:	*Combination of trees, shrubs and groundcover are eighty percent present, and there is more than fifty percent tree canopy coverage in the vegetated corridor.*
Marginal Existing Vegetated Corridor:	*Combination of trees, shrubs and groundcover are eighty percent present, and twenty-five to fifty percent canopy coverage in the vegetated corridor.*
Degraded Existing Vegetated Corridor:	*Less vegetation and canopy coverage than marginal vegetated corridors, and/or greater than ten percent surface coverage of any non-native species.*

Applicant's Response:
The applicant does not propose alternate mitigation standards.

B. The proposed mitigation shall occur at a minimum two-to-one ratio of mitigation area to proposed disturbance area;

Applicant's Response:
The applicant does not propose alternate mitigation standards.

C. The proposed mitigation shall result in a significant improvement to good existing condition as determined by a qualified environmental professional;

Applicant's Response:
The applicant does not propose alternate mitigation standards.

D. There shall be no detrimental impact on resources and functional values in the area designated to be left undisturbed;

Applicant's Response:
The applicant does not propose alternate mitigation standards.

E. Where the proposed mitigation includes alteration or replacement of development in a stream channel, wetland, or other water body, there shall be no detrimental impact related to the migration, rearing, feeding or spawning of fish;

Applicant's Response:
The applicant does not propose alternate mitigation standards.

F. Mitigation shall occur on the site of the disturbance to the extent practicable. If the proposed mitigation cannot practically occur on the site of the disturbance, then the applicant shall possess a legal instrument, such as an easement, sufficient to carry out and ensure the success of the mitigation.

Applicant's Response:
The applicant does not propose alternate mitigation standards.

17.49.200 - Adjustment from standards.

If a regulated NROD use cannot meet one or more of the applicable NROD standards then an adjustment may be issued if all of the following criteria are met. Compliance with these criteria shall be demonstrated by the applicant in a written report prepared by an environmental professional with experience and academic credentials in one or more natural resource areas such as ecology, wildlife biology, botany, hydrology or forestry. At the applicant's expense, the City may require the report to be reviewed by an environmental consultant. Such requests shall be processed under the Type III development permit procedure. The applicant shall demonstrate:

A. There are no feasible alternatives for the proposed use or activity to be located outside the NROD area or to be located inside the NROD area and to be designed in a way that will meet all of the applicable NROD development standards;

Applicant's Response:
The applicant does not seek an adjustment to the NROD standards.

B. The proposal has fewer adverse impacts on significant resources and resource functions found in the local NROD area than actions that would meet the applicable environmental development standards;

Applicant's Response:
The applicant does not seek an adjustment to the NROD standards.

C. The proposed use or activity proposes the minimum intrusion into the NROD area that is necessary to meet development objectives;

Applicant's Response:
The applicant does not seek an adjustment to the NROD standards.

D. Fish and wildlife passage will not be impeded;

Applicant's Response:
While the applicant does not seek an adjustment to the NROD standards, based on the 2012 NROD report, anadromous fish are not present in the immediate downstream drainage. The project does not propose impacts to the stream channel, wetlands or other water bodies. Therefore, no detrimental impact related to the migration, rearing, feeding or spawning of fish are anticipated

E. With the exception of the standard(s) subject to the adjustment request, all other applicable NROD standards can be met; and

Applicant's Response:
The applicant does not seek an adjustment to the NROD standards.

F. The applicant has proposed adequate mitigation to offset the impact of the adjustment.

Applicant's Response:
The applicant does not seek an adjustment to the NROD standards.

17.49.210 - Type II development permit application.
Unless otherwise directed by the NROD standards, proposed development within the NROD shall be processed as a Type II development permit application. All applications shall include the items required for a complete application by OCMC 17.49.220—17.49.230, and 17.50.080 as well as a discussion of how the proposal meets all of the applicable NROD development standards in OCMC 17.49.100—17.49.170.

Applicant's Response:
The applicant acknowledges the required development review process identified in this section.

17.49.220 - Required site plans.
Site plans showing the following required items shall be part of the application:
A. For the entire subject property (NROD and non-NROD areas):
1. The NROD District Boundary. This may be scaled in relation to property lines from the NROD Map;
2. One hundred-year floodplain and floodway boundary (if determined by FEMA);
3. Creeks and other waterbodies;
4. Any wetlands, with the boundary of the wetland that will be adjacent to the proposed development determined in a wetlands delineation report prepared by a professional wetland specialist and following the Oregon Division of State Lands wetlands delineation procedures;
5. Topography shown by contour lines of two or one foot intervals for slopes less than fifteen percent and by ten foot intervals for slopes fifteen percent or greater;
6. Existing improvements such as structures or buildings, utility lines, fences, driveways, parking areas, etc.;
7. Extent of the required vegetated corridor required by Table 17.49.110.

Applicant's Response:
Please see the proposed DDP application plans, specifically Sht DDP-C1.3, which includes the required plan information.

B. Within the NROD area of the subject property:
1. The distribution outline of shrubs and ground covers, with a list of most abundant species;
2. Trees six inches or greater in diameter, identified by species. When trees are located in clusters they may be described by the approximate number of trees, the diameter range, and a listing of dominant species;
3. An outline of the disturbance area that identifies the vegetation that will be removed. All trees to be removed with a diameter of six inches or greater shall be specifically identified as to number, trunk diameters and species;
4. If grading will occur within the NROD, a grading plan showing the proposed alteration of the ground at two foot vertical contours in areas of slopes less than fifteen percent and at five foot vertical contours of slopes fifteen percent or greater.

Applicant's Response:
Please see the Sht DDP-C1.3, which includes the required plan information.

C. A construction management plan including:

1. Location of site access and egress that construction equipment will use;
2. Equipment and material staging and stockpile areas;
3. Erosion control measures that conform to City of Oregon City erosion control standards;
4. Measures to protect trees and other vegetation located outside the disturbance area.

Applicant's Response:
Please see the proposed Preliminary Rough Grading and Erosion Control Plan, Sht DDP-C0.1 showing the requested information. Construction traffic is proposed to enter/exit the project's development area via the Beavercreek Rd access. Equipment and material staging areas will be shown on the final construction plans and will be located within the main site area rather than within the NROD buffer area.

D. A mitigation site plan demonstrating compliance with OCMC 17.49.180 or 17.49.190, including:

1. Dams, weirs or other in-water features;
2. Distribution, species composition, and percent cover of ground covers to be planted or seeded;
3. Distribution, species composition, size, and spacing of shrubs to be planted;
4. Location, species and size of each tree to be planted;
5. Stormwater management features, including retention, infiltration, detention, discharges and outfalls;
6. Water bodies or wetlands to be created, including depth;
7. Water sources to be used for irrigation of plantings or for a water source for a proposed wetland.

Applicant's Response:
The 2012 NROD report includes a mitigation site plan. The current DDP application follows the same mitigation plan but increases the mitigation areas as described herein. Please see the proposed permanent NROD mitigation area on Sht DDP-C1.0 and temporary mitigation area on Sht DDP-C1.3.

17.49.230 - Mitigation plan report.
A mitigation plan report that accompanies the above mitigation site plan is also required. The report shall be prepared by an environmental professional with experience and academic credentials in one or more natural resource areas such as ecology, wildlife biology, botany, hydrology or forestry. The mitigation plan report shall, at a minimum, discuss:

A. Written responses to each applicable mitigation standard in OCMC 17.49.180 or 17.49.190 indicating how the proposed development complies with the mitigation standards;

B. The resources and functional values to be restored, created, or enhanced through the mitigation plan;

C. Documentation of coordination with appropriate local, regional, state and federal regulatory/resource agencies such as the Oregon Department of State Lands (DSL) and the United States Army Corps of Engineers (USACE);

D. Construction timetables;

E. Monitoring and maintenance practices pursuant to OCMC 17.49.230.F and a contingency plan for undertaking remedial actions that might be needed to correct unsuccessful mitigation actions during the first five years of the mitigation area establishment.

Applicant's Response:
The 2012 NROD report, together with our 2025 supplemental information contained in these responses, includes the above information.

17.49.240 - Density transfer.
The NROD allocates urban densities to the non-NROD portions of properties located partially within the NROD, generally resulting in a substantial increase in net development potential.

For lots of record that are located within the NROD, density transfer is allowed, subject to the following provisions:

A. Density may be transferred from the NROD to non-NROD portions of the same property or of contiguous properties within the same development site;

Applicant's Response:
Density transfers are not needed for the proposed application, nor are they proposed.

B. The residential transfer credit shall be as follows: For new residential partitions and subdivisions, one-third of the area of the NROD tract or conservation easement area may be added to the net developable area outside of the tract or conservation easement area within the boundary of the development site in order to calculate the allowable number of lots.

Applicant's Response:
Density transfers are not needed for the proposed application, nor are they proposed.

C. Permitted Modifications to Residential Dimensional Standards. In order to allow for a transfer of density pursuant to subsection B above, the dimensional standards of the base zone may be modified in order minimize disturbance to the NROD. The permissible reductions are specified in Tables 17.49.240.A—17.49.240.C.

Applicant's Response:
Density transfers are not needed for the proposed application, nor are they proposed.

D. The applicant shall demonstrate that the minimum lot size of the underlying zone has been met. The area of the NROD in subsection B. above that is used to transfer density may be included in the calculation of the average minimum lot size.

Applicant's Response:
Density transfers are not needed for the proposed application, nor are they proposed.

E. The applicant may choose to make the adjustments over as many lots as required.
Table 17.49.240.A: Lot Size reductions allowed for NROD Density Transfers

ZONE	Min. Lot Size (%)	Min. Lot Width	Min. Lot Depth
R-10	5,000 sq. feet	50'	65'
R-8	4,000 sq. feet	45'	60'
R-6	3,500 sq. feet	35'	55'
R-5	3,000 sq. feet	30'	50'
R-3.5	1,800 sq. feet	20'	45'

Applicant's Response:
Density transfers are not needed for the proposed application, nor are they proposed.

Table 17.49.240.B: Reduced Dimensional Standards for Detached Single-Family Residential Units

Size of Reduced Lot	Front Yard Setback	Rear Yard Setback	Side yard Setback	Corner Side	Lot Coverage
8,000—9,999 sq ft	15 feet	20 feet	7/9 feet	15 feet	40%
6,000—7,999 sq ft	10 feet	15 feet	5/7 feet	15 feet	40%
4,000—5,999 sq ft	10 feet	15 feet	5/5 feet	10 feet	40%
1,800—3,999 sq ft	5 feet	15 feet	5/5 feet	10 feet	55%

Applicant's Response:
Density transfers are not needed for the proposed application, nor are they proposed.

Table 17.49.240 C: Reduced Dimensional Standards for Single-Family Attached or Two-Family Residential Units

Size of Reduced Lot	Front Yard Setback	Rear Yard Setback	Side yard Setback	Corner Side	Lot Coverage
3,500—7,000 sq ft	10 feet	15 feet	5/0* feet	10 feet	40%
1,800—3,499 sq ft	5 feet	15 feet	5/0* feet	10 feet	55%

**0 foot setback is only allowed on single-family attached units*

Applicant's Response:
Density transfers are not needed for the proposed application, nor are they proposed.

F. For density transfers on properties zoned Commercial, Institutional, Industrial or Multi-Family, the transfer credit ratio is ten thousand square feet per acre of land within the NROD;

G. The area of land contained in the NROD area may be excluded from the calculations for determining compliance with minimum density requirements of the land division code.

H. The owner of the transferring property shall execute a covenant that records the transfer of density. The covenant shall be found to meet the requirements of this section and be recorded before building permits are issued; and

I. All other applicable development standards, including setbacks, building heights, and maximum lot coverage shall continue to apply when a density transfer occurs.

Applicant's Response:
Density transfers are not needed for the proposed application, nor are they proposed.

17.49.250 - Verification of NROD boundary.
The NROD boundary may have to be verified occasionally to determine the true location of a resource and its functional values on a site. This may be through a site specific environmental survey or a simple site visit in those cases where existing information demonstrates that the NROD significance rating does not apply to a site-specific area. Applications for development on a site located in the NROD area may request a determination that the subject site is not in an NROD area and therefore is not subject to the standards of OCMC 17.49.100. Verifications shall be processed as either a Type I or Type II process.

Applicant's Response:
The applicant acknowledges this section.

17.49.255 - Type I verification.
A. Applicants for a determination under this section shall submit a site plan meeting the requirements of OCMC 17.49.220, as applicable.

B. An applicant may request a Type I Verification determination by the Community Development Director. Such requests may be approved provided that there is evidence substantiating that all the requirements of this chapter relative to the proposed use are satisfied and demonstrates that the property also satisfies the following criteria, as applicable:

1. No soil, vegetation, hydrologic features have been disturbed;
2. No hydrologic features have been changed;
3. There are no man-made drainage features, water marks, swash lines, drift lines present on trees or shrubs, sediment deposits on plants, or any other evidence of sustained inundation.
4. The property does not contain a wetland as identified by the City's Local Wetland Inventory or Water Quality and Flood Management Areas map.

5. There is no evidence of a perennial or intermittent stream system or other protected water feature. This does not include established irrigation ditches currently under active farm use, canals or manmade storm or surface water runoff structures or artificial water collection devices.
6. Evidence of prior land use approvals that conform to the Natural Resource Overlay District, or which conformed to the Water Quality Resources Area Overlay District that was in effect prior to the current adopted NROD (Ord. 99-1013).
7. There is an existing physical barrier between the site and a protected water feature, including:
a. Streets, driveways, alleys, parking lots or other approved impervious areas wider than fifteen feet and which includes drainage improvements that are connected to the City storm sewer system, as approved by the City.
b. Walls, buildings, drainages, culverts, topographic features or other structures which form a physical barrier between the site and the protected water features, as approved by the City.
C. If the City is not able to clearly determine, through the Type I verification process that the applicable criteria subsection B.1.—B.7 above are met, the verification application shall be denied. An applicant may then opt to apply for a verification through the Type II process defined below.

Applicant's Response:
The applicant acknowledges this section. A Type I verification is not being sought at this time.

17.49.260. - Type II verification.
Verifications of the NROD which cannot be determined pursuant to the standards of OCMC 17.49.255 may be processed under the Type II permit procedure.

A. Applicants for a determination under this section shall submit a site plan meeting the requirements of OCMC 17.49.220 as applicable.

B. Such requests may be approved provided that there is evidence that demonstrates in an environmental report prepared by one or more qualified professionals with experience and credentials in natural resource areas, including wildlife biology, ecology, hydrology and forestry, that a resource function(s) and/or land feature(s) does not exist on a site-specific area.

C. Verification to remove a recently developed area from the NROD shall show that all of the following have been met:
1. All approved development in the NROD has been completed;
2. All mitigation required for the approved development, located within the NROD, has been successful; and
3. The previously identified resources and functional values on the developed site no longer exist or have been subject to a significant detrimental impact.

Applicant's Response:
The applicant acknowledges this section. A Type I verification is not being sought at this time, as the existence and extent of the NROD boundary is clear based on the location of the wetland/water resource and the presence of the existing ravine containing the resources.

17.49.265 - Corrections to violations.

For correcting violations, the violator shall submit a remediation plan that meets all of the applicable standards of the NROD. The remediation plan shall be prepared by one or more qualified professionals with experience and credentials in natural resource areas, including wildlife biology, ecology, hydrology and forestry. If one or more of these standards cannot be met, then the applicant's remediation plan shall demonstrate that there will be:

A. No permanent loss of any type of resource or functional value listed in OCMC 17.49.10, as determined by a qualified environmental professional;

Applicant's Response:
The applicant acknowledges this section.

B. A significant improvement of at least one functional value listed in OCMC 17.49.10, as determined by a qualified environmental professional; and

Applicant's Response:
The applicant acknowledges this section.

C. There will be minimal loss of resources and functional values during the remediation action until it is fully established.

Applicant's Response:
The applicant acknowledges this section.

CHAPTER 17.50 ADMINISTRATION AND PROCEDURES

17.50.010 Purpose.

This chapter provides the procedures by which Oregon City reviews and decides upon applications for all permits relating to the use of land authorized by ORS 92, 197 and 227. These permits include all form of land divisions, land use, limited land use and expedited land division and legislative enactments and amendments to the Oregon City Comprehensive Plan and Titles 16 and 17 of this code. Pursuant to ORS 227.175, any applicant may elect to consolidate applications for two or more related permits needed for a single development project. Any grading activity associated with development shall be subject to preliminary review as part of the review process for the underlying development. It is the express policy of the City of Oregon City that development review not be segmented into discrete parts in a manner that precludes a comprehensive review of the entire development and its cumulative impacts.

Applicant's Response:
The applicant acknowledges the purpose of this chapter.

17.50.030 Summary of the City's decision-making processes.

The following decision-making processes chart shall control the City's review of the indicated permits:
Table 17.50.030 – Permit Approval Process

Permit Type	***I***	***II***	***III***	***IV***	***Expedited Land Division***
Annexation				*X*	
Compatibility review for communication facilities	*X*				
Compatibility review for the Willamette Greenway Overlay District			*X*		
Code Interpretation			*X*		
Master plan/planned unit development - General Development plan			*X*		
Master plan/planned unit development - General Development plan amendment	*X*	*X*	*X*		
Conditional use (excluding shelters)			*X*		
Conditional use for a shelter				*X*	
*Detailed development plan**	*X*	*X*	*X*		
Expedited land division		*X(modified)*			*X*
Extension	*X*				
Final plat	*X*				
Geologic hazards		*X*			
Historic review	*X*		*X*		
Live/Work dwelling review		*X*			
Lot line adjustment and abandonment	*X*				

Manufactured home park review (new or modification)	*X*				
Middle housing land division		*X(modified)*			*X*
Minor partition		*X*			
Modifications of residential design standards		*X*			
Natural resource overlay district exemption	*X*				
Natural resource overlay district review		*X*	*X*		
Nonconforming use, structure and lots review	*X*	*X*			
Placement of a single manufactured home on existing space or lot within a park	*X*				
Plan or code amendment					*X*
Residential design standards review for single-family detached, duplexes, triplexes, quadplexes, townhouses, cottage clusters and accessory dwelling units (uses minor site plan and design review)	*X*				
Revocation					*X*
Site plan and design review	*X*	*X*			
Subdivision		*X*			*X*
Variance		*X*	*X*		
Zone Change				*X*	

**If any provision or element of the master plan/planned unit development requires a deferred Type III procedure, the detailed development plan shall be processed through a Type III procedure.*

A. Type I decisions do not require interpretation or the exercise of policy or legal judgment in evaluating approval criteria. Because no discretion is involved, Type I decisions do not qualify as a land use, or limited land use, decision. The decision-making process requires no notice to any party other than the applicant. The Community Development Director's decision is final and not appealable by any party through the normal city land use process.

B. Type II decisions involve the exercise of limited interpretation and discretion in evaluating approval criteria, similar to the limited land use decision-making process under state law. Applications evaluated through this process are assumed to be allowable in the underlying zone, and the inquiry typically focuses on what form the use will take or how it will look. Notice of application and an invitation to comment is mailed to the applicant, recognized active neighborhood association(s) and property owners within three hundred feet. The Community Development Director accepts comments for a minimum of fourteen days and renders a decision. The Community Development Director's decision is appealable to the City Commission, by any party who submitted comments in writing before the expiration of the comment period. Review by the City Commission shall be on the record pursuant to OCMC 17.50.190 under ORS 197.195(5). The City Commission decision is the City's final decision and is subject to review by the land use board of appeals (LUBA) within twenty-one days of when it becomes final.

C. Type III decisions involve the greatest amount of discretion and evaluation of subjective approval standards, yet are not required to be heard by the City Commission, except upon appeal. In the event that any decision is not classified, it shall be treated as a Type III decision. The process for these land use decisions is controlled by ORS 197.763. Notice of the application and the Planning Commission or the Historic Review Board hearing is published and mailed to the applicant, recognized neighborhood association(s) and property owners within three hundred feet. Notice shall be issued at least twenty days pre-hearing, and the staff report shall be available at least seven days pre-hearing. At the evidentiary hearing held before the Planning Commission or the Historic Review Board, all issues are addressed. The decision of the Planning Commission or Historic Review Board is appealable to the City Commission, on the record pursuant to OCMC 17.50.190. The City Commission decision on appeal from is the City's final decision and is subject to review by LUBA within twenty-one days of when it becomes final, unless otherwise provided by state law.

D. Type IV decisions include only quasi-judicial plan amendments and zone changes. These applications involve the greatest amount of discretion and evaluation of subjective approval standards and shall be heard by the City Commission for final action. The process for these land use decisions is controlled by ORS 197.763. Notice of the application and Planning Commission hearing is published and mailed to the applicant, recognized neighborhood association(s) and property owners within three hundred feet. Notice shall be issued at least twenty days pre-hearing, and the staff report shall be available at least seven days pre-hearing. At the evidentiary hearing held before the Planning Commission, all issues are addressed. If the Planning Commission denies the application, any party with standing (i.e., anyone who appeared before the Planning Commission either in person or in writing within the comment period) may appeal the Planning Commission denial to the City Commission. If the Planning Commission denies the application and no appeal has been received within fourteen days of the issuance of the final decision, then the action of the Planning Commission becomes the final decision of the City. If the Planning Commission votes to approve the application, that decision is forwarded as a recommendation to the City Commission for final consideration. In either case, any review by the City Commission is on the record and only issues raised before the Planning Commission may be raised before the City Commission. The City Commission decision is the City's final decision and is subject to review by LUBA within twenty-one days of when it becomes final.

E. Expedited land divisions and middle housing land divisions are subject to the requirements of OCMC 16.24.The expedited land division (ELD) process is set forth in ORS 197.360 to 197.380.
F. Decisions, completeness reviews, appeals, and notices in this chapter shall be calculated according to OCMC 1.04.070 and shall be based on calendar days, not business days.

Applicant's Response:
The applicant acknowledges the above land-use review processes. This project proposes General Development Plan approval for the overall development and Detailed Development Plan approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel.

17.50.040 Development review in overlay districts and for erosion control.
For any development subject to regulation of geologic hazards overlay district under OCMC 17.44; natural resource overlay district under OCMC 17.49; Willamette River Greenway Overlay District under

OCMC 17.48; historic overlay district under OCMC 17.40, and erosion and sediment control under OCMC 17.47, compliance with the requirements of these chapters shall be reviewed as part of the review process required for the underlying development for the site.

Applicant's Response:
The applicant acknowledges the above review responsibility in overlay districts. The proposed project includes Geologic Hazard and NROD overlay districts. A preliminary erosion control plan is included in the proposed DDP plan package. Please see Sht DDP-C0.1. Final Erosion Control Plans will accompany the project's construction plans.

17.50.050 – Pre-application conference.
A. Pre-application Conference. Prior to a Type II – IV or Legislative application, excluding Historic Review, being deemed complete, the applicant shall schedule and attend a pre-application conference with City staff to discuss the proposal, unless waived by the Community Development Director. The purpose of the pre-application conference is to provide an opportunity for staff to provide the applicant with information on the likely impacts, limitations, requirements, approval standards, fees and other information that may affect the proposal.

1. To schedule a pre-application conference, the applicant shall contact the Planning Division, submit the required materials, and pay the appropriate conference fee.
2. At a minimum, an applicant should submit a short narrative describing the proposal and a proposed site plan, drawn to a scale acceptable to the City, which identifies the proposed land uses, traffic circulation, and public rights-of-way and all other required plans.
3. The Planning Division shall provide the applicant(s) with the identity and contact persons for all affected neighborhood associations as well as a written summary of the pre-application conference.

Applicant's Response:
A pre-application conference was conducted April 22, 2025. Notes from the pre-application conference are included in Appendix A.

B. A pre-application conference shall be valid for a period of six months from the date it is held. If no application is filed within six months of the conference or meeting, the applicant shall schedule and attend another conference before the City will accept a permit application. The Community Development Director may waive the pre-application requirement if, in the Director's opinion, the development has not changed significantly and the applicable municipal code or standards have not been significantly amended. In no case shall a pre-application conference be valid for more than one year.

Applicant's Response:
The preapplication conference was conducted April 22, 2025. The Masterplan application was submitted June 27, 2025, less than six months after the pre=application conference.

C. Notwithstanding any representations by City staff at a pre-application conference, staff is not authorized to waive any requirements of this code, and any omission or failure by staff to recite to an

applicant all relevant applicable land use requirements shall not constitute a waiver by the City of any standard or requirement.

Applicant's Response:
The applicant acknowledges this section.

17.50.055 - Neighborhood association meeting.
Neighborhood Association Meeting. The purpose of the meeting with the recognized neighborhood association is to inform the affected neighborhood association about the proposed development and to receive the preliminary responses and suggestions from the neighborhood association and the member residents.
A. Applicants applying for annexations, zone change, comprehensive plan amendments, conditional use, Planning Commission variances, subdivision, or site plan and design review (excluding minor site plan and design review), general development master plans or detailed development plans applications shall schedule and attend a meeting with the City-recognized neighborhood association in whose territory the application is proposed no earlier than one year prior to the date of application. Although not required for other projects than those identified above, a meeting with the neighborhood association is highly recommended.

B. The applicant shall request via email or regular mail a request to meet with the neighborhood association chair where the proposed development is located. The notice shall describe the proposed project. A copy of this notice shall also be provided to the chair of the citizen involvement committee.

C. A meeting shall be scheduled within thirty days of the date that the notice is sent. A meeting may be scheduled later than thirty days if by mutual agreement of the applicant and the neighborhood association. If the neighborhood association does not want to, or cannot meet within thirty days, the applicant shall host a meeting inviting the neighborhood association, citizen involvement committee, and all property owners within three hundred feet to attend. This meeting shall not begin before six p.m. on a weekday or may be held on a weekend and shall occur within the neighborhood association boundaries or at a city facility.

D. If the neighborhood association is not currently recognized by the City, is inactive, or does not exist, the applicant shall request a meeting with the citizen involvement committee.

E. To show compliance with this section, the applicant shall submit a copy of the email or mail notice to the neighborhood association and CIC chair, a sign-in sheet of meeting attendees, and a summary of issues discussed at the meeting. If the applicant held a separately noticed meeting, the applicant shall submit a copy of the meeting flyer, postcard or other correspondence used, and a summary of issues discussed at the meeting and submittal of these materials shall be required for a complete application.

Applicant's Response:
The neighborhood meeting was conducted October 7, 2025, at the joint Hillendale/Vista Towers meeting. Please see Appendix C for the meeting request, acknowledgement of the request, and meeting sign-in sheet. The neighbors who attended the meeting were very cordial and asked general questions about the proposal following a brief presentation by the applicant.

17.50.060 Application requirements.

A permit application may only be initiated by the record property owner or contract purchaser, the City Commission or Planning Commission. If there is more than one record owner, then the City will not complete a Type II—IV application without signed authorization from all record owners. All permit applications shall be submitted on the form provided by the City, along with the appropriate fee and all necessary supporting documentation and information, sufficient to demonstrate compliance with all applicable approval criteria. The applicant has the burden of demonstrating, with evidence, that all applicable approval criteria are, or can be, met.

Applicant's Response:
Please see enclosed land-use application signed by all record property owners and the applicant.

17.50.070 Completeness review and one hundred twenty-day rule.

A. Upon submission, the Community Development Director shall date stamp the application form and verify that all of the appropriate application review fee(s) have been submitted. Upon receipt of all review fees and an application form, the Community Development Director will then review the application and all information submitted with it and evaluate whether the application is complete enough to process. Within thirty days of receipt of the application and all applicable review fees, the Community Development Director shall complete this initial review and issue to the applicant a written statement indicating whether the application is complete enough to process, and if not, what information shall be submitted to make the application complete.

B. The applicant has one hundred eighty days from the date the application was made to submit the missing information or the application shall be rejected and the unused portion of the application fee returned to the applicant. If the applicant submits the requested information within the one hundred eighty-day period, the Community Development Director shall again verify whether the application, as augmented, is complete. Each such review and verification shall follow the procedure in subsection A of this section.

The application will be deemed complete for the purpose of this section upon receipt by the Community Development Director of:

1. All the missing information;
2. Some of the missing information and written notice from the applicant that no other information will be provided; or
3. Written notice from the applicant that none of the missing information will be provided.

C. Once the Community Development Director determines the application is complete enough to process, or the applicant refuses to submit any more information, the City shall declare the application complete. Pursuant to ORS 227.178, the City will reach a final decision on an application within one hundred twenty calendar days from the date that the application is determined to be or deemed complete unless the applicant agrees to suspend the one hundred twenty-calendar-day timeline or unless state law provides otherwise. The one hundred twenty-day period, however, does not apply in the following situations:

1. Any hearing continuance or other process delay requested by the applicant shall be deemed an extension or waiver, as appropriate, of the one hundred twenty-day period.
2. Any delay in the decision-making process necessitated because the applicant provided an incomplete set of mailing labels for the record property owners within three hundred feet of the subject property shall extend the one hundred twenty-day period for the amount of time required to correct the notice defect.
3. The one hundred twenty-day period does not apply to any application for a permit that is not wholly within the City's authority and control.
4. The one hundred twenty-day period does not apply to any application for an amendment to the City's comprehensive plan or land use regulations nor to any application for a permit, the approval of which depends upon a plan amendment.

D. A one hundred day-period applies in place of the one hundred twenty-day period for affordable housing projects where:
1. The project includes five or more residential units, including assisted living facilities or group homes;
2. At least fifty percent of the residential units will be sold or rented to households with incomes equal to or less than sixty percent of the median family income for Clackamas County or for the state, whichever is greater; and
3. Development is subject to a covenant restricting the owner and successive owner from selling or renting any of the affordable units as housing that is not affordable for a period of sixty years from the date of the certificate of occupancy.

E. The one hundred twenty-day period specified in OCMC 17.50.070.C or D may be extended for a specified period of time at the written request of the applicant. The total of all extensions may not exceed two hundred forty-five calendar days.

F. The approval standards that control the City's review and decision on a complete application are those which were in effect on the date the application was first submitted.

Applicant's Response:
The applicant acknowledges the above procedural requirements. An application for Masterplan General Development Plan and Detailed Development Plan, together with Lot Line Adjustment, Geologic Hazard Overlay, Conditional Use, Parking Adjustment, and Natural Resource (NROD) Review, was submitted June 27, 2025. The application was deemed incomplete on July 24, 2025. This land-use application package is submitted in response to the July 24, 2025 incomplete letter.

17.50.080 Complete application—Required information.
Unless stated elsewhere in OCMC 16 or 17, a complete application includes all the materials listed in this subsection. The Community Development Director may waive the submission of any of these materials if not deemed to be applicable to the specific review sought. Likewise, within thirty days of when the application is first submitted, the Community Development Director may require additional information, beyond that listed in this subsection or elsewhere in Titles 12, 14, 15, 16, or 17, such as a traffic study or other report prepared by an appropriate expert. In any event, the applicant is responsible for the completeness and accuracy of the application and all of the supporting documentation, and the City will

not deem the application complete until all information required by the Community Development Director is submitted. At a minimum, the applicant shall submit the following:

A. One copy of a completed application form that includes the following information:
1. An accurate address and tax map and location of all properties that are the subject of the application;
2. Name, address, telephone number and authorization signature of all record property owners or contract owners, and the name, address and telephone number of the applicant, if different from the property owner(s);
B. A complete list of the permit approvals sought by the applicant;
C. A complete and detailed narrative description of the proposed development;
D. A discussion of the approval criteria for all permits required for approval of the development proposal that explains how the criteria are or can be met or are not applicable, and any other information indicated by staff at the pre-application conference as being required;

E. One copy of all architectural drawings and site plans shall be submitted for Type II—IV applications. One paper copy of all application materials shall be submitted for Type I applications;

F. For all Type II—IV applications, the following is required:
1. An electronic copy of all materials.
2. Mailing labels or associated fee for notice to all parties entitled under OCMC 17.50.090 to receive mailed notice of the application. The applicant shall use the names and addresses of property owners within the notice area indicated on the most recent property tax rolls.
3. Documentation indicating there are no liens favoring the City on the subject site.
4. A receipt from the county assessor's office indicating that all taxes for the lot or parcels involved are paid in full for the preceding tax year.
5. A current preliminary title report or trio for the subject property(ies);
G. All required application fees;
H. Annexation agreements, traffic or technical studies (if applicable);
I. Additional documentation, as needed and identified by the Community Development Director.

Applicant's Response:
The applicant acknowledges the application submittal requirements. A completed application form is included with this application, including a list of permit approvals (on the face of the application form). Please see the project narrative and responses to all applicable code criteria. Detailed Development Plan approval for each of the parcels will follow under a separate application. Accordingly, architectural drawings are not included with this application; however, plans and accompanying reports are included to support the Detailed Development Plan application for the proposed public street and utility improvements together with rough grading of Parcels A, B, and D. The applicant understands that the city prepares the mailing labels and sends notice to property owners within 300 ft of the proposed project boundary. Please see the enclosed Title Report indicating no liens favoring the city on the subject parcels (Appendix J). Please see Appendix N for 2024 tax statements for each of the properties indicating all have been paid in full.

17.50.090 - Public notices.
All public notices issued by the City announcing applications or public hearings of quasi-judicial or legislative actions, shall comply with the requirements of this section.

A. Notice of Type II Applications. Once the Community Development Director has deemed a Type II application complete, the City shall prepare and send notice of the application, by first class mail, to all record owners of property within three hundred feet of the subject property and to any city-recognized neighborhood association whose territory includes the subject property. The applicant shall provide or the City shall prepare for a fee an accurate and complete set of mailing labels for these property owners and for posting the subject property with the City-prepared notice in accordance with OCMC 17.50.100. The City's Type II notice shall include the following information:

1. Street address or other easily understood location of the subject property and city-assigned planning file number;
2. A description of the applicant's proposal, along with citations of the approval criteria that the City will use to evaluate the proposal;
3. A statement that any interested party may submit to the City written comments on the application during a fourteen-day comment period prior to the City's deciding the application, along with instructions on where to send the comments and the deadline of the fourteen-day comment period;
4. A statement that any issue which is intended to provide a basis for an appeal shall be raised in writing during the fourteen-day comment period with sufficient specificity to enable the City to respond to the issue;
5. A statement that the application and all supporting materials may be inspected, and copied at cost, at City Hall during normal business hours;
6. The name and telephone number of the planning staff person assigned to the application or is otherwise available to answer questions about the application;
7. The notice shall state that a city-recognized neighborhood association requesting an appeal fee waiver pursuant to OCMC 17.50.290.C must officially approve the request through a vote of its general membership or board at a duly announced meeting prior to the filing of an appeal.

Applicant's Response:
The applicant acknowledges this procedure.

B. Notice of Public Hearing on a Type III or IV Quasi-Judicial Application. Notice for all public hearings concerning a quasi-judicial application shall conform to the requirements of this subsection. At least twenty days prior to the hearing, the City shall prepare and send, by first class mail, notice of the hearing to all record owners of property within three hundred feet of the subject property and to any city-recognized neighborhood association whose territory includes the subject property. The City shall also publish the notice on the City website within the City at least twenty days prior to the hearing. Pursuant to OCMC 17.50.080.H, the applicant is responsible for providing an accurate and complete set of mailing labels for these property owners and for posting the subject property with the City-prepared notice in accordance with OCMC 17.50.100. Notice of the application hearing shall include the following information:

1. The time, date and location of the public hearing;

2. Street address or other easily understood location of the subject property and city-assigned planning file number;
3. A description of the applicant's proposal, along with a list of citations of the approval criteria that the City will use to evaluate the proposal;
4. A statement that any interested party may testify at the hearing or submit written comments on the proposal at or prior to the hearing and that a staff report will be prepared and made available to the public at least seven days prior to the hearing;
5. A statement that any issue which is intended to provide a basis for an appeal to the City Commission shall be raised before the close of the public record. Issues must be raised and accompanied by statements or evidence sufficient to afford the City and all parties to respond to the issue;
6. The notice shall state that a city-recognized neighborhood association requesting an appeal fee waiver pursuant to OCMC 17.50.290.C must officially approve the request through a vote of its general membership or board at a duly announced meeting prior to the filing of an appeal;
7. A statement that the application and all supporting materials and evidence submitted in support of the application may be inspected at no charge and that copies may be obtained at reasonable cost at the planning division offices during normal business hours; and
8. The name and telephone number of the planning staff person responsible for the application or is otherwise available to answer questions about the application.

Applicant's Response:
The applicant acknowledges this procedure.

C. Notice of Public Hearing on a Legislative Proposal. At least twenty days prior to a public hearing at which a legislative proposal to amend or adopt the City's land use regulations or comprehensive plan is to be considered, the Community Development Director shall issue a public notice that conforms to the requirements of this subsection. Notice shall be sent to affected governmental entities, special districts, providers of urban services, including Tri-Met, Oregon Department of Transportation and Metro, any affected recognized neighborhood associations and any party who has requested in writing such notice. Notice shall also be published on the City website. Notice issued under this subsection shall include the following information:

1. The time, date and location of the public hearing;
2. The City-assigned planning file number and title of the proposal;
3. A description of the proposal in sufficient detail for people to determine the nature of the change being proposed;
4. A statement that any interested party may testify at the hearing or submit written comments on the proposal at or prior to the hearing; and
5. The name and telephone number of the planning staff person responsible for the proposal and who interested people may contact for further information.

Applicant's Response:
The proposed Detailed Development Plan is not considered a legislative proposal. Accordingly, this criterion is not applicable.

17.50.100 - Notice posting requirements.
Where this chapter requires notice of a pending or proposed permit application or hearing to be posted on the subject property, the requirements of this section shall apply.

A. City Guidance and the Applicant's Responsibility. The City shall supply all of the notices which the applicant is required to post on the subject property and shall specify the dates the notices are to be posted and the earliest date on which they may be removed. The City shall also provide a statement to be signed and returned by the applicant certifying that the notice(s) were posted at the correct time and that if there is any delay in the City's land use process caused by the applicant's failure to correctly post the subject property for the required period of time and in the correct location, the applicant agrees to extend the applicable decision-making time limit in a timely manner.

B. Number and Location. The applicant shall place the notices on each frontage of the subject property. If the property's frontage exceeds six hundred feet, the applicant shall post one copy of the notice for each six hundred feet or fraction thereof. Notices do not have to be posted adjacent to alleys or unconstructed right-of-way. Notices shall be posted within ten feet of the street and shall be visible to pedestrians and motorists. Notices shall not be posted within the public right-of-way or on trees. The applicant shall remove all signs within ten days following the event announced in the notice.

Applicant's Response:
The applicant acknowledges this procedure and will post public notice on the property accordingly.

7.50.110 Assignment of decision-makers.
The following City entity or official shall decide the following types of applications:
A. Type I Decisions. The Community Development Director shall render all Type I decisions. The Community Development Director's decision is the City's final decision on a Type I application.

B. Type II Decisions. The Community Development Director shall render the City's decision on all Type II permit applications, which are then appealable to the City Commission with notice to the Planning Commission. The City's final decision is subject to review by LUBA.

C. Type III Decisions. The Planning Commission or Historic Review Board, as applicable, shall render all Type III decisions. Such decision is appealable to the City Commission, on the record. The City Commission 's decision is the city's final decision and is subject to review by LUBA within twenty-one days of when it becomes final.

D. Type IV Decisions. The Planning Commission shall render the initial decision on all Type IV permit applications. If the Planning Commission denies the Type IV application, that decision is final unless appealed in accordance with OCMC 17.50.190. If the Planning Commission recommends approval of the application, that recommendation is forwarded to the City Commission. The City Commission decision is the City's final decision on a Type IV application and is subject to review LUBA.

E. Expedited Land Division (ELD). The Community Development Director shall render the initial decision on all ELD applications. The Community Development Director's decision is the City's final decision unless

appealed in accordance to ORS 197.375 to a City-appointed hearings referee. The hearings referee decision is the City's final decision which is appealable to the Oregon Court of Appeals.

Applicant's Response:
The applicant acknowledges this assignment of decision-makers, and understands the General Development Plan, Conditional Use (Parcel D) and Maximum Parking Adjustment (Parcels A & D) will be Type III decision, with the proposed Detailed Development Plan, Geologic Hazard Overlay, and NROD Review being Type II decisions.

17.50.120 Quasi-judicial hearing process.
All public hearings pertaining to quasi-judicial permits, whether before the Planning Commission, Historic Review Board, or City Commission, shall comply with the procedures of this section. In addition, all public hearings held pursuant to this chapter shall comply with the Oregon Public Meetings Law, the applicable provisions of ORS 197.763 and any other applicable law.

A. Once the Community Development Director determines that an application for a Type III or IV decision is complete, the planning division shall schedule a hearing before the Planning Commission or Historic Review Board, as applicable. Once the Community Development Director determines that an appeal of a Type II, Type III or Type IV decision has been properly filed under OCMC 17.50.190, the planning division shall schedule a hearing pursuant to OCMC 17.50.190.

B. Notice of the Type III or IV hearing shall be issued at least twenty days prior to the hearing in accordance with OCMC 17.50.090.B.

C. Written notice of an appeal hearing shall be sent by regular mail no later than fourteen days prior to the date of the hearing to the appellant, the applicant if different from the appellant, the property owner(s) of the subject site, all persons who testified either orally or in writing before the hearing body and all persons that requested in writing to be notified.

D. The Community Development Director shall prepare a staff report on the application which lists the applicable approval criteria, describes the application and the applicant's development proposal, summarizes all relevant city department, agency and public comments, describes all other pertinent facts as they relate to the application and the approval criteria and makes a recommendation as to whether each of the approval criteria are met.

E. At the beginning of the initial public hearing at which any quasi-judicial application or appeal is reviewed, a statement describing the following shall be announced to those in attendance:

1. That the hearing will proceed in the following general order: Staff report, applicant's presentation, testimony in favor of the application, testimony in opposition to the application, rebuttal, record closes, commission deliberation and decision;
2. That all testimony and evidence submitted, orally or in writing, shall be directed toward the applicable approval criteria. If any person believes that other criteria apply in addition to those addressed in the staff report, those criteria shall be listed and discussed on the record. The meeting

chairperson may reasonably limit oral presentations in length or content depending upon time constraints. Any party may submit written materials of any length while the public record is open;
3. Failure to raise an issue on the record with sufficient specificity and accompanied by statements or evidence sufficient to afford the City and all parties to respond to the issue, will preclude appeal on that issue to the land use board of appeals;
4. Any party wishing a continuance or to keep open the record shall make that request while the record is still open;
5. That the commission chair shall call for any ex-parte contacts, conflicts of interest or bias before the beginning of each hearing item; and
6. For appeal hearings, only those persons who participated either orally or in writing in the decision or review will be allowed to participate either orally or in writing on the appeal.

F. Requests for continuance and to keep open the record: The hearing may be continued to allow the submission of additional information or for deliberation without additional information. New notice of a continued hearing need not be given so long as a time-certain and location is established for the continued hearing. Similarly, hearing may be closed but the record kept open for the submission of additional written material or other documents and exhibits. The chairperson may limit the factual and legal issues that may be addressed in any continued hearing or open record period.

Applicant's Response:
The applicant acknowledges the quasi-judicial process identified in this section.

17.50.130 Conditions of approval and notice of decision.
A. All City decision-makers have the authority to impose reasonable conditions of approval designed to ensure that all applicable approval standards, including standards set out in city overlay districts, the City's master plans, and City public works design standards, are, or can be met.

B. Failure to comply with any condition of approval shall be grounds for revocation of the permit(s) and grounds for instituting code enforcement proceedings pursuant to OCMC 1.20 of this code and ORS 30.315.

C. Notice of Decision. The City shall send, by first class mail, a notice of all decisions rendered under this chapter to all persons with standing, i.e., the applicant, all others who participated either orally or in writing before the close of the public record and those who specifically requested notice of the decision. The notice of decision shall include the following information:
1. The file number and date of decision;
2. The name of the applicant, owner and appellant (if different);
3. The street address or other easily understood location of the subject property;
4. A brief summary of the decision, and if an approval, a description of the permit approved;
5. A statement that the decision is final unless appealed and description of the requirements for perfecting an appeal;
6. The contact person, address and a telephone number whereby a copy of the final decision may be inspected or copies obtained.

D. Modification of Conditions. Any request to modify a condition of permit approval is to be considered either minor modification or a major modification, unless otherwise authorized. A minor modification shall be processed as a Type I. A major modification shall be processed in the same manner and shall be subject to the same standards as was the original application. However, the decision-maker may at their sole discretion, consider a modification request and limit its review of the approval criteria to those issues or aspects of the application that are proposed to be changed from what was originally approved.

Applicant's Response:
The applicant acknowledges the Decision process, Notice of Decision, and Modification of decision processes of this section.

17.50.140 – Financial guarantees.
When conditions of permit approval require a permitee to construct certain public improvements, the City shall require the permitee to provide financial guarantee for construction of the certain public improvements. Financial guarantees shall be governed by this section.

A. Form of Guarantee. Guarantees shall be in a form approved by the City attorney. Approvable forms of guarantee include irrevocable standby letters of credit to the benefit of the City issued by a recognized lending institution, certified checks, dedicated bank accounts or allocations of construction loans held in reserve by the lending institution for the benefit of the City. The form of guarantee shall be specified by the City engineer and, prior to execution and acceptance by the City shall be reviewed and approved by the City attorney. The guarantee shall be filed with the City engineer.
B. Performance Guarantees. A permittee shall be required to provide a performance guarantee as follows.

1. After Final Approved Design by the City. The City may request the permittee to submit a performance guarantee for construction of certain public improvements. A permitee may request the option of submitting a performance guarantee when prepared for temporary/final occupancy. The guarantee shall be one hundred twenty percent of the estimated cost of constructing the public improvements as submitted by the permittee's engineer. The engineer's estimated costs shall be supported by a verified engineering estimate and approved by the City engineer.
2. Before Complete Design Approval and Established Engineered Cost Estimate. The City may request a permittee to submit a performance guarantee for construction of certain public improvements. A permitee may request the option of submitting a performance guarantee before public improvements are designed and completed. The guarantee shall be one hundred fifty percent of the estimated cost of constructing the public improvements as submitted by the permittee's engineer and approved by the City engineer. The engineer's estimated costs shall be supported by a verified engineering estimate and approved by the City engineer.

C. Release of Guarantee. The guarantee shall remain in effect until the improvement is actually constructed and accepted by the City. Once the City has inspected and accepted the improvement, the City shall release the guarantee to the permittee. If the improvement is not completed to the City's satisfaction within the time limits specified in the permit approval, the City engineer may, at their discretion, draw upon the guarantee and use the proceeds to construct or complete construction of the improvement and for any related administrative and legal costs incurred by the City in completing the construction, including any costs incurred in attempting to have the permittee complete the

improvement. Once constructed and approved by the City, any remaining funds shall be refunded to the permittee. The City shall not allow a permittee to defer construction of improvements by using a performance guarantee, unless the permittee agrees to construct those improvements upon written notification by the City, or at some other mutually agreed-to time. If the permittee fails to commence construction of the required improvements within six months of being instructed to do so, the City may, without further notice, undertake the construction of the improvements and draw upon the permittee's performance guarantee to pay those costs.

D. Fee-in-lieu. When conditions of approval or the City engineer allows a permittee to provide a fee-in-lieu of actual construction of public improvements, the fee shall be one hundred fifty percent of the estimated cost of constructing the public improvements as submitted by the permittee's engineer and approved by the City engineer. The percentage required is to ensure adequate funds for the future work involved in design, bid, contracting, and construction management and contract closeout. The engineer's estimated costs shall be supported by a verified engineering estimate and approved by the City engineer. The fee-in-lieu shall be submitted as cash, certified check, or other negotiable instrument acceptable by the City attorney.

Applicant's Response:
The applicant acknowledges the financial guarantee provisions of this section.

17.50.141 – Public improvements – Warranty
All public improvements not constructed by the City, shall be maintained and under warranty provided by the property owner or developer constructing the facilities until the City accepts the improvements at the end of the warranty period. The warranty is to be used at the discretion of the City engineer or designee to correct deficiencies in materials or maintenance of constructed public infrastructure, or to address any failure of engineering design.

A. Duration of Warranty. Responsibility for maintenance of public improvements shall remain with the property owner or developer for a warranty period of two years.

B. Financial Guarantee. Approvable forms of guarantee include irrevocable standby letters of credit to the benefit of the City issued by a recognized lending institution, bond, certified checks, dedicated bank accounts or allocations of construction loans held in reserve by the lending institution for the benefit of the City. The form of guarantee shall be specified by the City engineer and, prior to execution and acceptance by the City shall be reviewed and approved by the City attorney. The guarantee shall be filed with the City engineer.

C. Amount of Warranty. The amount of the warranty shall be equal to fifteen percent of the estimated cost of construction of all public improvements (including those improvements that will become owned and maintained by the City at the end of the two-year maintenance period), and shall be supported by a verified engineering estimate and approved by the City engineer. Upon expiration of the warranty period and acceptance by the City as described below, the City shall be responsible for maintenance of those improvements.

D. Transfer of Maintenance. The City will perform an inspection of all public improvements approximately forty-five days before the two-year warranty period expires. The public improvements shall be found to be in a clean, functional condition by the City engineer before acceptance of maintenance responsibility by the City. Transfer of maintenance of public improvements shall occur when the City accepts the improvements at the end of the two-year warranty period.

Applicant's Response:
The applicant acknowledges the public improvement warranty provisions of this section.

CHAPTER 17.52 OFF-STREET PARKING AND LOADING

17.52.010 - Applicability.
The construction of a new structure or parking lot, or alterations to the size or use of an existing structure, parking lot or property use shall require site plan review approval and compliance with this chapter. This chapter does not apply to single-family attached, detached residential dwellings, duplexes, townhouses and cottage clusters.

Applicant's Response:
The applicant acknowledges the applicability of 17.52

17.52.015 - Planning commission adjustment of parking standards.
A. Purpose. The purpose of permitting a planning commission adjustment to parking standards is to provide for flexibility in modifying parking standards in all zoning districts, without permitting an adjustment that would adversely impact the surrounding or planned neighborhood. Adjustments provide flexibility to those uses which may be extraordinary, unique, or provide greater flexibility for areas that can accommodate a denser development pattern based on existing infrastructure and ability to access the site by means of walking, biking or transit. An adjustment to a minimum parking standard may be approved based on a determination by the planning commission that the adjustment is consistent with the purpose of this code, and the approval criteria can be met.

B. Procedure. A request for a planning commission parking adjustment shall be initiated by a property owner or authorized agent by filing a land use application. The application shall be accompanied by a site plan, drawn to scale, showing the dimensions and arrangement of the proposed development and parking plan, the extent of the adjustment requested along with findings for each applicable approval criteria. A request for a parking adjustment shall be processed as a Type III application as set forth in Chapter 17.50.

C. Approval criteria for the adjustment are as follows:
1. Documentation: The applicant shall document that the individual project will require an amount of parking that is different from that required after all applicable reductions have been taken.

Applicant's Response:
The applicant acknowledges the purpose and procedure for Planning Commission consideration of parking adjustments. While each parcel will seek their own individual Detailed Development Plan (DDP) approval, this Masterplan application seeks adjustment to the required parking criteria as shown below so that the individual parcel DDP applications will already have received a decision on anticipated parking counts.

Parcel	Proposed Use	Required Parking	Required Criteria	Proposed Parking	Parking Adj Needed?
A	Retail	55 (min); 68 (max)	4.10/1ksf (min); 5.00/1ksf (max)	102 (7.0/1ksf)	Yes
B	Multi-Family Residential	208 (min); 520 (max)	1.00/unit (min); 2.5/unit (max)	320	No
D	Restaurant	20 (min); 25 (max)	4.10/1ksf (min); 5.00/1ksf (max)	58 (11.8/1ksf)	Yes

2. Parking analysis for Surrounding Uses and on-street parking availability: The applicant shall show that there is a continued fifteen percent parking vacancy in the area adjacent to the use during peak parking periods and that the applicant has permission to occupy this area to serve the use pursuant to the procedures set forth by the Community Development Director.

a. For the purposes of demonstrating the availability of on street parking as defined in OCMC 17.52.020.B.3., the applicant shall undertake a parking study during time periods specified by the Community Development Director. The time periods shall include those during which the highest parking demand is anticipated by the proposed use. Multiple observations during multiple days shall be required. Distances are to be calculated as traversed by a pedestrian that utilizes sidewalks and legal crosswalks or an alternative manner as accepted by the Community Development Director.

Applicant's Response:
The above analysis requirement implies a request for a reduction in parking by evaluating surrounding parking availability, including on-street parking. This project's proposed parking adjustments are in excess of maximum required parking, rather than seeking a reduction in parking requirements due to on-street parking or shared parking from another use.

Oregon City Municipal Code (OCMC) Table 17.52.020 identifies parking requirements and groups retail stores, shopping centers, and restaurants in the same category and limits the maximum parking ratio to 5.0 per thousand square feet. It does not differentiate between sizes of uses or different types of uses within the three applicable uses described (for example: retail store vs grocery store or specialty retail; sit-down restaurants vs quick service restaurants that generate higher traffic/parking impacts; or larger regional shopping centers vs neighborhood shopping centers). As such, variations in use can have a significant impact on the number of required parking spaces for a given user that may not fit within the limits of Table 17.52.020.

<u>Parcel A Discussion:</u>
This project's proposed public street does not include on-street parking. Existing uses north of this parcel preclude shared parking by virtue of adjacent limited parking capacity of the existing QSR, and street connectivity to Hilltop Ave. Additionally, counting on-street parking from Hilltop Ave would preclude parking in front of these existing Hilltop uses by those same uses. There is no on-street parking on Molalla Ave. The shopping center on the west side of Molalla Ave is not likely to be utilized by Parcel A customers given the distance from the Parcel A building entrance and the need to cross Molalla Ave.

A maximum parking ratio of 5.0 may work for larger retail or shopping centers, but the proposed retail use is relatively small at 14,600 sf

The applicant seeks an increase in maximum parking as proposed in the above table. Parking ratios have varied between approximately 5.0 – 7.0 in similar combined retail shops/QSR uses. In locations where their parking ratios have been lower, parking has spilled over to adjacent shopping center parking to make up for demand at this retailer. With this project, the retail shops and QSR combination is a stand-alone location without the ability to share parking with another use or shopping center. If the parking ratio is limited to 5.0, customers would attempt to utilize adjacent parking from Parcel B, thereby reducing available parking for adjacent residential use. Customers may also attempt to utilize parking from Parcel D across the street, reducing available parking for Parcel D and creating an unsafe street crossing situation.

<u>Parcel D Discussion:</u>
Required parking for this proposed use is grouped with retail store and shopping center uses and does not recognize the parking demands of a quick service restaurant. Existing development north of the site is comprised of another Quick Service Restaurant (QSR) at the northeast corner of the subject property and single- and multi-family residential, with no connected access to these properties. The adjacent QSR is situated 4'-5' higher in elevation than the subject property and already has limited parking. The adjacent QSR parking ratio is approximately 12.5/1ksf, consistent with the project's requested parking ratio. The adjacent QSR, as with the proposed QSR, is a stand-alone restaurant and not part of a shopping center development where shared parking can occur. Our proposed QSR cannot share parking with other uses without crossing either a major arterial street (Molalla Ave) or our proposed Collector street, thus limiting practical shared parking opportunities. If the parking ratio is limited to 5.0, customers may attempt to utilize parking from Parcels A or B across the street, reducing available parking for these parcels and creating an unsafe street crossing situation.

The applicant seeks an increase in maximum parking as proposed in the above table. Based on other locations for this QSR, parking ratios have varied between approximately 12.6 – 20.0. In locations where their parking ratios have been the highest, parking was shared with adjacent development so identifying the exact parking count is difficult to do. This project does not seek an extreme parking ratio. Instead, it seeks a parking ratio consistent with adjacent uses in similar conditions. If the parking ratio is limited to 5.0, customers would attempt to utilize adjacent parking from Parcel B, thereby reducing available parking for adjacent residential use. Customers may also attempt to utilize parking from Parcel D across the street, reducing available parking for Parcel D and creating an unsafe street crossing situation.

b. The onsite parking requirements may be reduced based on the parking vacancy identified in the parking study. The amount of the reduction in onsite parking shall be calculated as follows:

i. Vacant on-street parking spaces within three hundred feet of the site will reduce onsite parking requirements by 0.5 parking spaces; and

ii. Vacant on-street parking spaces between three hundred and six hundred feet of the site will reduce onsite parking requirements by 0.2 parking spaces.

Applicant's Response:
The applicant does not seek a reduction in the minimum parking criterion. Parcels A and D seek an increase in maximum allowable parking. This criterion is not applicable.

3. Function and Use of Site: The applicant shall demonstrate that modifying the amount of required parking spaces will not significantly impact the use or function of the site and/or adjacent sites.

Applicant's Response:
As noted above, allowing an increase to the maximum allowed parking results in needed customer parking that does not depend on shared parking from adjacent uses that also need parking. Adjustments to the maximum allowable parking are requested for Parcels A and D. Each of these parcels have stand-alone parking lots where shared parking with another on-site use is not possible. Sharing parking with other uses within the proposed masterplan development would involve taking parking from the Parcel B residential use, which is not recommended, or requiring customers to cross a Collector road that separates Parcels A & D. Customers are not likely to park in the Parcel A parking lot, then travel to the Molalla Ave crosswalk then walk to the Parcel D building and vice versa (a travel distance of nearly 600 feet). Allowing an increase in maximum parking will not negatively impact the function and use of the proposed development. In fact, function and use of the development site are both supported by an increase in maximum parking so that customers from Parcels A and/or D do not consume parking from each other or from Parcel B that otherwise needed by those uses.

4. Compatibility: The proposal is compatible with the character, scale and existing or planned uses of the surrounding neighborhood.

Applicant's Response:
The subject property is considered infill development, as surrounding properties are already developed. The proposed increase in maximum allowable parking is compatible with surrounding uses which include comparably-parked adjacent QSR uses and shopping center parking.

5. Safety: The proposal does not significantly impact the safety of adjacent properties and rights-of-way.

Applicant's Response:
The proposed maximum parking adjustment results in a safer development proposal than one in which inadequate parking exists. As noted above, given the stand-alone nature of the subject parcels, any shared parking that may be necessary to satisfy the parking needs of Parcels A & D would result in taking parking away from adjacent residential use or require customers to cross a Collector street or Major Arterial to patron the subject uses.

6. Services: The proposal will not create a significant impact to public services, including fire and emergency services.

Applicant's Response:
The proposed increase to maximum allowable parking will have no negative impact on public services, including fire or emergency services. Additional space created by added parking allows more room for

emergency services access and circulation within Parcels A and D. Public and private utility demands are unaffected by the requested parking increase.

17.52.020 - Number of automobile spaces required.
A. The number of parking spaces shall comply with the minimum and maximum standards listed in Table 17.52.020. The parking requirements are based on spaces per one thousand square feet net leasable area unless otherwise stated.

Table 17.52.020

LAND USE	***PARKING REQUIREMENTS***	
	MINIMUM	*MAXIMUM*
Multi-family Residential	*1 per unit*	*2.5 per unit*
Triplex and quadplex	*2*	*4*
Hotel, Motel	*1 per guest room*	*1.25 per guest room*
Correctional Institution	*1 per 7 beds*	*1 per 5 beds*
Senior housing, including congregate care, residential care and assisted living facilities; nursing homes and other types of group homes	*1 per 7 beds*	*1 per 5 beds*
Hospital	*2*	*4*
Preschool Nursery/Kindergarten	*2*	*3*
Elementary/Middle School	*1 per classroom*	*1 per classroom + 1 per administrative employee + 0.25 per seat in auditorium/assembly room/stadium*
High School, College, Commercial School for Adults	*0.20 per # staff and students*	*0.30 per # staff and students*
Auditorium, Meeting Room, Stadium, Religious Assembly Building, movie theater,	*.25 per seat*	*0.5 per seat*
Retail Store, Shopping Center, Restaurants	*4.10*	*5*
Office	*2.70*	*3.33*
Medical or Dental Clinic	*2.70*	*3.33*
Sports Club, Recreation Facilities	*Case Specific*	*5.40*
Storage Warehouse, Freight Terminal	*0.30*	*0.40*
Manufacturing, Wholesale Establishment	*1.60*	*1.67*
Light Industrial, Industrial Park	*1.3*	*1.60*

1. *Multiple Uses. In the event several uses occupy a single structure or parcel of land, the total requirements for off-street parking shall be the sum of the requirements of the several uses computed separately.*
2. *Requirements for types of buildings and uses not specifically listed herein shall be determined by the community development director, based upon the requirements of comparable uses listed.*
3. *Where calculation in accordance with the above list results in a fractional space, any fraction less than one-half shall be disregarded and any fraction of one-half or more shall require one space.*
4. *Fleet vehicle parking shall be accommodated within the maximum parking ratio, except that in GI, CI, and MUE zones, fleet vehicle parking may be included in a parking lot in addition to the maximum number of permitted parking spaces.*
5. *A change in use within an existing habitable building located in the MUD design district or the Willamette Falls Downtown District is exempt from additional parking requirements. Additions to an existing building and new construction are required to meet the minimum parking requirements for the areas as specified in Table 17.52.020 for the increased square footage.*

Applicant's Response:
The above parking requirements are acknowledged by the applicant, and a request to increase the allowable maximum parking for Parcels A and D are included in this application.

Parcel	Proposed Use	Required Parking	Required Criteria	Proposed Parking	Parking Adj Needed?
A	Retail	55 (min); 68 (max)	4.10/1ksf (min); 5.00/1ksf (max)	102 (7.0/1ksf)	Yes
B	Multi-Family Residential	208 (min); 520 (max)	1.00/unit (min); 2.5/unit (max)	320	No
D	Restaurant	20 (min); 25 (max)	4.10/1ksf (min); 5.00/1ksf (max)	58 (11.8/1ksf)	Yes

B. Parking requirements can be met either on-site, or off-site by meeting one or multiple of the following conditions:

1. Parking may be located on the same site as the associated use which it is supporting.
2. Mixed Uses. If more than one type of land use occupies a single structure or parcel of land, the total requirements for off-street automobile parking shall be the sum of the requirements for all uses, unless it can be shown that the peak parking demands are actually less (e.g. the uses operate on different days or at different times of the day). In that case, the total requirements shall be reduced accordingly, up to a maximum reduction of fifty percent, as determined by the community development director.
3. Shared Parking. Required parking facilities for two or more uses, structures, or parcels of land may be satisfied by the same parking facilities used jointly, to the extent that the owners or operators show that the need for parking facilities does not materially overlay (e.g., uses primarily of a daytime versus nighttime nature), that the shared parking facility is within one thousand feet of the potential uses, and provided that the right of joint use is evidenced by a recorded deed, lease, contract, or similar written instrument authorizing the joint use.

4. On-Street Parking. On-street parking may be counted toward the minimum standards when it is on the street face abutting the subject land use. An on-street parking space shall not obstruct a required clear vision area and it shall not violate any law or street standard. On-street parking for commercial uses shall conform to the following standards:
    a. Dimensions. The following constitutes one on-street parking space:
        1. Parallel parking: Twenty-two feet of uninterrupted and available curb;
        2. Forty-five and/or sixty-degree diagonal parking: Fifteen feet of curb;
        3. Ninety-degree (perpendicular) parking: Twelve feet of curb.
        4. Public Use Required for Credit. On-street parking spaces counted toward meeting the parking requirements of a specific use may not be used exclusively by that use, but shall be available for general public use at all times. Signs or other actions that limit general public use of on-street spaces are prohibited.

Applicant's Response:
Parking requirements are proposed to be met within each of the parcels proposed development area using parking stall geometry consistent with the geometry identified in the code. The Detailed Development Plan application for Parcels A, B, & D will address their individual parking proposals.

C. Reduction of the Number of the Minimum Automobile Spaces Required. Any combination of the reductions below is permitted unless otherwise noted.

1. Downtown Parking Overlay. The minimum required number of parking stalls is reduced within the downtown parking overlay by fifty percent.
2. Transit Oriented Development. For projects not located within the downtown parking overlay district, the minimum required number of parking stalls is reduced up to twenty-five percent when:
    a. In a commercial center (sixty thousand square feet or greater of retail or office use measured cumulatively within a five hundred foot radius);
    b. When adjacent to multi-family development with over eighty units; or
    c. Within one thousand three hundred twenty feet of an existing or planned public transit street and within one thousand three hundred twenty feet of the opposite use (commercial center or multi-family development with over eighty units).
3. Tree Preservation. The community development director may grant an adjustment to any standard of this requirement provided that the adjustment preserves a designated heritage tree or grove so that the reduction in the amount of required pavement can help preserve existing healthy trees in an undisturbed, natural condition.
4. Transportation Demand Management. The community development director shall reduce the required number of parking stalls up to twenty-five percent when a parking-traffic study prepared by a traffic engineer demonstrates alternative modes of transportation, including transit, bicycles, and walking, and/or special characteristics of the customer, client, employee or resident population will reduce expected vehicle use and parking space demand for this development, as compared to standard Institute of Transportation Engineers vehicle trip generation rates and further that the transportation demand management program promotes or achieves parking utilization lower than minimum city parking requirements.

    A transportation demand management (TDM) program shall be developed to include strategies for reducing vehicle use and parking demand generated by the development and will be measured annually. If, at the annual assessment, the city determines the plan is not

successful, the plan may be revised. If the city determines that no good-faith effort has been made to implement the plan, the city may take enforcement actions.

5. The minimum required number of stalls may be reduced by up to ten percent when the subject property is adjacent to an existing or planned fixed public transit route or within one thousand feet of an existing or planned transit stop.

Applicant's Response:
The applicant does not request a reduction in allowable parking for any of the proposed parcels. The Detailed Development Plan application for Parcels A, B, & D will address their individual parking proposals.

17.52.030 - Standards for automobile parking.
A. Access. Ingress and egress locations on public thoroughfares shall be located in the interests of public traffic safety and meet requirements of OCMC 16.12.035. Groups of more than four parking spaces shall be so located and served by driveways so that their use will require no backing movements or other maneuvering within a street right-of-way other than an alley.

Applicant's Response:
As indicated in our response to OCMC 16.12.035, all proposed driveways meet the access spacing requirements identified in Table 16.12.035.A, with the exception of the easterly driveway for Parcel A and the westerly driveway for Parcel B. The separation between these two driveways measured at the right-of-way from curb-to-curb on the driveways is approximately 50.9 ft. With the pre-application notes prepared by Public Works indicating the proposed road was a Local Street, this driveway separation met the minimum 25-ft separation identified in the above table. However, subsequent to the pre-application notes Public Works increased the road classification to a Collector Street, which places the driveway spacing in conflict with Table 16.12.035.A.

The applicant wishes to keep the proposed driveways as shown on the proposed site layout (Shts DDP-C1.0 and GDP-C1.0 for the following reasons:

1. **Oregon Fire Code Appendix D106.2 and D106.3 require two access points for multi-family residential projects having more than 200 units and that they be separated by a distance not less than one-half of the length of the maximum overall diagonal dimension of the property (measured in a straight line between accesses). The maximum diagonal distance of Parcel B is 879 ft, resulting in a minimum driveway spacing of approximately 439 ft.**

2. **Moving the Parcel B westerly driveway further east along the proposed public road to a distance of 439 ft from the easterly driveway results in splitting the current 70-unit building in two, reducing unit count while increasing building construction costs to a point where the multi-family development becomes unviable. Such a new driveway location would place it in the middle of the west diagonal leg of this building (see Sht GDP-C1.0 for building reference).**

B. Surfacing. Required off-street parking spaces and access aisles shall have paved surfaces adequately maintained. The use of pervious asphalt/concrete and alternative designs that reduce storm water runoff

and improve water quality pursuant to the City's stormwater and low impact development design standards are encouraged.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

C. Drainage. Drainage shall be designed in accordance with the requirements of OCMC 13.12 and the City public works stormwater and grading design standards.

Applicant's Response:
The applicant acknowledges the drainage design standards for the proposed public street and utility improvements as well as the proposed rough grading associated with this DDP application. Please see the storm report accompanying this application and the Preliminary Civil Grading and Drainage Plan, Sht DDP-C2.0. Each of the parcels will provide their own separate design proposals with their own DDP applications.

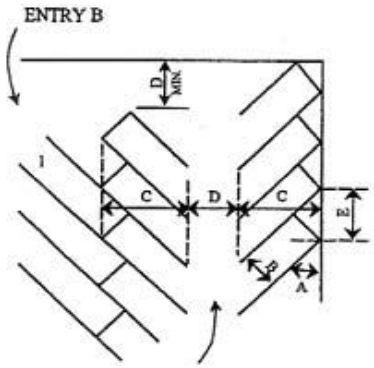
D. Dimensional Standards.
1. Requirements for parking developed at varying angles are according to the table included in this section. A parking space shall not be less than seven feet in height when within a building or structure and shall have access by an all-weather surface to a street or alley. Parking stalls in compliance with the American with Disabilities Act may vary in size in order to comply with the building division requirements. Up to thirty-five percent of the minimum required parking may be compact, while the remaining required parking stalls are designed to standard dimensions. The Community Development Director may approve alternative dimensions for parking stalls in excess of the minimum requirement which comply with the intent of this chapter.

PARKING STANDARD / PARKING ANGLE SPACE DIMENSIONS

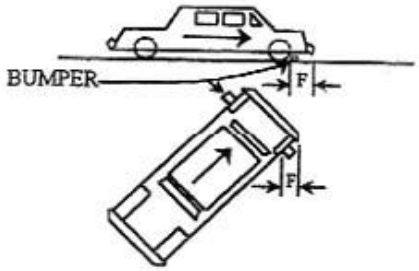
A ***Parking Angle***		***B*** ***Stall Width***	***C*** ***Stall to Curb***	***D*** ***Aisle Width***	***E*** ***Curb Length***	***F*** ***Overhang***
0 degrees		*8.5*	*9'*	*12'*	*20'*	*0*
30 degrees	*Standard* *Compact*	*9'* *8'*	*17.3'* *14.9'*	*11'* *11'*	*18'* *16'*	
45 degrees	*Standard* *Compact*	*8.5* *8.5*	*19.8'* *17'*	*13'* *13'*	*12.7'* *11.3'*	*1.4*
60 degrees	*Standard* *Compact*	*9'* *8'*	*21'* *17.9'*	*18'* *16'*	*10.4'* *9.2'*	*1.7*
90 degrees	*Standard* *Compact*	*9'* *8'*	*19'* *16'*	*24'* *22'*	*9'* *8'*	*1.5*

All dimensions are to the nearest tenth of a foot.

C:\Users\lterway\AppData\Local\Microsoft\Windows\INetCache\IE\images\17.52.030Typicalparkinglayout.



png
Typical Parking layout Entry A



Note: Space 1 Contingent upon Entry B overhang
Note: Overhang dimensions are intended to indicate possible location from parking area edge for location of bumpers.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

2. Alternative parking/plan. Any applicant may propose an alternative parking plan. Such plans are often proposed to address physically constrained or smaller sites, however innovative designs for larger sites may also be considered. In such situations, the Community Development Director may approve an alternative parking lot plan with variations to parking dimensions of this section. The alternative shall be consistent with the intent of this chapter and shall create a safe space for automobiles and pedestrians while providing landscaping to the quantity and quality found within parking lot landscaping requirements.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. While alternative parking plans are not anticipated on the parcels, each of the parcels will seek their own Detailed Development Plan approval separately

from this masterplan application and will address the site/plan specific elements of this code section at that time.

E. Carpool and Vanpool Parking. New developments with seventy-five or more parking spaces, excluding projects where seventy-five percent or more of the total floor area is residential , and new hospitals, government offices, group homes, nursing and retirement homes, schools and transit park-and-ride facilities with fifty or more parking spaces, shall identify the spaces available for employee, student and commuter parking and designate at least five percent, but not fewer than two, of those spaces for exclusive carpool and vanpool parking. Carpool and vanpool parking spaces shall be located closer to the main employee, student or commuter entrance than all other employee, student or commuter parking spaces with the exception of ADA accessible parking spaces. The carpool/vanpool spaces shall be clearly marked "Reserved - Carpool/Vanpool Only."

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

17.52.040 - Bicycle parking standards.
A. Purpose-Applicability. To encourage bicycle transportation to help reduce principal reliance on the automobile, and to ensure bicycle safety and security, bicycle parking shall be provided in conjunction with all uses other than exclusively residential use with less than five dwellings on-site (excluding cottage clusters).
B. Number of Bicycle Spaces Required. For any use not specifically mentioned in Table A, the bicycle parking requirements shall be the same as the use which, as determined by the Community Development Director, is most similar to the use not specifically mentioned. Calculation of the number of bicycle parking spaces required shall be determined in the manner established in OCMC 17.52.020 for determining automobile parking space requirements. Modifications to bicycle parking requirements may be made through the site plan and design, conditional use, or master plan review process.

*TABLE A Required Bicycle Parking Spaces**
Where two options for a requirement are provided, the option resulting in more bicycle parking applies. Where a calculation results in a fraction, the result is rounded up to the nearest whole number.

USE	***MINIMUM BICYCLE PARKING***	***MINIMUM BICYCLE PARKING - COVERED - The following percentage of bicycle parking is required to be covered***
Multi-family (five or more units)	*1 per 10 units (min of 2)*	*50% (min of 1)*
Correctional institution	*1 per 15 auto spaces (min of 2)*	*30% (min of 1)*
Nursing home or care facility	*1 per 30 auto spaces (min of 2)*	*30% (min of 1)*

Hospital	*1 per 20 auto spaces (min of 2)*	*30% (min of 1)*
Park-and-ride lot	*1 per 5 auto spaces (min of 2)*	*50% (min of 1)*
Transit center	*1 per 5 auto spaces (min of 2)*	*50% (min of 1)*
Parks and open space	*1 per 10 auto spaces (min of 2)*	*0%*
Public parking lots	*1 per 10 auto spaces (min of 2)*	*50% (min of 1)*
Automobile parking structures	*1 per 10 auto spaces (min of 4)*	*80% (min of 2)*
Religious institutions, movie theater, auditorium or meeting room	*1 per 10 auto spaces (min of 2)*	*30% (min of 1)*
Libraries, museums	*1 per 5 auto spaces (min of 2)*	*30% (min of 1)*
Preschool, nursery, kindergarten	*2 per classroom (min of 2)*	*50% (min of 1)*
Elementary	*4 per classroom (min of 2)*	*50% (min of 1)*
Junior high and High school	*2 per classroom (min of 2)*	*50% (min of 2)*
College, business/commercial schools	*2 per classroom (min of 2)*	*50% (min of 1)*
Swimming pools, gymnasiums, ball courts	*1 per 10 auto spaces (min of 2)*	*30% (min of 1)*
Retail stores and shopping centers	*1 per 20 auto spaces (min of 2)*	*50% (min of 2)*
Retail stores handling exclusively bulky merchandise such as automobile, boat or trailer sales or rental	*1 per 40 auto spaces (min of 2)*	*0%*
Bank, office	*1 per 20 auto spaces (min of 2)*	*50% (min of 1)*
Medical and dental clinic	*1 per 20 auto spaces (min of 2)*	*50% (min of 1)*
Eating and drinking establishment	*1 per 20 auto spaces (min of 2)*	*0%*
Gasoline service station	*1 per 10 auto spaces (min of 2)*	*0%*

** Covered bicycle parking is not required for developments with two or fewer parking stalls.*

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

C. Design Standards.

1. Bicycle parking facilities shall be in the form of a lockable enclosure onsite, secure room in a building onsite, a covered or uncovered rack onsite, or within the adjacent right-of-way.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

2. Bicycle parking areas shall be clearly marked or visible from on-site buildings or the street. If a bicycle parking area is not plainly visible from the street or main building entrance, a sign shall be posted indicating the location of the bicycle parking area. Indoor bicycle parking areas shall not require stairs to access the space. If sites have more than one building, bicycle parking shall be distributed as appropriate to serve all buildings.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

3. All bicycle racks shall be designed so that:
a. The bicycle frame is supported horizontally at two or more places.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

b. The frame and at least one wheel of the bicycle can be locked to the rack with a standard U-type lock.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

c. The user is not required to lift the bicycle onto the bicycle rack.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

d. Each bicycle parking space is accessible without moving another bicycle.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

e. It is a minimum of thirty inches tall and eighteen inches wide between the two points of contact.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

f. Provides an area of six feet by two feet per bicycle.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

g. All bicycle racks and lockers shall be securely anchored to the ground or to a structure.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

17.52.060 - Parking lot landscaping.
Purpose. The purpose of this code section includes the following:
1. To enhance and soften the appearance of parking lots;
2. To limit the visual impact of parking lots from sidewalks, streets and particularly from residential areas;
3. To shade and cool parking areas;
4. To reduce air and water pollution;
5. To reduce stormwater impacts and improve water quality; and
6. To establish parking lots that are more inviting to pedestrians and bicyclists.

A. Applicability. Unless otherwise specified, construction of new parking lots and alterations of existing parking lots shall comply with parking lot landscaping standards. Parking lot landscaping requirements

within this section do not apply to parking structures or parking garages, except landscaping as required in OCMC 17.62.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

B. Development Standards.

1. The landscaping shall be located in defined landscaped areas that are uniformly distributed throughout the parking or loading area.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

2. All areas in a parking lot not used for parking, maneuvering, or circulation shall be landscaped.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

3. Parking lot trees shall be a mix of deciduous shade trees and coniferous trees. The trees shall be evenly distributed throughout the parking lot as both interior and perimeter landscaping.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

4. Required landscaping trees shall be of a minimum two-inch minimum caliper size (though it may not be standard for some tree types to be distinguished by caliper), planted according to American Nurseryman Standards, and selected from the Oregon City Street Tree List or approved by an arborist.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed

Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

5. At maturity, all of the landscaped area shall be planted in ground cover plants, which includes grasses. Mulch (as a ground cover) shall only be allowed underneath plants at full growth and within two feet of the base of a tree and is not a substitute for ground cover.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

6. Landscaped areas shall include irrigation systems unless an alternate plan is submitted, and approved by the Community Development Director, that can demonstrate adequate maintenance;

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

7. All landscaping shall be installed according to accepted planting procedures, according to American Nurseryman Standards.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

C. Perimeter Parking Lot Landscaping and Parking Lot Entryway/Right-of-Way Screening. Parking lots and associated drive aisles shall include a five-foot wide landscaped buffer where the parking lot abuts the right-of-way and/or adjoining properties. In order to provide connectivity between non-single-family sites, the Community Development Director may approve an interruption in the perimeter parking lot landscaping for a single driveway where the parking lot abuts property designated as multi-family, commercial or industrial. Shared driveways and parking aisles that straddle a lot line do not need to meet perimeter landscaping requirements.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

1. The perimeter parking lot are[a] shall include:
a. Trees spaced a maximum of thirty feet apart (minimum of one tree on either side of the entryway is required). When the parking lot is adjacent to a public right-of-way, the parking lot trees shall be offset from the street trees;

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

b. An evergreen hedge screen of thirty to forty-two inches high or shrubs spaced no more than four feet apart on average. The hedge/shrubs shall be parallel to and not nearer than two feet from the right-of-way line. The required screening shall be designed to allow for free access to the site and sidewalk by pedestrians. Visual breaks, no more than five feet in width, shall be provided every thirty feet within evergreen hedges abutting public right-of-ways.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

D. Parking Area/Building Buffer. Except for parking lots with fewer than five parking stalls, parking areas (excluding drive aisles with no adjacent parking) shall be separated from the exterior wall of a structure, exclusive of pedestrian entranceways or loading areas, by one of the following:
1. Minimum five-foot wide landscaped planter strip (excluding areas for pedestrian connection) meeting the standards for perimeter parking lot area landscaping; or:

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

2. Minimum seven foot sidewalks with shade trees spaced a maximum of thirty feet apart in three-foot by five-foot tree wells.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

E. Interior Parking Lot Landscaping. Surface parking lots with more than five parking stalls shall include at least forty-five square feet of interior parking lot landscaping per parking stall to improve the water quality, reduce storm water runoff, and provide pavement shade. Pedestrian walkways or any impervious surface in the landscaped areas are not to be counted in the percentage. Fractions shall be rounded up when calculating the required number of plantings. Interior parking lot landscaping shall include:

1. A minimum of one tree per four parking spaces.

Applicant's Response: This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

2. A minimum of 1.5 shrubs per parking space.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

3. No more than eight contiguous parking spaces shall be created without providing an interior landscape strip between them. Landscape strips shall be provided between rows of parking shall be a minimum of six feet in width and a minimum of ten feet in length.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

F. Alternative landscaping plan.
Any applicant may propose an alternative landscaping plan. Such plans are often proposed to address physically constrained or smaller sites, however innovative designs for larger sites may also be considered. Alternative plans may include the use of low impact development techniques and minimized landscaping requirements. In such situations, the Community Development Director may approve variations to the landscaping standards of OCMC 17.52.060 in accordance with 1 and/or 2 below.

1. General Review Standard. The alternative shall meet the standards in OCMC 17.62.015-Modifications that will better meet design review requirements.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

2. Credit for Pervious/Low Impact Development. The Community Development Director may count up to fifty percent of the square footage of any pervious hardscaped landscape material within a parking lot that is designed and approved pursuant to the City's adopted stormwater and low impact development design standards toward minimum landscaping requirements for the site. (This includes porous pavement detention, open celled block pavers, porous asphalt, porous concrete pavement, porous turf, porous gravel, etc.).

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

17.52.080 - Maintenance.
The owner, tenant and their agent, if any, shall be jointly and severally responsible for the maintenance of the site including but not limited to the off-street parking and loading spaces, bicycle parking and all landscaping which shall be maintained in good condition so as to present a healthy, neat and orderly appearance and shall be kept free from refuse and debris.
All plant growth in interior landscaped areas shall be controlled by pruning, trimming, or otherwise so that:
A. It will not interfere with the maintenance or repair of any public utility;
B. It will not restrict pedestrian or vehicular access; and
C. It will not constitute a traffic hazard due to reduced visibility.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

17.52.090 - Loading areas.
A. Purpose. The purpose of this section is to provide adequate loading areas for commercial, office, retail and industrial uses that do not interfere with the operation of adjacent streets.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

B. Applicability. OCMC 17.52.090 applies to uses that are expected to have service or delivery truck visits with a forty-foot or longer wheelbase, at a frequency of one or more vehicles per week. The City Engineer and decision maker shall determine through site plan and design review the number, size and location of required loading areas, if any.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

C. Standards.

1. The off-street loading space shall be large enough to accommodate the largest vehicle that is expected to serve the use without obstructing vehicles or pedestrian traffic on adjacent streets and driveways. Applicants are advised to provide complete and accurate information about the potential need for loading spaces because the City Engineer or decision maker may restrict the use of other public right-of-way to ensure efficient loading areas and reduce interference with other uses.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

2. Where parking areas are prohibited between a building and the street, loading areas or drive isles are also prohibited.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

3. The City Engineer and decision maker, through site plan and design review, may approve a loading area adjacent to or within a street right-of-way when all of the following loading and unloading operations conditions are met:

a. Short in duration (i.e., less than one hour);
b. Infrequent (less than three operations daily between 5:00 a.m. and 12:00 a.m. or all operations between 12:00 a.m. and 5:00 a.m. at a location that is not adjacent to a residential zone);
c. Does not obstruct traffic during peak traffic hours;
d. Does not interfere with emergency response services; and
e. Is acceptable to the applicable roadway authority.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed

Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

CHAPTER 17.54 SUPPLEMENTAL ZONING REGULATIONS AND EXCEPTIONS

17.54.010 - Accessory structures and uses.
Accessory structures and uses shall comply with all requirements for the principal use except where specifically modified by this title and shall comply with the following standards:

A. Signs. Signs shall be permitted as provided in Chapter 15.28.
B. Residential Accessory Structures, Not Including Accessory Dwellings Units. The section applies to all accessory structures within the R-10, R-8, R-6, R-5 and R-3.5 zoning districts and accessory structures on properties with a residential use with less than five units within a zoning designation not listed above.

1. Accessory Structures with a Footprint Less than Two Hundred Square Feet:

a. Shall be located behind the front line of the primary structure;
b. Shall comply with the dimensional standards of the zoning designation including height, lot coverage and setbacks unless modified pursuant to subsection c herein; and
c. Side and rear setbacks may be reduced to not less than three feet for the accessory structure and its projections if the height does not exceed seventeen feet as defined in OCMC 17.04.550.

Applicant's Response:
The applicant acknowledges this section relative to signs. This Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel. As indicated in 17.54.010.B, above, the residential accessory structures requirements in this section are not applicable to the MUC-2 zone based on the proposed multi-family residential density.

2. Accessory Structures with a Footprint from Two Hundred to Six Hundred Square Feet:

a. Shall be located behind the front line of the primary structure;
b. Shall comply with the dimensional standards of the zoning designation, including height, setbacks, and lot coverage unless modified pursuant to subsection c; and
c. Side and rear setbacks may be reduced to not less than three feet for one accessory structure and its projections if the height does not exceed seventeen feet as defined in OCMC 17.04.550.

Applicant's Response:
This Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel. As indicated in 17.54.010.B, above, the residential accessory structures requirements in this section are not applicable to the MUC-2 zone based on the proposed multi-family residential density.

3. Accessory Structures with a Footprint Over Six Hundred Square Feet:

a. Shall not exceed more than one accessory structure with a footprint in excess of six hundred square feet per parcel;

b. The parcel shall be in excess of twenty thousand square feet;
c. The footprint shall not exceed the footprint of the primary structure;
d. Shall not exceed eight hundred square feet;
e. Shall not exceed the height of the primary structure;
f. Shall be located behind the front line of the primary structure; and
g. Shall comply with the dimensional standards of the zoning designation including height, setbacks, and lot coverage.

Applicant's Response:
This Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel. As indicated in 17.54.010.B, above, the residential accessory structures requirements in this section are not applicable to the MUC-2 zone based on the proposed multi-family residential density.

4. Prohibited:
a. Cargo containers.
b. Membrane and fabric covered storage areas visible from the adjacent right-of-way.
c. Metal structures within a historic district, or on an individually designated historic property, unless otherwise authorized by OCMC Chapter 17.40.

Applicant's Response:
This Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel. As indicated in 17.54.010.B, above, the residential accessory structures requirements in this section are not applicable to the MUC-2 zone based on the proposed multi-family residential density.

5. An accessory structure housing a hooved animal shall be located a minimum of twenty-five feet from any property line.
6. Accessory structures constructed prior to January 1, 2017 which are located behind the front building line of the primary structure are exempt from the setback and height requirements in this chapter, except as otherwise limited through an applicable overlay district.
7. Swimming Pools. In-ground and above-ground swimming pools shall be constructed not less than three feet from the side or rear yard lines. Swimming pools shall comply with the front yard setback requirements for the principal structure. A pool shall be surrounded by a fence no less than four feet in height or a suitable alternative such as a locked or electric cover, approved by the building official.

Applicant's Response:
This Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel. As indicated in 17.54.010.B, above, the residential accessory structures requirements in this section are not applicable to the MUC-2 zone based on the proposed multi-family residential density.

C. Temporary Structures in the Right-of-Way. This section applies to temporary structures associated with permitted events in the right-of-way. Temporary structures:

1. May be constructed of any building material;

2. Shall comply with all provisions of the Americans with Disabilities Act; and

3. Shall be exempt from all sections of Chapters 12.04 (except 12.04.120), 12.08, 16.12, 17.52 and 17.62.

Applicant's Response:
Temporary structures are not proposed in public right-of-way.

17.54.020 - Projections from buildings.
Residential building projections that are cantilevered so that they do not touch the ground (such as cornices, eaves, bay windows, fireplaces, overhangs, canopies, sunshades, gutters, chimneys, flues, sills or similar architectural features) may project into the required setbacks up to twenty-four inches. The projection may be limited by easement restrictions, etc.

Applicant's Response:
This Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel.

17.54.030 - Setback exceptions.
A. Through lots having a frontage on two streets shall provide the required front yard on each street. The required rear yard setback shall not apply.
B. Structures within the right-of-way are exempt from setback standards.
C. Uncovered decks or porches with a height of less than thirty inches from grade are exempt from setback standards.

Applicant's Response:
Parcels A, B, & C are not through lots having frontage on two streets. Parcels A & B are considered corner lots with 20-ft setbacks along Molalla Ave in conformance with OCMC 17.29.060.G.3. This Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel.

17.54.100 Fences, Hedges, Walls, and Retaining Walls.
A. A fence, hedge, wall, retaining wall, or combination thereof may be located on real property, not within the right-of-way, subject to all of the following:

1. A fence, hedge, wall, retaining wall, or combination thereof located in front of a building may be up to 3.5-feet in total height as measured from the finished grade at any point on the fence.

2. A fence, hedge, wall, located next to, or behind the forward most building, or within more than forty feet of the right-of-way, whichever is less may be up to:

a. Six feet in total height for residential properties with less than five units as measured from the finished grade at any point on the fence; or

b. Eight feet in total height for all other uses as measured from the finished grade at any point on the fence.

3. A retaining wall or combination of a fence, hedge, wall located next to and behind the forward most building, or within more than forty feet of the right-of-way, whichever is less, may be up to (as measured from the finished grade) 8.5 feet in height from the finished grade.

4. Fences, hedges, and/or walls located within two feet above a retaining wall, as measured on a horizontal plane, shall be measured together for the purposes of determining height.

5. Property owners shall ensure compliance with the Traffic Sight Obstruction requirements in Chapter 10.32 of the Oregon City Municipal Code.

6. Retaining walls completely below the elevation of the right-of-way may be up to six feet in height.

7. Minimum fall protection required by the Building Official, such as railings, is not included in the height of a retaining wall but must comply with the fence height requirements.

Applicant's Response:
Retaining walls are not proposed on the parcels associated with this Detailed Development Plan submittal. This DDP application seeks approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel. The proposed public street from the site to Beavercreek Rd includes a retaining wall to minimize impacts to the NROD resource and avoid impacts to an existing wetland. This retaining wall is located within the right-of-way and is shown on Sht DDP-C1.4.

B. When no other practicable alternative exists, the City Engineer may permit a fence, hedge, wall, retaining wall, or combination thereof to be located within the right-of-way subject to all of the following:

1. A Revocable Permanent Obstruction in the Right of Way permit is granted per OCMC 12.04.120;

2. Retaining walls, fences, or hedges comply with OCMC 17.54.100.A, unless determined to be impracticable by the City Engineer.

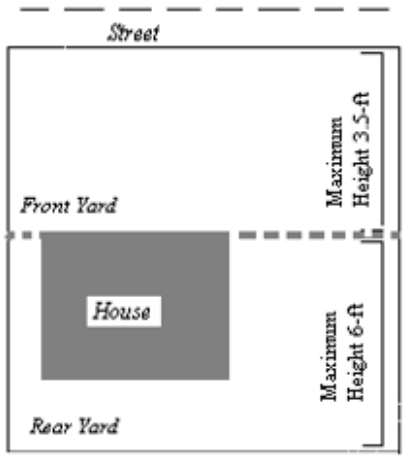
3. The abutting property owner shall ensure compliance with the Traffic Sight Obstruction requirements in Chapter 10.32 of the Oregon City Municipal Code.

Applicant's Response:
This criterion appears to be applicable to private development's desire to locate a wall within the public right-of-way for the benefit of private development. The retaining wall within the right-of-way of the proposed public road through the NROD area is associated with the public roadway design and supports the roadway, not adjacent private development. It does not impede sight distance and will include a guard rail and fence. Accordingly, we understand this criterion does not apply to this proposed wall.

C. It is unlawful for any person to erect any electric fence or any fence constructed in whole or in part of barbed wire or to use barbed wire, except as erected in connection with security installations at a minimum height of six feet, providing further that prior written approval has been granted by the City Manager.

Applicant's Response:
The applicant acknowledges this criterion and is not proposing an electric fence with this DDP application.

Residential Height Requirements:
Any fence, hedge or wall located in front of may be up to 3.5 feet in total height.
A fence, hedge or wall located next to and behind your home may be up to six feet in total height.



Applicant's Response:
Retaining walls are not proposed on the parcels associated with this Detailed Development Plan submittal. This DDP application seeks approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel.

17.54.110 - Marijuana businesses.
For the purpose of zoning regulation pursuant to this section, recreational and medical marijuana facilities are considered the same by Oregon City.

Applicant's Response:
This DDP application does not propose a marijuana business. Accordingly, this criterion is not applicable to this application.

17.54.115 - Mobile Food Units
A. Applicability. The following provisions apply to mobile food units not located within a building. The provisions do not apply to indoor mobile food units or mobile food units allowed pursuant to a special event permit issued by the City.

Applicant's Response:
This DDP application does not propose mobile food units. Accordingly, this criterion is not applicable to this application. This Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel.

CHAPTER 17.62 SITE PLAN AND DESIGN REVIEW

17.62.010 Purpose.
The purposes of site plan and design review are to: Encourage site planning in advance of construction; protect lives and property from potential adverse impacts of development; consider natural or man-made hazards which may impose limitations on development; conserve the City's natural beauty and visual character and minimize adverse impacts of development on the natural environment as much as is reasonably practicable; assure that development is supported with necessary public facilities and services; ensure that structures and other improvements are properly related to their sites and to surrounding sites and structure; and implement the City's comprehensive plan and land use regulations with respect to development standards and policies.

17.62.015 - Modifications that will better meet design review requirements.
The review body shall consider modification of certain site related development standards of this chapter specified below. These modifications may be approved as part of a Type II design review process.
A. Applicability.

1. This process shall apply to modifications to:
a. Landscaping in OCMC 17.62.050.A;
b. Vehicular connections to adjoining properties in OCMC 17.62.050.B.2;
c. On-site pedestrian circulation in OCMC 17.62.050.C;
d. Onsite utility location OCMC 17.62.050.G;
e. Building location in OCMC 17.62.055.D;
f. Building details in OCMC 17.62.055.I;
g. Windows in OCMC 17.62.055.J;
h. Parking lot landscaping in OCMC 17.52.060.

2. Modifications that are denied through Type II design review may be requested as a variance through the variance process pursuant to OCMC 17.60.020 or master plan adjustment pursuant to OCMC 17.65.070 as applicable.

3. Rather than a modification, applicants may choose to apply for a variance through the variance process pursuant to OCMC 17.60.020 or master plan adjustment pursuant to OCMC 17.65.070 as applicable.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time and may or may not seek modifications to certain development standards.

As shown on Shts DDP-C1.3 and DDP-L1.0, street trees on the proposed public street through TL 500 are shown on the west side of the street where space allows and are located behind the proposed pedestrian/bike path on the east side of the street where space allows. This street tree location allows a 10.5' wide unobstructed path to facilitate both pedestrian and bicycle movement without

obstruction from street trees, as development of TL 500 is not proposed at this time. The existing right-of-way through TL 500 is the result of an agreement between Walmart and the TL 500 property owner and the applicant does not have the ability to increase the width to allow more room for street trees within the sidewalk, which would generate the need for bike lanes on this section of street, which cannot fit within the available right-of-way. The applicant does not believe this rises to the level of a formal modification request via OCMC 16.12.013. Public Works suggested the alternate street tree location, provided the Planning Department approves. This response highlights this request.

B. The review body may approve requested modifications if it finds that the applicant has shown that the following approval criteria are met:

1. The modification will result in a development that better meets the applicable design guidelines; and

Applicant's Response:
Formal design modifications are included in our response to OCMC 16.12.013. As noted above, the applicant believes the alternate street tree location through TL 500 does not rise to the level of a formal modification request. The proposed alternate street tree location maintains the city's requirement to provide street trees.

2. The modification meets the intent of the standard. On balance, the proposal will be consistent with the purpose of the standard for which a modification is requested.

Applicant's Response:
Formal design modifications are included in our response to OCMC 16.12.013. As noted above, the applicant believes the alternate street tree location through TL 500 does not rise to the level of a formal modification request. The proposed alternate street tree location maintains the city's requirement to provide street trees.

17.62.030 - When required.
Site plan and design review shall be required for all development of real property in all zones except the low and medium density residential districts, unless otherwise provided for by this title or as a condition of approval of a permit. Site plan and design review shall also apply to all conditional uses, cluster housing developments, multi-family uses, manufactured home parks, and non-residential uses in all zones. Site Plan and Design Review does not apply to activities occurring within the right-of-way except for communication facilities pursuant to OCMC 17.80.

Site plan and design review is required for a change in use between the uses in Table 17.62.030:

Table 17.62.030

Existing Use	***Proposed Use***
Residential	*Nonresidential use, including but not limited to: commercial, office, industrial, retail, or institutional*
Single-family or duplex	*3 or more dwellings*

Site plan and design review shall not alter the type and category of uses permitted in the underlying zoning districts.

Applicant's Response:
The applicant acknowledges the applicability of Site Plan Review within the Masterplan Detailed Development Plan process. This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time.

Only the standards of OCMC 17.62.035 apply to duplex, triplex, quadplex, cottage cluster, townhouse, single family detached residential unit, live/work dwelling and accessory dwelling unit Type I applications

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time. This masterplan application does not seek Type I Minor Site Plan and Design Review.

17.62.035 - Minor site plan and design review.
This section provides for a minor site plan and design review process. Minor site plan review is a Type I or Type II decision, as described in OCMC 17.62.035.A, subject to administrative proceedings described in OCMC 17.50 and may be utilized as the appropriate review process only when authorized by the Community Development Director. The purpose of this type of review is to expedite design review standards for uses and activities that require only a minimal amount of review, typical of minor modifications and/or changes to existing uses or buildings.

A. Type I Minor Site Plan and Design Review.
1. Applicability. Type I applications involve no discretion and are typically processed concurrently with a building permit application. The Type I process is not applicable for:
a. Any activity which is included with or initiates actions that require Type II—IV review.
b. Any increase in square footage of a conditional or nonconforming use (excluding nonconforming structures).
c. Any proposal in which nonconforming upgrades are required under OCMC 17.58.
d. Any proposal in which modifications are proposed under OCMC 17.62.015.

Applicant's Response:
This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time. This masterplan application does not seek Type I Minor Site Plan and Design Review.

B. Type II Minor Site Plan and Design Review.

1. Type II minor site plan and design review applies to the following uses and activities unless those uses and activities qualify for Type I review per OCMC 17.62.035.A:

a. Modification of an office, commercial, industrial, institutional, public or multi-family structure that does not increase the interior usable space (for example covered walkways or entryways, addition of unoccupied features such as clock tower, etc.).

b. Modification to parking lot layout and landscaping, or the addition of up to five parking spaces.

c. A maximum addition of up to one thousand square feet to a commercial, office, institutional, public, multi-family, or industrial building provided that the addition is not more than thirty-five percent of the original building square footage.

d. Mobile food units in OCMC 17.54.115.

e. Other land uses and activities may be added if the Community Development Director makes written findings that the activity/use will not increase off-site impacts and is consistent with the type and/or scale of activities/uses listed above.

2. Application. The application for the Type II minor site plan and design review shall contain the following elements:

a. The submittal requirements of OCMC 17.50.

b. A narrative explaining all aspects of the proposal in detail and addressing each of the applicable criteria listed in OCMC 17.62.

c. Site plan drawings showing existing conditions/uses and proposed conditions/uses.

d. Architectural drawings, including building elevations and envelopes, if architectural work is proposed.

e. Additional submittal material may be required by the Community Development Director on a case-by-case basis.

Applicant's Response:

This masterplan application seeks Detailed Development Plan approval for the proposed street and utility improvements and site rough grading. Each of the parcels will seek their own Detailed Development Plan approval separately from this masterplan application and will address the site/plan specific elements of this code section at that time. Please see the project narrative, various plans and reports included with this application.

<u>17.62.040 – Items required.</u>

A complete application for site plan and design review shall be submitted. Except as otherwise in subsection I of this section, the application shall include the following:

A. A site plan or plans, to scale, containing the following:

1. Vicinity information showing streets and access points, pedestrian and bicycle pathways, transit stops and utility locations;

2. The site size, dimensions, and zoning, including dimensions and gross area of each lot or parcel and tax lot and assessor map designations for the proposed site and immediately adjoining properties;

3. Contour lines at two-foot contour intervals for grades zero to ten percent, and five-foot intervals for grades over ten percent;

4. The location of natural hazard areas on and within one hundred feet of the boundaries of the site, including:

a. Areas indicated on floodplain maps as being within the one hundred-year floodplain,
b. Unstable slopes, as defined in OCMC 17.44.020,
c. Areas identified on the seismic conditions map in the comprehensive plan as subject to earthquake and seismic conditions;

5. The location of natural resource areas on and within one hundred feet of the boundaries of the site, including fish and wildlife habitat, existing trees (six inches or greater in caliper measured four feet above ground level), wetlands, streams, natural areas, wooded areas, areas of significant trees or vegetation, and areas designated as being within the natural resources overlay district;

6. The location of inventoried historic or cultural resources on and within one hundred feet of the boundaries of the site;

7. The location, dimensions, and setback distances of all existing permanent structures, improvements and utilities on or within twenty five feet of the site, and the current or proposed uses of the structures;

8. The location, dimensions, square footage, building orientation and setback distances of proposed structures, improvements and utilities, and the proposed uses of the structures by square footage;

9. The location, dimension and names, as appropriate, of all existing and platted streets, other public ways, sidewalks, bike routes and bikeways, pedestrian/bicycle accessways and other pedestrian and bicycle ways, transit street and facilities, neighborhood activity centers, and easements on and within two hundred fifty feet of the boundaries of the site;

10. The location, dimension and names, as appropriate, of all proposed streets, other public ways, sidewalks, bike routes and bikeways, pedestrian/bicycle accessways and other pedestrian and bicycle ways, transit streets and facilities, neighborhood activity centers, and easements on and within two hundred feet of the boundaries of the site;

11. All parking, circulation, loading and servicing areas, including the locations of all carpool, vanpool and bicycle parking spaces as required in OCMC 17.52;

12. Site access points for automobiles, pedestrians, bicycles and transit;

13. On-site pedestrian and bicycle circulation;

14. Outdoor common areas proposed as open space;

15. Total impervious surface created (including buildings and hard ground surfaces);

16. The proposed location, dimensions and materials of fences and walls.

B. A landscaping plan, drawn to scale, showing the location and types of existing trees (six inches or greater in caliper measured four feet above ground level) and vegetation proposed to be removed and to be retained on the site, the location and design of landscaped areas, the varieties, sizes and spacings of trees and plant materials to be planted on the site, other pertinent landscape features, and irrigation systems required to maintain plant materials.

C. Architectural drawings or sketches, drawn to scale and showing floor plans, elevations accurately reflected to grade, and exterior materials of all proposed structures and other improvements as they will appear on completion of construction. The name of the adjacent street shall be identified on each applicable building elevation.

D. An electronic materials board clearly depicting all building materials with specifications as to type, color and texture of exterior materials of proposed structures.

E. An erosion/sedimentation control plan, in accordance with the requirements of OCMC 17.47 and the public works erosion and sediment control standards, and a drainage plan developed in accordance with city drainage master plan requirements, OCMC 13.12 and the public works stormwater and grading design standards. The drainage plan shall identify the location of drainage patterns and drainage courses on and within one hundred feet of the boundaries of the site. Where development is proposed within an identified hazard area, these plans shall reflect concerns identified in the hydrological/geological/geotechnical development impact statement.

F. An exterior lighting plan, drawn to scale, showing type, height, and area of illumination.

Applicant's Response:
Please see the various plans and reports included with this application. These plans include a cover sheet, preliminary rough grading and erosion control plan, preliminary tree removal plan, preliminary site plan, preliminary landscape plan, Molalla Ave street plan, proposed Public Street Plan & Profile, preliminary grading plan, and preliminary utility plan. As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel. Accordingly, architectural drawings, materials board and exterior lighting beyond proposed street lighting will accompany future DDP applications for the proposed parcels.

G. Archeological Monitoring Recommendation. For all projects that will involve ground disturbance, the applicant shall provide:

1. A letter or email from the Oregon State Historic Preservation Office Archaeological Division indicating the level of recommended archeological monitoring on-site, or demonstrate that the applicant had notified the Oregon State Historic Preservation Office and that the Oregon State Historic Preservation Office had not commented within forty-five days of notification by the applicant; and

2. A letter or email from the applicable tribal cultural resource representative of the Confederated Tribes of the Grand Ronde, Confederated Tribes of the Siletz, Confederated Tribes of the Umatilla,

> *Confederated Tribes of the Warm Springs and the Confederated Tribes of the Yakama Nation indicating the level of recommended archeological monitoring on-site, or demonstrate that the applicant had notified the applicable tribal cultural resource representative and that the applicable tribal cultural resource representative had not commented within forty-five days of notification by the applicant.*

If, after forty-five days' notice from the applicant, the Oregon State Historic Preservation Office or the applicable tribal cultural resource representative fails to provide comment, the City will not require the letter or email as part of the completeness review. For the purpose of this section, ground disturbance is defined as the movement of native soils.

Applicant's Response:
The Oregon State Historic Preservation Office (SHPO) provided a letter, dated September 10, 2025, indicating that SHPO has no records identifying archaeologic objects or sites, and no Native American cairn, burial, human remains, sacred objects of cultural patrimony in or adjacent to the project area and does not have any concerns with the project proceeding as planned. Notice was sent to the above-referenced tribes on September 23, 2025.

We were able to speak with representatives from 2 of the tribes over the phone and received the following feedback:

- **Confederated Tribes of the Grand Ronde - on October 6th, the tribal representative suggested fieldwork be conducted and that they would send an official written response**
  - **Fieldwork was conducted; results were negative**
  - **To date, we have not received a written response.**
- **Confederated Tribes of the Umatilla.**
  - **Tribal representative said she would confer with the other tribal representative**
  - **To date, we have not heard anything else from the tribe**

We have not received anything from the Confederated Tribes of the Siletz, Confederated Tribes of the Warm Springs and the Confederated Tribes of the Yakama Nation. November 7, 2025, marked the end of the 45-day notification period. Please see our Cultural Resources Summary Letter in Appendix O.

H. Such special studies or reports as the Community Development Director may require to obtain information to ensure that the proposed development does not adversely affect the surrounding community or identified natural resource areas or create hazardous conditions for persons or improvements on the site. The Community Development Director shall require an applicant to submit one or more development impact evaluations as may be necessary to establish that the City's traffic safety or capacity standards, natural resource, including geologic hazard and flood plain overlay districts, will be satisfied.

Applicant's Response:
The applicant acknowledges the Community Development Director's ability to require additional information to support the proposed masterplan application.

I. The Community Development Director may waive the submission of information for specific requirements of this section or may require information in addition to that required by a specific provision of this section, as follows:

1. The Community Development Director may waive the submission of information for a specific requirement upon determination either that specific information is not necessary to evaluate the application properly, or that a specific approval standard is not applicable to the application. If submission of information is waived, the Community Development Director shall, in the decision, identify the waived requirements, explain the reasons for the waiver, and state that the waiver may be challenged on appeal and may be denied by a subsequent review authority. If the matter is forwarded to the planning commission for initial review, the information required by this paragraph shall be included in the staff report;

2. The Community Development Director may require information in addition to that required by a specific provision of this section upon determination that the information is needed to evaluate the application properly and that the need can be justified on the basis of a special or unforeseen circumstance as necessary to comply with the applicable standards. If additional information is required, the Community Development Director shall, in the decision, explain the reasons for requiring the additional information.

Applicant's Response:
The applicant acknowledges the Community Development Director's ability to waive certain requirements or may require additional information to support the proposed masterplan application.

J. All new utilities shall be placed underground.

1. Service poles may be allowed on private property when undergrounding service is technically or physically infeasible.

Applicant's Response:
All new utilities within the proposed development will be underground. Overhead utilities along Molalla Ave will be relocated to allow construction of required Molalla Ave improvements but are not planned to be placed underground due to the nature of the existing electrical lines on the existing utility poles.

K. One full-sized copy of all architectural and site plans.

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel. Accordingly, architectural drawings, materials board and exterior lighting beyond proposed street lighting will accompany future DDP applications for the proposed parcels.

17.62.050 - General Standards

All development shall comply with the following standards:

A. Landscaping.

1. Existing native vegetation is encouraged to be retained to the maximum extent practicable. All plants listed on the Oregon City Nuisance Plant List shall be removed from the site prior to issuance of a final occupancy permit for the building.

Applicant's Response:
The applicant acknowledges this criterion. Each of the parcels will submit their own Detailed Development Plan applications, which will provide more information on planned landscaping.

2. The amount of landscaping required is found in the standards for each underlying zone. Where the underlying zone does not contain a minimum landscaping standard, the minimum site landscaping shall be fifteen percent of the total site area. Except as allowed elsewhere in Title 16 or 17 of this code, all areas to be credited towards landscaping shall be installed with growing plant materials.

Applicant's Response:
The applicant acknowledges this landscape requirement. Please see our response to overall landscaping in our response to OCMC 17.29.060.I.

3. Pursuant to OCMC 17.49, landscaping requirements within the Natural Resource Overlay District, other than landscaping required for parking lots, may be met by preserving, restoring and permanently protecting native vegetation and habitat on development sites.

Applicant's Response:
The applicant acknowledges this landscape requirement. The Detailed Development Plan for Parcel B may, or may not, choose to include a provision for preserving or permanently protecting the forested slope on the easterly edge of Parcel B.

4. A landscaping plan shall be prepared by a registered landscape architect for new or revised landscaped areas and parking lots. Landscape architect approval is not required for tree removal and/or installation if the species are chosen from an approved street tree list. A certified landscape designer, arborist, or nurseryman shall be acceptable in lieu of a landscape architect for projects with less than five hundred square feet of landscaping. All landscape plans shall include a mix of vertical (trees and shrubs) and horizontal elements (grass, groundcover, etc.) that within three years will cover one hundred percent of the landscape area. Plant species listed on the Oregon City Nuisance Plant list are prohibited and native species are encouraged. No mulch, bark chips, or similar materials shall be allowed at the time of landscape installation except under the canopy of shrubs and within two feet of the base of trees.

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel. Accordingly, landscape plans of parcel site

improvements will accompany future DDP applications for the proposed parcels. This proposed DDP application includes street trees for the proposed roadway improvements, and the final construction plans will include preparation by a licensed landscape architect for proposed street tree planting.

5. Landscaping shall be visible from public thoroughfares to the extent practicable.

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel. Accordingly, landscape plans of parcel site improvements will accompany future DDP applications for the proposed parcels. This proposed DDP application includes street trees for the proposed roadway improvements.

6. The landscaping in parking areas shall not obstruct lines of sight for safe traffic operation and shall comply with all requirements of OCMC 10.32, Traffic Sight Obstructions.

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel. Accordingly, landscape plans of parcel site improvements will accompany future DDP applications for the proposed parcels.

B. Vehicular Access and Connectivity.

1. Parking areas shall be located behind the building façade that is closest to the street, below buildings, or on one or both sides of buildings.

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel. However, the proposed General Development Plan application identifies expected development of each of the parcels, which complies with this criterion.

2. Existing or future connections to adjacent sites through the use of vehicular and pedestrian access easements which provide connection from the right-of-way to the adjoining property shall be provided.

Applicant's Response:
Please see Detailed Development Plan Sht DDP-C1.0 9as well as other DDP plan sheets) showing an access easement along the southern portion of Parcel D for future access to properties south of the site as identified in the Beavercreek Access Management Plan. Additionally, the proposed public street through the site abuts the property's southern border for the remainder of the properties along the project's southern border providing these properties with access to the proposed public street. Additionally, the proposed public road extending to Beavercreek Rd provides a truck access driveway for future connection to the Les Schwab TL 602 parcel and provides access to both TL 500 and 501 (via

TL500 south of the NROD area) to continue to maintain these parcels. Access to TL 500 is located across from the TL 602 access and is designed for truck access to maintain existing truck use on TL 500.

Additionally, a pedestrian pathway is proposed for future trail connectivity from Beavercreek Rd along the proposed public street to the southeast corner of the subject property where the proposed pathway departs from the public street and continues through the subject property to the vicinity of the northeast corner of the site. Please see DDP-C1.0.

3. Parcels larger than three acres shall provide streets as required in OCMC 16.12.

Applicant's Response:
This DDP application includes a proposed public street connecting Molalla Ave and Beavercreek Rd.

4. Parking garage entries shall not be more than half of the streetscape.

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel.

C. A well-marked, continuous and protected on-site pedestrian circulation system meeting the following standards shall be provided:

1. Pathways between all building entrances and the street are required. Pathways between the street and buildings fronting on the street shall be direct and not cross a drive aisle. Exceptions may be allowed by the director where steep slopes, a physically constrained site, or protected natural resources prevent a direct connection or where an indirect route would enhance the design and/or use of a common open space.

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel. However, the General Development Plan accompanying this DDP application includes representative layouts that satisfy this criterion, subject to individual parcel DDP approval.

2. The pedestrian circulation system shall connect all main entrances, parking areas, bicycle parking, recreational areas, common outdoor areas, and any pedestrian amenities on the site. For buildings fronting on the street, the sidewalk may be used to meet this standard.

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel. However, the General Development Plan

accompanying this DDP application includes representative layouts that satisfy this criterion, subject to individual parcel DDP approval.

3. The pedestrian circulation system shall connect the principal building entrance to those of buildings on adjacent sites, except within industrial zoning designations.

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel. However, the General Development Plan accompanying this DDP application includes representative layouts that satisfy this criterion, subject to individual parcel DDP approval. Pedestrian connectivity between the proposed parcels includes public sidewalks along the proposed public street.

4. Elevated external stairways or walkways shall not extend beyond the building façade except for external stairways or walkways located in, or facing interior courtyard areas that are not visible from the street or a public access easement. This standard does not apply to sky-bridges or sky-ways.

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel.

5. On-site pedestrian walkways shall be hard surfaced, well drained and at least five feet wide. Surface material shall contrast visually to adjoining surfaces. When bordering parking spaces other than spaces for parallel parking, pedestrian walkways shall be a minimum of seven feet in width unless curb stops are provided. When the pedestrian circulation system is parallel and adjacent to an auto travel lane, the walkway shall be raised or separated from the auto travel lane by a raised curb, bollards, landscaping or other physical barrier.

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel. However, the General Development Plan accompanying this DDP application includes representative layouts that satisfy this criterion, subject to individual parcel DDP approval.

D. All development shall maintain continuous compliance with applicable federal, state, and City standards.

Applicant's Response:
The applicant acknowledges this criterion.

E. Adequate public water and sanitary sewer facilities sufficient to serve the proposed or permitted level of development shall be provided pursuant to OCMC 16.12. The applicant shall demonstrate that adequate facilities and services are presently available or can be made available concurrent with development. Service providers shall be presumed correct in the evidence which they submit. All facilities shall be designated to City standards as set out in the City's facility master plans and public works design standards. A development may be required to modify or replace existing off-site systems if necessary to provide adequate public facilities. The City may require over sizing of facilities where necessary to meet standards in the City's facility master plan or to allow for the orderly and efficient provision of public facilities and services. Where oversizing is required, the developer may request reimbursement from the City for over sizing based on the City's reimbursement policy and fund availability or provide for recovery of costs from intervening properties as they develop.

Applicant's Response:
Please see the Preliminary Utility Plan, Sht DDP-C3.0, included with this DDP application. The utilities within the proposed public street will be public. The proposed water line in this street is located in conformance with the city's water system master plan and connects the existing water lines in Molalla Ave with Beavercreek Rd. Additionally, this project will ultimately extend sanitary sewer service to the property's northeast corner for future extension by others to allow the ultimate removal of the Hilltop Ave sanitary sewer pump station.

F. If a transit agency, upon review of an application for an industrial, institutional, retail or office development, recommends that a bus stop, bus turnout lane, bus shelter, accessible bus landing pad, lighting, or transit stop connection be constructed, or that an easement or dedication be provided for one of these uses, consistent with an agency adopted or approved plan at the time of development, the review authority shall require such improvement, using designs supportive of transit use. Improvements at a major transit stop may include intersection or mid-block traffic management improvements to allow for crossings at major transit stops, as identified in the City's transportation system plan.

Applicant's Response:
As shown on Sht DDP-C1.2, a new bus turnout and shelter are proposed north of the existing signal that will replace the existing bus stop on the south side of this signal.

G. Screening of Mechanical Equipment. Commercial, mixed-use, institutional, and multi-family buildings shall include the following measures to screen or block views of mechanical equipment from adjacent streets according to the following requirements:

1. Rooftop mechanical equipment, including HVAC equipment and utility equipment that serves the structure, shall be screened from view from the adjacent street on all new buildings or building additions. Screening shall be accomplished through the use of parapet walls or a sight-obscuring enclosure around the equipment constructed of one of the primary materials used on the primary facades of the structure, and that is an integral part of the building's architectural design. The parapet or screen shall completely surround the rooftop mechanical equipment to an elevation equal to or greater than the highest portion of the rooftop mechanical equipment being screened from adjacent streets, as viewed from the sidewalk or future sidewalk location on the adjacent street at pedestrian level. In the event such parapet wall does not fully screen all rooftop equipment, then the rooftop equipment shall be enclosed by a screen constructed of one of the

primary materials used on the primary facade of the building so as to achieve complete screening. Screening requirements do not apply to new or replacement equipment on existing buildings. New or replacement rooftop mechanical equipment on existing buildings shall be painted or powder-coated.

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel.

2. Wall-mounted mechanical HVAC and air conditioning equipment, and groups of multiple utility meters shall not be placed on the front facade of a building or on a facade that faces a right-ofway. Wall-mounted mechanical equipment, including-air conditioning and groups of multiple utility meters, that extend six inches or more from the outer building wall shall be screened from view from adjacent streets; from residential, public, and institutional properties; and from public areas of the site or adjacent sites through the use of (a) sight-obscuring enclosures constructed of one of the primary materials used on the primary facade of the structure, (b) sight-obscuring fences, or (c) trees or shrubs that block at least eighty percent of the equipment from view or (d) painting the units to match the building. Wall-mounted mechanical equipment that extends six inches or less from the outer building wall shall be designed to blend in with the color and architectural design of the subject building. Vents which extend six inches or less from the outer building wall shall [be] exempt from this standard if painted.

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel.

3. Ground-mounted above-grade mechanical equipment shall be screened by ornamental fences, screening enclosures, trees, or shrubs that block at least eighty percent of the view from the public right of way.

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel.

4. This section shall not apply to the installation of solar energy panels, photovoltaic equipment, wind power generating equipment, dishes/antennas, pipes, vents, and chimneys.

Applicant's Response: As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel.

H. Building Materials.

1. Prohibited Materials. The following materials shall be prohibited in visible locations from the right-of-way or a public access easement unless an exception is granted by the Community Development Director based on the integration of the material into the overall design of the structure:

a. Vinyl or plywood siding (including T-111 or similar plywood).
b. Glass block or highly tinted, reflected, translucent or mirrored glass (except stained glass) as more than ten percent of the building facade.
c. Corrugated fiberglass.
d. Chain link fencing (except for temporary purposes such as a construction site, gates for a refuse enclosure, stormwater facilities, when excepted by 17.62.050.H.2.g, or when located on properties within the general industrial district).
e. Crushed colored rock/crushed tumbled glass.
f. Non-corrugated and highly reflective sheet metal.
g. Tarps, except for the protection of outside storage.

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel.

2. Special Material Standards. The following materials are allowed if they comply with the requirements found below:

a. Concrete Block. When used for the front façade of any building, concrete blocks shall be split, rock- or ground-faced and shall not be the prominent material of the elevation. Plain concrete block or plain concrete may be used as foundation material if the foundation material is not revealed more than three feet above the finished grade level adjacent to the foundation wall.
b. Metal Siding. Metal siding shall have visible corner moldings and trim and incorporate masonry or other similar durable/permanent material near the ground level (first two feet above ground level) except when used for a temporary structure.
c. Exterior insulation and finish system (EIFS) and similar troweled finishes shall be trimmed in wood, masonry, or other approved materials and shall be sheltered from extreme weather by roof overhangs or other methods.
d. Building surfaces shall be maintained in a clean condition and painted surfaces shall be maintained to prevent or repair peeling, blistered or cracking paint.
e. Membrane or fabric covered storage areas are permitted as temporary structures, excluding the use of tarps.
f. Vinyl or powder coated chain link fencing is permitted for City-owned stormwater management facilities, reservoirs, and other public works facilities such as pump stations, maintenance yards, and storage yards not located within the general industrial district.
g. Chain link fencing is permitted in the following circumstances:
1. Within City-owned parks and recreational facilities.
2. On any property when used for a baseball or softball backstop or dugout, track and field facility, or sports court.

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel.

I. Temporary Structures. Temporary structures are permitted pursuant to the following standards:

1. Structures up to two hundred square feet:

a. Shall not be on a property for more than three consecutive days;
b. Shall not be on a property more than six times per year;
c. Shall comply with the minimum dimensional standards of the zoning designation;
d. Shall be sited so as to leave the minimum number of parking spaces for the primary uses as required by OCMC 17.52 or as otherwise specified in a land use approval;
e. Shall not disturb ingress or egress to the site; and
f. Shall be exempt from all sections of OCMC 12.08, 16.12, 17.52 and 17.62 except subsections 17.62.050.I and J.

2. Temporary structures larger than two hundred square feet may be permitted up to two times per year; and:

a. Structures larger than two hundred square feet up to eight hundred square feet:
i. Shall not be on a property for more than thirty consecutive days;
ii. Shall comply with the minimum dimensional standards of the zoning designation;
iii. Shall be sited so as to leave the minimum number of parking spaces for the primary uses as required by OCMC 17.52 or as otherwise specified in a land use approval;
iv. Shall not disturb ingress or egress to the site; and
v. Shall be exempt from all sections of OCMC 12.08, 16.12, 17.52 and 17.62 except subsections 17.62.050.I and J.
b. Structures larger than eight hundred square feet:
i. Shall not be on a property for more than seven consecutive days;
ii. Shall comply with the minimum dimensional standards of the zoning designation;
iii. Shall be sited so as to leave the minimum number of parking spaces for the primary uses as required by OCMC 17.52 or as otherwise specified in a land use approval;
iv. Shall not disturb ingress or egress to the site; and
v. Shall be exempt from all sections of OCMC 12.08, 16.12, 17.52 and 17.62 except subsections 17.62.050.I and J.

3. Government owned properties are exempt from all sections of OCMC 12.08, 16.12, 17.52 and 17.62 except subsections 17.62.050.H and I and the dimensional standards of the zoning designation.

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel.

J. All new utilities shall be placed underground.

1. Service poles may be allowed on private property when undergrounding service is technically or physically infeasible.

Applicant's Response:
All new utilities are proposed to be placed underground. Overhead utility lines exist on the east side of Molalla Ave that will need to be relocated to accommodate the proposed bus turnout. However, given the nature of these lines, they are not proposed to be placed underground as doing so is broader utility issue beyond the scope of this project.

K. Development shall comply with requirements of the following Oregon City Municipal Code chapters, as applicable, including but not limited to:

1. Chapter 12.04, Streets, Sidewalks and Public Places.
2. Chapter 12.08, Public and Street Trees.
3. Chapter 13.04, Water Service System.
4. Chapter 13.08, Sewer Regulations.
5. Chapter 13.12, Stormwater Management.
6. Chapter 16.12, Minimum Improvements and Design Standards for Development.
7. Chapter 17.20, Residential Design Standards for ADU's, Cluster Housing, Internal Conversions, Live/Work Units, and Manufactured Home Parks.
8. Chapter 17.40, Historic Overlay District.
9. Chapter 17.41, Tree Protection Standards.
10. Chapter 17.42, Flood Management Overlay District.
11. Chapter 17.44, Geologic Hazards.
12. Chapter 17.47, Erosion and Sediment Control.
13. Chapter 17.48, Willamette River Greenway.
14. Chapter 17.49, Natural Resource Overlay District.
15. Chapter 17.50, Administration and Procedures.
16. Chapter 17.52, Off-Street Parking and Loading.
17. Chapter 17.54, Supplemental Zoning Regulations and Exceptions.
18. Chapter 17.58, Lawful Nonconforming Uses, Structures, and Lots.
19. Chapter 17.65, Master Plans and Planned Unit Development.

Applicant's Response:
The applicant acknowledges OCMC chapters applicable to this DDP application. OCMC 12.04, 12.08, 13.12, 16.12, 17.41, 17.44, 17.47, 17.49, 17.50, 17.52, 17.54, 17.65 as well as 17.62 are applicable to this land-use application submittal and are addressed with either this DDP application, the accompanying GDP application, or both. OCMC 13.04 and 13.08 are applicable to the ultimate construction of the site but are focused on construction standards and permitting requirements. These will be satisfied with applicable construction plan preparation/submittal. OCMC 17.20, 17.40, 17.42, 17.48, and 17.58 are not applicable to this masterplan application.

Not listed in the above criterion is OCMC 15.48, which addresses grading filling and excavating. This chapter focuses primarily on construction permitting requirements but has one provision requiring review during eh land-use process. Accordingly, this chapter is also included in this DDP application code response.

17.62.055 –Institutional, office, multi-family, retail, and commercial building standards.
A. Purpose. The primary objective of the regulations contained in this section is to provide a range of design choices that promote creative, functional, and cohesive development that is compatible with surrounding areas. Buildings approved in compliance with these standards are intended to serve multiple tenants over the life of the building and are not intended for a one-time occupant. The standards encourage people to spend time in the area, which also provides safety though informal surveillance. Finally, this section is intended to promote the design of an urban environment that is built to human scale by creating buildings and streets that are attractive to pedestrians, create a sense of enclosure, provide activity and interest at the intersection of the public and private spaces, while also accommodating vehicular movement.

B. Applicability. This section applies to institutional, office, multi-family, retail and commercial buildings except accessory structures less than one thousand square feet and temporary structures.

Applicant's Response:
The applicant acknowledges the applicability of this criterion.

C. Conflicts. With the exception of standards for building orientation and building front setbacks, in the event of a conflict between a design standard in this section and a standard or requirement contained in the underlying zoning district, the standard in the zoning district shall prevail.

Applicant's Response:
The applicant acknowledges the applicability of this criterion.

D. Siting of Structures. On sites with one hundred feet or more of frontage at least sixty percent of the site frontage width shall be occupied by buildings placed within five feet of the property line. For sites with less than one hundred feet of street frontage, at least fifty percent of the site frontage width shall be occupied by buildings placed within five feet of the property. Multi-family developments shall be placed no farther than twenty feet from the front property line. This section does not apply to properties with less than forty feet of frontage.

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel.

A larger front yard setback may be approved through site plan and design review if the setback area incorporates at least one element from the following list for every five feet of increased setback requested:

1. *Tables, benches or other approved seating area.*
2. *Cobbled, patterned or paved stone or enhanced concrete.*
3. *Pedestrian scale lighting.*
4. *Sculpture/public art.*
5. *Fountains/Water feature.*

6. At least twenty square feet of landscaping or planter boxes for each tenant facade fronting on the activity area.
7. Outdoor café.
8. Enhanced landscaping or additional landscaping.
9. Other elements, as approved by the Community Development Director, that can meet the intent of this section.

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel. However, the General Development Plan accompanying this DDP application includes representative layouts that satisfy this criterion, subject to individual parcel DDP approval. Please see the accompanying General Development Plan Sht GDP-C1.0, which shows enhanced areas for Parcels A and D buildings that will utilize at least one of the nine elements identified in this criterion for to mitigate increases in the allowable front yard setback. Specific elements use will be addressed with the Detailed Development Plan submittals for these parcels.

E. Building Orientation. All buildings along the street frontage shall face the front most architecturally significant façade toward the street and have a functional primary entrance facing the street. Primary building entrances shall be clearly defined and recessed or framed by a sheltering element such as an awning, arcade or portico in order to provide shelter from the summer sun and winter weather.

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel. However, the General Development Plan accompanying this DDP application includes representative layouts that satisfy this criterion with the "street" being the proposed public road, subject to individual parcel DDP approval.

F. Entryways. Entrances shall include a doorway and a minimum of four of the following elements:
1. Display windows; recesses or projections; peaked roof or raised parapet over the door; canopy of at least five feet in depth; porch; distinct materials; architectural details such as tile work and moldings; pedestrian amenities such as benches, planters or planter boxes; landscape treatments integrating arbors, low walls, trellis work; or similar elements. Trellises, canopies and fabric awnings may project up to five feet into front setbacks and public rights-of-way, provided that the base is not less than eight feet at the lowest point and no higher than ten feet above the sidewalk.

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel.

G. Corner Lots. For buildings located at the corner of intersections, the primary entrance of the building shall be located at the corner of the building or within twenty-five feet of the corner of the building. Additionally, one of the following treatments shall be required:

1. Incorporate prominent architectural elements, such as increased building height or massing, cupola, turrets, or pitched roof, at the corner of the building or within twenty-five feet of the corner of the building.

2. Chamfer the corner of the building (i.e. cut the corner at a forty-five degree angle and a minimum of ten feet from the corner) and incorporate extended weather protection (arcade or awning), special paving materials, street furnishings, or plantings in the chamfered area.

3. Standards 1 and 2 above do not apply to vertically attached 3—4 plexes, multi-family buildings or multi-family portions of residential mixed-use buildings.

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel.

H. Variation in Massing. For street facing facades greater than one hundred twenty feet in length a modulation is required which extends through all floors. Decks and roof overhangs may encroach up to three feet per side into the modulation. The modulation shall meet one of the following dimensional requirements:

1. A minimum depth of two percent of the length of the façade and a minimum width of thirty percent of the length of the façade; or

2. A minimum depth of four percent of the length of the façade and a minimum width of twenty percent of the length of the façade.

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel.

I. Building Design Elements.

1. All front and side facades shall provide a design element or architectural feature that add interest and detail such that there are no blank walls of thirty feet in length or more, measured horizontally. Features that can meet this requirement include:

a. Change in building material or texture;
b. Window or door;
c. Balcony; or
d. Pillar or post

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel.

2. Street facing facades shall include additional design features. For every thirty feet of façade length, three of the following elements are required:

a. Decorative materials on more than ten percent of the total wall area (e.g., brick or stonework, shingles, wainscoting, ornamentation, and similar features);
b. Decorative cornice and/or roof line (e.g., for flat roofs);
c. Roof gable;
d. Recessed entry;
e. Covered canopy entry;
f. Cupola or tower;
g. Dormer;
h. Balcony;
i. Pillars or posts;
j. Repeating pattern of building materials;
k. A change in plane of at least two feet in width and six inches in depth;
l. Bay or oriel window; or
m. An alternative feature providing visual relief and detail as approved by the Community Development Director

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel.

3. Building Detail Variation. Architectural features shall be varied on different buildings within the same development. At least two of the required features on each street-facing elevation shall be distinct from the street-facing elevations of other buildings within the same development.

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel.

J. Windows.

1. The minimum windows requirements are set forth in Table 17.62.055.J. Windows are measured in lineal fashion between 3.5 feet and six feet from the ground. For example, a one hundred foot long building elevation would be required to have at least sixty feet (sixty percent of one hundred feet) of windows in length between the height of 3.5 feet and six feet from the ground.

Table 17.62.055.J Minimum Windows

Use	***Ground Floor: Front and Street Facing Facades***	***Upper floor(s): Front and Street Facing Facades***	***Ground Floor: Side(s) Facades***	***Upper Floor(s): Side(s) Facades***
Non-Multi-Family (or Portions of Buildings Thereof)	*60%*	*10%*	*30%*	*10%*

Multi-Family (or Portions of Buildings Thereof)	*15%*	*15%*	*10%*	*10%*
Proposed:				

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel.

2. Reflective, glazed, mirrored or tinted glass is limited to ten percent of the lineal footage of windows on the street facing facade. Highly reflective or glare-producing glass with a reflective factor of one quarter or greater is prohibited on all building facades. Any glazing materials shall have a maximum fifteen percent outside visual light reflectivity value. No exception shall be made for reflective glass styles that appear transparent when internally illuminated.

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel.

3. Side walls that face walkways may include false windows and door openings only when actual doors and windows are not feasible because of the nature of the use of the interior use of the building. False windows located within twenty feet of a right-of-way shall be utilized as display windows with a minimum display depth of thirty-six inches.

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel.

4. Multi-family windows shall incorporate window trim at least four inches in width when surrounded by horizontal or vertical lap siding

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel.

K. Roof Treatments. The maximum length of any continuous roofline on a street-facing façade shall be seventy five feet without a cross gable or change in height of at least two feet.

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel.

L. Drive-through facilities shall:
1. Be located at the side or rear of the building.
2. Be designed to maximize queue storage on site.

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel. However, the General Development Plan accompanying this DDP application includes a representative layout for Parcel D that satisfies this criterion, subject to individual parcel DDP approval. Please see the accompanying General Development Plan Sht GDP-C1.0.

M. Special development standards along transit streets.
1. Purpose. This section is intended to provide direct and convenient pedestrian access to retail, office and institutional buildings from public sidewalks and transit facilities and to promote pedestrian and transit travel to commercial and institutional facilities.
2. Applicability. Except as otherwise provide in this section, the requirements of this section shall apply to the construction of new retail, office and institutional buildings which front on a transit street.
3. Development Standards.
a. All buildings shall have at least one main building entrance oriented towards the transit street. A main building entrance is oriented toward a transit street if it is directly located on the transit street, or if it is linked to the transit street by an on-site pedestrian walkway that does not cross off-street parking or maneuvering areas.
i. If the site has frontage on more than one transit street, or on a transit street and a street intersecting a transit street, the building shall provide one main building entrance oriented to the transit street or to the corner where the two streets intersect.
ii. For building facades over three hundred feet in length on a transit street, two or more main building entrances shall be provided as appropriate and oriented towards the transit street.
b. In the event a requirement of this section conflicts with other requirements in Title 17, the requirements of this section shall control.
4. Exemptions. The following permitted uses are exempted from meeting the requirements of subsection 3. of this section:
a. Heavy equipment sales;
b. Motor vehicle service stations, including convenience stores associated therewith; or
c. Solid waste transfer stations.

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel. However, the General Development Plan accompanying this DDP application includes a representative layout for Parcel D that satisfies this criterion, subject to individual parcel DDP approval. Please see the accompanying General Development Plan Sht GDP-C1.0.

17.62.056 - Additional standards for large retail establishments.
Retail building(s) occupying more than ten thousand gross square feet of floor area shall contribute to the establishment or enhancement of community and public spaces by providing at least two of the following:

A. Patio/seating area;
B. Pedestrian plaza with benches;
C. Transportation center;
D. Window shopping walkway;
E. Outdoor playground area;
F. Kiosk area, water feature;
G. Clock tower; or
H. Other such deliberately shaped area and/or a focal feature or amenity that, in the judgment of the appropriate decision maker, adequately enhances such community and public spaces. Any such areas shall have direct access to the public sidewalk network and such features shall not be constructed of materials that are inferior to the principle materials of the building and landscape.

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel.

17.62.057 - Multifamily Usable Open Space Requirements
A. Intent. Creating areas of usable open space that are easily accessed by residents provides focal points for community recreation and interaction and adds to the overall quality of life for residents. Given the environmental and recreational benefits of common open space, it should be integrated purposefully into the overall design of a development and not merely be residual areas left over after buildings and parking lots are sited.

B. Open Space Required. All new multi-family developments in all zones shall provide usable open space.
1. In residential zones, each development shall provide a minimum of one hundred square feet of open space per dwelling unit.

Applicant's Response:
The subject property is not located in a residential zone. Accordingly, this criterion is not applicable.

2. In non-residential, commercial and mixed-use zones, each development shall provide a minimum of fifty square feet of open space per dwelling unit.

Applicant's Response:
The subject property is located in the MUC-2 zone, resulting in the need for 50 sf of open space per unit. At 208 units, this equates to 10,400 sf of open space. While the Detailed Development Plan for Parcel B will be submitted separately from the current DDP application following a decision on the larger masterplan application, General Development Plan Sht GDP-C1.0 shows approximate open space anticipated to be provided by Parcel B. This includes over 12,000 sf of open space between the two northerly buildings (subject to Parcel B Detailed Development Plan submittal/approval) and over 20,000 sf of open space between the top of the slope and the geologic hazard setback line. A pedestrian pathway is proposed within this geologic hazard setback. Additionally, over 42,000 sf of forested open space lies on the east edge of Parcel B between the property boundary and the top of slope. Though subject to a future DDP process, Parcel B is expected to provide open space far in excess of the minimum required open space.

Note – OCMC 17.65.050.C.8.b identifies a larger open space requirement for master planned development (100 sf per residential unit). This results in an open space requirement of 20,800 square feet. The proposed open space will exceed the criteria identified in both 17.62.057.B.2 and 17.65.050.C.8.b.

3. Required setback areas shall not count toward the open space requirement unless setback areas are incorporated into spaces that meet all other requirements of this section.

Applicant's Response:
The Geologic Hazard setback area is not a setback required by the city. Instead, it is a setback recommended by the geotechnical engineer to protect against long-term slope stability concerns. Accordingly, it is not considered a building setback for the purpose of this section. However, even if the Geologic Hazard setback area is excluded from open space consideration (not likely, since the project is required to provide a pedestrian pathway), the steep slope area east of the top of slope is more than adequate to satisfy the open space requirements.

4. Required open space areas may be counted towards both the open space requirements and the minimum landscaping requirements in OCMC 17.62.050.A, if the spaces meet the requirements of both sections.

Applicant's Response:
While not expected to be necessary, the applicant acknowledges this criterion. Separate Detailed Development Plan applications will be submitted for each of the parcels at a future date and open space compliance will be part of those applications. Open space is not required for the proposed roadway and utility improvements/rough grading Detailed Development Plan application.

C. Usable Open Space Types.

1. Common open spaces shall be accessible to all residents of the development and include landscaped courtyards, decks, gardens with pathways, children's play areas, common rooftop

decks and terraces, and other multipurpose recreational or green spaces. Common open spaces may be used to meet one hundred percent of the usable open space requirement. Design standards:

a. Minimum dimensions for common open space shall be twelve feet with a minimum size of two hundred square feet for developments with twenty units or less, and twenty feet with a minimum size of four hundred square feet for developments with twenty-one or more units.

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel.

b. Common open space shall feature a mix of natural and recreational amenities to make the area more functional and enjoyable for a range of users. Sites with twenty units or less shall provide a minimum of two of the following amenities, and sites with twenty-one units or more shall provide a minimum of three of the following amenities and an additional amenity for every twenty units over forty, rounded up.

i. Landscaping areas.
ii. Community gardening areas.
iii. Large trees expected to reach over eighteen inches dbh at maturity.
iv. Seating.
v. Pedestrian-scaled lighting.
vi. Hard-surfaced pedestrian paths in addition to those required for internal pedestrian circulation.
vii. Paved courtyard or plaza.
viii. Gazebos or other decorative shelters.
ix. Play structures for children.
x. Sports courts.
xi. An alternative amenity as approved by the Community Development Director.

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel.

c. Common open space shall be separated from ground level windows, streets, service areas and parking lots with landscaping, low-level fencing, and/or other treatments as approved by the City that enhance safety and privacy for both the common open space and dwelling units.

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel.

d. Common open space shall be accessible from the dwelling units and, as appropriate, from public streets and sidewalks. The space shall be oriented to encourage activity from local residents.

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel.

2. Private open space that is not open to all residents includes balconies, patios, and other outdoor multi-purpose recreational or green spaces. It may be used to meet up to fifty percent of the usable open space requirement.

a. Minimum dimensions for private open space shall be five feet with a minimum size of forty square feet.

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel.

3. Indoor recreational space may be used to meet up to twenty-five percent of the usable open space requirement provided the space is:

a. Accessible to all dwelling units.

b. Designed for and includes equipment for a recreational use (e.g., exercise, group functions, etc.).

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel.

17.62.058 - Additional public park and open space requirements in Thimble Creek Concept Plan Area—Nonresidential development.

Applicant's Response:
The subject property is not located within the Thimble Creek concept plan area. Accordingly, these criteria are not applicable.

17.62.065 Outdoor lighting.

A. Purpose. The general purpose of this section is to require outdoor lighting that is adequate for safety and convenience; in scale with the activity to be illuminated and its surroundings; directed to the surface or activity to be illuminated; and designed to clearly render people and objects and contribute to a pleasant nighttime environment. Additional specific purposes are to:

1. Provide safety and personal security as well as convenience and utility in areas of public use or traverse, for uses where there is outdoor public activity during hours of darkness;

2. Control glare and excessive brightness to improve visual performance, allow better visibility with relatively less light, and protect residents from nuisance and discomfort;
3. Control trespass light onto neighboring properties to protect inhabitants from the consequences of stray light shining in inhabitants' eyes or onto neighboring properties;
4. Result in cost and energy savings to establishments by carefully directing light at the surface area or activity to be illuminated, using only the amount of light necessary; and
5. Control light pollution to minimize the negative effects of misdirected light and recapture views to the night sky.
6. Encourage energy efficient lighting with new technologies such as light emitting diodes (LED) or similar to reduce ongoing electrical demand and operating costs.

Applicant's Response:
The applicant acknowledges the purpose of this chapter. This DDP application includes street lighting for the proposed street improvements. Outdoor lighting for each of the parcels will be part of their separate DDP applications following the current masterplan process.

B. Applicability.
1. General.
a. All exterior lighting for any type of commercial, mixed-use, industrial, institutional, or multifamily development shall comply with the standards of this section, unless excepted in subsection B.3.
b. The City engineer or public works director shall have the authority to enforce these regulations on private property if any outdoor illumination is determined to present an immediate threat to the public health, safety and welfare.
2. Lighting Plan Requirement. All commercial, industrial, mixed-use, cottage housing and multi-family developments shall submit a proposed exterior lighting plan. The plan shall be submitted concurrently with the site plan. The exterior lighting plan shall include plans and specifications for streetlights, parking lot lights, and exterior building lights. The specifications shall include details of the pole, fixture height and design, lamp type, wattage, and spacing of lights.
3. Excepted Lighting. The following types of lighting are excepted from the requirements of this section:
a. Residential lighting for single-family attached and detached homes, and duplexes.
b. Public street and right-of-way lighting.
c. Temporary decorative seasonal lighting provided that individual lamps have a light output of sixty watts or less.
d. Temporary lighting for emergency or nighttime work and construction.
e. Temporary lighting for theatrical, television, and performance areas, or for special public events.
f. Lighting for a special district, street, or building that, according to an adopted municipal plan or ordinance, is determined to require special lighting aesthetics as part of its physical character.
g. Lighting required and regulated by the Federal Aviation Administration.

Applicant's Response:
The applicant acknowledges the applicability of this chapter. This DDP application includes street lighting for the proposed street improvements, which according to 17.62.065.B.3.b is exempt from these standards. Street lighting will be designed in conformance with Oregon City Public Works requirements. Outdoor lighting for each of the parcels will be part of their separate DDP applications following the current masterplan process.

C. Design and Illumination Standards.

1. Outdoor lighting, if provided, shall be provided in a manner that enhances security, is appropriate for the use, avoids adverse impacts on surrounding properties, and the night sky through appropriate shielding as defined in this section. Glare shall not cause illumination on other properties in excess of a measurement of 0.5 footcandles of light as measured at the property line.

2. Lighting shall be provided in parking lots and vehicular circulation areas.

3. Lighting shall be provided in pedestrian walkways, pedestrian plazas, and pedestrian circulation areas.

4. Lighting shall be provided at all building entrances.

5. With the exception of pedestrian scale lighting, all light sources shall be concealed or shielded with a full cut-off style fixture in order to minimize the potential for glare and unnecessary diffusion on adjacent property.

6. The maximum height of any lighting pole serving a multi-family residential use shall be twenty feet. The maximum height serving any other type of use shall be twenty-five feet, except in parking lots larger than five acres, the maximum height shall be thirty-five feet if the pole is located at least one hundred feet from any residential use.

7. Floodlights shall not be utilized to light all or any portion of a building facade between ten p.m. and six a.m.

8. Lighting on outdoor canopies shall be fully recessed into the canopy and shall not protrude downward beyond the ceiling of the canopy.

9. All outdoor light not necessary for security purposes shall be reduced, activated by motion sensor detectors, or turned off during non-operating hours.

10. Light fixtures used to illuminate flags, statues, or any other objects mounted on a pole, pedestal, or platform shall use a narrow cone beam of light that will not extend beyond the illuminated object.

11. For upward-directed architectural, landscape, and decorative lighting, direct light emissions shall not be visible above the building roofline.

12. No flickering or flashing lights shall be permitted, except for temporary decorative seasonal lighting.

13. Lighting for outdoor recreational uses such as ball fields, playing fields, tennis courts, and similar uses, are allowed a light post height up to eighty feet in height.

14. Main building entrances shall be well lighted and visible from any transit street. The minimum lighting level for building entries fronting on a transit street shall be three foot-candles.

Applicant's Response:
This DDP application includes street lighting for the proposed street improvements, which according to 17.62.065.B.3.b is exempt from these standards. Street lighting will be designed in conformance

with Oregon City Public Works requirements. Outdoor lighting for each of the parcels will be part of their separate DDP applications following the current masterplan process.

17.62.085 Refuse and recycling standards for commercial, industrial, office, institutional, and multi-family developments.

The purpose and intent of these provisions is to provide an efficient, safe and convenient refuse and recycling enclosure for the public as well as the local collection firm. All new development, change in property use, expansions, or exterior alterations to uses, other than single-family detached residential units, duplexes, triplexes, quadplexes, townhouses, cottage clusters or accessory dwelling units (ADUs), shall include a refuse and recycling enclosure. The area(s) shall be:

A. Fully enclosed and visually screened;
B. Located in a manner easily and safely accessible by collection vehicles;
C. Located in a manner so as not to hinder travel lanes, walkways, streets or adjacent properties;
D. On a level, hard surface designed to discharge surface water runoff and avoid ponding;
E. Maintained by the property owner;
F. Used only for purposes of storing solid waste and recyclable materials;
G. Designed in accordance with applicable sections of the Oregon City Municipal Code (including OCMC 8.20, Solid Waste Collection and Disposal) and City adopted policies.

Enclosures are encouraged to be sized appropriately to meet the needs of current and future tenants and designed with sturdy materials which are compatible to the primary structure(s).

Applicant's Response:
As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel.

17.62.090 Implementation.

A. Applications for site plan and design review shall be reviewed in the manner provided in OCMC 16.12 and 17.50. The building official may issue a certificate of occupancy only after the improvements required by site plan and design review approval have been completed, or a schedule for completion and a bond or other financial guarantee have been accepted by the City.

B. In performing site plan and design review, the review authority shall consider the effect of additional financial burdens imposed by such review on the cost and availability of needed housing types. Consideration of such factors shall not prevent the imposition of conditions of approval found necessary to meet the requirements of this section. The cost of such conditions of approval shall not unduly increase the cost of housing beyond the minimum necessary to achieve the provisions of this title, nor shall such cost prevent the construction of needed housing types.

C. The site plan and design review provisions of this chapter shall not be applied to reduce the density or height of an application for a development project that reserves at least seventy-five percent of the gross floor area for housing where the proposed density or height is at or below what is allowed in the base zone, except in the following situations:

1. Where the reduction in density is required for development subject to historic overlay provision in OCMC 17.40; or
2. Where the reduction in density is necessary to resolve a health, safety or habitability issue, or to comply with the natural resource overlay district regulations of OCMC 17.49, the geologic hazard overlay district regulations of OCMC 17.44, or the floodplain management overlay district regulations of OCMC 17.42 or steep slope regulations.

Applicant's Response:
The applicant acknowledges the provisions of this section. As noted above, this Detailed Development Plan application seeks DDP approval of the proposed street and utility improvements and rough grading of the site. Specific use/layout information will be included with the DDP applications for each parcel.

CHAPTER 17.65 MASTER PLANS AND PLANNED UNIT DEVELOPMENT

17.65.010 Purpose and intent.

It is the intent of this chapter to foster the growth of major institutions, phased residential, commercial or mixed-use development, and other large-scale development, while identifying and mitigating the impacts of such growth on surrounding properties and public infrastructure. The City recognizes the valuable housing options, services and/or employment opportunities that these developments bring to Oregon City residents. The master plan or planned unit development process is intended to facilitate an efficient and flexible review process for major developments, support innovative and creative land development, and to provide long-term assurance to plan for and execute developments in a phased manner. To facilitate this, the master plan process is structured to allow an applicant to address larger development issues, such as adequacy of infrastructure and transportation capacity, and reserve capacity of the infrastructure and transportation system before expenditure of final design costs. The master plan or planned unit development process is further intended to promote efficiency in land development, maintenance, street systems and utility networks while providing site layouts that integrate usable and attractive open spaces, site circulation, and the general wellbeing of site users. For the purposes of this chapter planned unit developments are considered the same as master plans.

Applicant's Response:
The applicant acknowledges the purpose and intent of the masterplan process and chooses to request General Development Plan approval for the overall property and Detailed Development Plan approval for the proposed street improvements and rough grading of the site. Detailed Development Plan approval for Parcels A, B & D will be sought separately from this application.

17.65.020 What is included in a master plan or planned unit development.

A. A master plan or planned unit development is a two-step process that includes a general development plan and a detailed development plan. A general development plan incorporates the entire area where development is planned for up to the next twenty years from the date of final approval, including the identification of one or more development phases. The general development plan may encompass land that is not currently under the applicant's control, but which eventually may be controlled by the applicant during the duration of the master plan. The plan shall have no effect for lands not currently controlled by the applicant. "Controlled" shall be defined as leased or owned by the applicant. A detailed development plan is the phase or phases of the general development plan that are proposed for development within two years.

B. A master plan or planned unit development identifies the current and proposed uses of the development, proposed project boundaries, and proposed public and private infrastructure needed to serve the development. If approved, the general development plan may be used to allow existing legal non-conforming uses. If conditions of approval from a previous land use decision have not been completed, they shall be modified through the general development plan or completed with new development.

C. A master plan or planned unit development identifies future development impacts, thresholds for mitigation and mitigation improvements and implementation schedules. A threshold for mitigation is the point that determines when or where a mitigation improvement will be required. Examples of "thresholds" include vehicle trips, square feet of impervious surface area, water usage measured in gallons per minute, construction of a building within a general development plan and construction of a building within a certain distance of a residential lot.

Mitigation improvements are necessary when a threshold for mitigation is reached. Examples include road dedication, intersection improvement, road widening, construction of a stormwater or water quality facility, installation of vegetative buffering and wetland restoration or enhancement.

Applicant's Response:
The applicant acknowledges the masterplan process.

17.65.030 - Applicability of the Master Plan or Planned Unit Development Regulations.
A. Required for Large Institutional Uses. If the boundaries of an institutional development exceed ten acres in size, the proposed development shall be master planned using the regulations of this chapter. No land use review other than a Type I or II Minor Site Plan and Design Review shall be issued for any institutional development in excess of ten acres in total acreage unless it is accompanied by or preceded by a master plan approval under this chapter. This requirement does not apply to modifications to existing institutional developments unless the modification results in a cumulative square footage increase of over ten thousand total building square feet in an existing institutional development over ten acres.

B. When Required as Part of Previous Land Use Review. The master plan or planned unit development regulations may be used to fulfill a condition of approval from a previous land use decision-requiring master planning for a development.

C. When identified in the Oregon City Comprehensive Plan. The master plan regulations are required for all properties identified for master planning in the land use section of the Oregon City Comprehensive Plan.

D. Voluntarily. An applicant may voluntarily submit a master plan or planned unit development as part of a land use review, including for residential projects.

Applicant's Response:
The applicant voluntarily requests General Development Plan approval for the overall property and Detailed Development Plan approval for the proposed street and utility main improvements and rough grading of the site. Detailed Development Plan approval for Parcels A, B & D will be sought separately from this application.

17.65.040 - Procedure.
A. Preapplication Review. Prior to filing for either general development plan or detailed development plan approval, the applicant shall file a pre-application conference pursuant to OCMC 17.50.030.

Applicant's Response:
A pre-application conference was held April 22, 2025.

B. General Development Plan. An application for a general development plan describing the long-term buildout of the site shall be reviewed through a Type III procedure. An applicant shall have an approved general development plan before any detailed development plan may be approved unless both are approved or amended concurrently. Amendments to an approved general development plan shall be reviewed under a Type III procedure pursuant to OCMC 17.65.080.

Applicant's Response:
An application for Masterplan General Development Plan and Detailed Development Plan, together with Lot Line Adjustment, Geologic Hazard Overlay, Conditional Use, Parking Adjustment, and Natural Resource (NROD) Review, was submitted June 27, 2025. The application was deemed incomplete on July 24, 2025. This land-use application package is submitted in response to the July 24, 2025 incomplete letter.

C. Detailed Development Plan. An application for a detailed development plan, is processed through a Type II procedure, as long as it is in conformance with the approved general development plan. Amendments to an approved detailed development plan shall be processed pursuant to OCMC 17.65.080. Once a development has an approved detailed development plan, OCMC 17.62 Site Plan and Design Review is not required.

Applicant's Response:
The applicant seeks Detailed Development Plan approval for the proposed street improvements and rough grading of the site. Detailed Development Plan approval for Parcels A, B & D will be sought separately from this application.

D. Concurrent Review. An applicant may concurrently apply for a general development plan and a detailed development plan. Such a concurrent application is reviewed through the highest procedure that applies to any element of the combined application.

Applicant's Response:
The applicant requests concurrent General Development Plan approval for the overall property and Detailed Development Plan approval for the proposed street and utility main improvements and rough grading of the site. Detailed Development Plan approval for Parcels A, B & D will be sought separately from this application.

E. Relationship to Other Reviews. It is the express policy of the City that development review not be segmented into discrete parts in a manner that precludes a comprehensive review of the entire development and its cumulative impacts.

Applicant's Response:
The applicant presents the enclosed application packages for comprehensive review of the entire development and its cumulative impacts.

F. Duration of General Development Plan. A general development plan shall involve a planning period of up to twenty years. An approved general development plan shall remain in effect until development allowed by the plan has been completed through the detailed development plan process, the plan is amended or superseded, or the plan expires under its stated expiration date either as stated in the approved master plan or planned unit development application or decision of approval.

Applicant's Response:
The applicant acknowledges the planning period of up to twenty years for the requested masterplan approval.

17.65.050 - General Development Plan.

A. Existing Conditions Submittal Requirements.

1. Narrative Statement. An applicant shall submit a narrative statement that describes the following:

a. Current uses of and development on the site;

b. For institutions, history or background information about the mission and operational characteristics of the institution that may be helpful in the evaluation of the general development plan, and information about current programs or services;

c. A vicinity map showing the location of the general development plan boundary relative to the larger community, along with affected major transportation routes, transit, and parking facilities. At least one copy of the vicinity map shall be eight and one-half inches by eleven inches in size, and black and white reproducible;

d. Land uses that surround the development site. This may also reference submitted maps, diagrams or photographs;

e. Previous land use approvals within the general development plan boundary and related conditions of approval, if applicable;

f. Existing utilization of the site;

g. Site description, including the following items. May also reference submitted maps, diagrams or photographs:

i. Physical characteristics;

ii. Ownership patterns;

iii. Building inventory;

iv. Vehicle/bicycle parking;

v. Landscaping/usable open space;

vi. FAR/lot coverage;

vii. Natural resources that appear on the City's adopted Goal 5 inventory;

viii. Cultural/historic resources that appear on the City's adopted Goal 5 inventory;

ix. Location of existing trees six inches in diameter or greater when measured four feet above the ground. The location of single trees shall be shown. Trees within groves may be clustered together rather than shown individually; and

x. Geologic hazards pursuant to OCMC 17.44.

h. Existing transportation analysis, including the following items. May also reference submitted maps, diagrams or photographs.

i. Existing transportation facilities, including highways, local streets and street classifications, and pedestrian and bicycle access points and ways;

ii. Transit routes, facilities and availability;
iii. Alternative modes utilization, including shuttle buses and carpool programs; and
iv. Baseline parking demand and supply study (may be appended to application or waived if not applicable).

i. Infrastructure facilities and capacity, including the following items:
i. Water;
ii. Sanitary sewer;
iii. Stormwater management; and
iv. Easements.

Applicant's Response:
Please see the narrative included with this application which addresses the above narrative requirements. The narrative includes references to various reports and project plan sheets.

2. Maps and Plans.

a. Existing conditions site plan. Drawn at a minimum scale of one-inch equals one hundred feet (one inch equals one hundred feet) that shows the following items. At least one copy shall be eight and one-half inches x eleven inches in size, and black and white reproducible.
i. Date, north point, and scale of drawing.
ii. Identification of the drawing as an existing conditions site plan.
iii. Proposed development boundary.
iv. All parking, circulation, loading and service areas, including locations of all carpool, vanpool and bicycle parking spaces as required in Chapter 52 of this title.
v. Contour lines at two-foot contour intervals for grades zero to ten percent, and five-foot intervals for grades over ten percent.

b. A site plan or plans, to scale, for the general development plan site and surrounding properties containing the required information identified in OCMC 17.62.040.b, Vicinity map. Depicting the location of the site sufficient to define its location, including identification of nearest cross streets. At least one copy of the vicinity map shall be eight and one-half inches by eleven inches in size, and black and white reproducible.

c. Aerial photo. Depicting the subject site and property within two hundred fifty feet of the proposed development boundaries. At least one copy of the aerial photo shall be eight and one half inches by eleven in size, and black and white reproducible.

Applicant's Response:
Please see the existing conditions plan and proposed General Development Plan maps accompanying this application.

B. Proposed Development Submittal Requirements.

1. Narrative statement. An applicant shall submit a narrative statement that describes the following:

a. The proposed duration of the general development plan.

b. The proposed development boundary. May also reference submitted maps or diagrams.

c. A description, approximate location, and timing of each proposed phase of development, and a statement specifying the phase or phases for which approval is sought under the current application. May also reference submitted maps or diagrams.
d. An explanation of how the proposed development is consistent with the purposes of Section 17.65, the applicable zone district or districts, and any applicable overlay district.
e. A statement describing the impacts of the proposed development on inventoried Goal 5 natural, historic or cultural resources within the development boundary or within two hundred fifty feet of the proposed development boundary.
f. An analysis of the impacts of the proposed development on the surrounding community and neighborhood, including:
i. Transportation impacts as prescribed in subsection g below;
ii. Internal parking and circulation impacts and connectivity to sites adjacent to the development boundary and public right-of-ways within two hundred fifty feet of the development boundary;
iii. Public facilities impacts (sanitary sewer, water and stormwater management) both within the development boundary and on City-wide systems; including a phasing plan for all onsite and off-site public improvements, including but not limited to transportation, schools, parks, open space, trails, sewer, water and stormwater, with an analysis off the capacity and improvements required as a result of fully implementing the plan. This analysis shall reference any adopted parks and recreation, public facilities plans and concept plans and identify specific funding mechanisms to address the adequacy of public facilities.
iv. Neighborhood livability impacts;
v. Natural, cultural and historical resource impacts within the development boundary and within two hundred fifty feet of the development boundary.
g. A summary statement describing the anticipated transportation impacts of the proposed development. This summary shall include a general description of the impact of the entire development on the local street and road network, and shall specify the maximum projected average daily trips, projected AM and PM peak hour traffic and the maximum parking demand associated with build-out each phase of the master plan or planned unit development.
h. In addition to the summary statement of anticipated transportation impacts, an applicant shall provide a traffic impact study as specified by City requirements. The transportation impact study shall either:
i. Address the impacts of the development of the site consistent with all phases of the general development plan; or
ii. Address the impacts of specific phases if the City engineer determines that the traffic impacts of the full development can be adequately evaluated without specifically addressing subsequent phases.
i. If an applicant chooses to pursue option h.1., the applicant may choose among three options for implementing required transportation capacity and safety improvements:
i. The general development plan may include a phasing plan for the proposed interior circulation system and for all on-site and off-site transportation capacity and safety improvements required on the existing street system as a result of fully implementing

the plan. If this option is selected, the transportation phasing plan shall be binding on the applicant.
ii. The applicant may choose to immediately implement all required transportation safety and capacity improvements associated with the fully executed general development plan. If this option is selected, no further transportation improvements will be required from the applicant. However, if a general development plan is later amended in a manner so as to cause the projected average daily trips, the projected a.m. or p.m. peak hour trips, or the peak parking demand of the development to increase over original projections, an additional transportation impact report shall be required to be submitted during the detailed development plan review process for all future phases of the development project and additional improvements may be required.
iii. The applicant may defer implementation of any and all capacity and safety improvements required for any phase until that phase of the development reaches the detailed development plan stage. If this option is selected, the applicant shall submit a table linking required transportation improvements to vehicle trip thresholds for each development phase.

j. For residential and mixed-use projects:
i. Proposed minimum lot area, width, frontage and yard requirements.
ii. Proposed project density in number of units per acre.
iii. Proposed residential types and number of each.

Applicant's Response:
Please see the narrative included with this application which addresses the above narrative requirements. The narrative includes references to various reports and project plan sheets.

2. Maps and Diagrams. The applicant shall submit, in the form of scaled maps or diagrams, as appropriate, the following information:

a. A preliminary site circulation plan showing the approximate location of proposed vehicular, bicycle, and pedestrian access points and circulation patterns, parking and loading areas or, in the alternative, proposed criteria for the location of such facilities to be determined during detailed development plan review.
b. The approximate location of all proposed streets, alleys, other public ways, sidewalks, bicycle and pedestrian access ways and other bicycle and pedestrian ways, transit streets and facilities, neighborhood activity centers and easements on and within two hundred fifty feet of the site. The map shall identify existing subdivisions and development and un-subdivided or unpartitioned land ownerships adjacent to the proposed development site and show how existing streets, alleys, sidewalks, bike routes, pedestrian/bicycle access ways and utilities within two hundred fifty feet may be extended to and/or through the proposed development.
c. The approximate location of all public facilities to serve the proposed development, including water, sanitary sewer, stormwater management facilities.
d. The approximate location, footprint and building square footage of buildings within of each phase of proposed development, and/or proposed lot patterns for each phase of future development.
e. The approximate locations of proposed parks, playgrounds or other outdoor play areas; outdoor common areas and usable open spaces; and natural, historic and cultural resource areas or

features proposed for preservation. This information shall include identification of areas proposed to be dedicated or otherwise preserved for public use and those open areas to be maintained and controlled by the owners of the property and their successors in interest for private use.

Applicant's Response:
Please see the proposed General Development Plan maps accompanying this application.

C. Approval Criteria for a General Development Plan. The Planning Commission may approve an application for general development plan only upon finding that the following approval criteria are met.

1. The proposed General Development Plan is consistent with the purposes of OCMC 17.65.

Applicant's Response:
The proposed General Development Plan identifies the proposed uses and street patterns of the subject property which has been vacant for nearly twenty-five years. The proposed development will include mixed uses comprised of multi-family residential, retail, and restaurant uses with various adjustments requested born out of the site's geometry and need for a public roadway through the site. The proposed masterplan will be developed in phases, with Phase 1 being the public street and utility improvements together with rough grading of the site. Parcels A, B, and D include retail, multi-family residential, and restaurant uses and will be constructed based on market demand following their individual Detailed Development Plan approval processes. Construction of the individual parcel uses may be concurrent with each other or may be separate. The master plan process is useful for implementing such a development plan by promoting efficiency in the overall development process and infrastructure needed to support the entire development.

2. Development shall demonstrate compliance with OCMC 12.04 16.12, 17.62, if applicable, and 16.08, if applicable.

Applicant's Response:
Compliance with OCMC 12.04, 16.12, 17.62, and 16.08 is demonstrated in our Masterplan Detailed Development Plan code responses. Please see our accompanying DDP application/code responses.

3. Public services for transportation, water supply, police, fire, sanitary waste disposal, storm-water disposal, and any other needed public services and facilities including schools and parks for proposed residential uses, are capable of serving the proposed development, or will be made capable by the time each phase of the development is completed.

Applicant's Response:
The proposed masterplan development will construct the necessary public roadway and utility improvements associated with the proposed development plan, including roadway and bike facilities, pedestrian improvements, traffic signal improvements, storm sewer, sanitary sewer, water, and dry utilities. When Parcel B submits its Detailed Development Plan, residential open space will be further described.

4. The proposed General Development Plan protects any inventoried Goal 5 natural, historic or cultural resources within the proposed development boundary consistent with the provisions of applicable overlay districts.

Applicant's Response:
The proposed development is adjacent to and overlooks the Newel Creek Canyon, an inventoried Goal 5 natural resource within the city of Oregon City. The property's eastern edge is included in a geologic hazard overlay and a geotechnical report addressing development, including slope stability, is included with this application. The geotechnical analysis recommends a 35-ft setback from the top of bank overlooking Newell Creek Canyon, as well as specific retaining wall recommendations which mitigate the geologic hazard. Additionally, the project's overall stormwater discharge location lies within a Natural Resource Overlay District (NROD) which also drains through the Newell Creek Canyon. The project minimizes impacts to the NROD buffer due to the required public street connection to Beavercreek Rd and mitigates the impact that it does have. The project's stormwater facilities provide both water quality and detention treatment to reduce impacts to the downstream drainage through Newell Creek Canyon. Please see our specific code responses to the Geologic Hazard and NROD code sections included with this application.

5. The proposed General Development Plan, including development standards and impact mitigation thresholds and improvements, adequately mitigates identified impacts from each phase of development. For needed housing, as defined in ORS 197.303(1), the development standards and mitigation thresholds shall contain clear and objective standards.

Applicant's Response:
Oregon City's 2021 Housing Needs Analysis identified the need for 7,435 new dwelling units over the next 20 years. The proposed multi-family residential component of the General Development Plan helps the city achieve their goal of providing more housing. The proposed roadway and signal improvements, together with cost participation in the city's planned Beavercreek Road/Hwy 213 improvements, will mitigate the project's development impact. The roadway and utility improvements are proposed to be constructed with the initial phase of development, with the uses generating the actual impact to follow, thereby providing impact mitigation before the proposed demand.

6. The proposed general development plan is consistent with the Oregon City Comprehensive Plan.

Applicant's Response:
As described in our response to OCMC 17.56.010.A.5, the proposed General Development Plan is consistent with the Oregon City Comprehensive Plan. Please see our response to OCMC 17.56.010.A.5 for the Parcel D drive-through conditional use. The overall General Development Plan provides similar compliance with our responses to OCMC 17.56.010.A.5.

7. The proposed general development plan is consistent with the underlying zoning district(s) and any applicable overlay zone or concept plans.

Applicant's Response:
The proposed General Development Plan is consistent with the underlying MUC-2 zone, Geologic Hazard Overlay, and Natural Resource Overlay District as identified and described in this application and associated code responses and supporting documents.

8. For projects with a residential use component, the proposed general development plan includes common open space for the recreational needs of the development's residents.

a. Required open space shall be located either on-site or off-site within one-quarter mile of the development.

Applicant's Response:
Required open space for the Parcel B multi-family component of the General Development Plan is proposed to be located on-site. While Parcel B's Detailed Development Plan will provide detail on the proposed open space, the proposed open space area is shown on the General Development Plan Sht GDP-C1.0.

b. Minimum required open space shall be 100 square feet per residential unit in the development.

Applicant's Response:
The proposed Parcel B multi-family component of the General Development Plan includes 208 units, resulting in a required open space of 20,800 sf at 100 sf per unit. As shown on General Development Plan Sht GDP-C1.0, Parcel B includes over 12,000 sf of open space between the two northerly buildings (subject to Parcel B Detailed Development Plan submittal/approval) and over 20,000 sf of open space between the top of the slope and the geologic hazard setback line. A pedestrian pathway is proposed within this geologic hazard setback. Additionally, over 42,000 sf of forested open space lies on the east edge of Parcel B between the property boundary and the top of slope. Parcel B provides open space far in excess of the minimum required open space.

Note – OCMC 17.62.057.B.2 identifies a smaller open space requirement for mixed-use zones of 50 square feet per residential unit. This results in an open space requirement of 10,400 square feet. The proposed open space will exceed the criteria identified in both 17.65.050.C.8.b and 17.62.057.B.2.

c. The open space area may be in private ownership or proposed for public dedication, at the City's discretion whether to accept.

Applicant's Response:
The Parcel B open space is currently planned for private ownership.

d. The open space shall be developed with a unified design to provide for a mix of passive and active uses. Passive uses include, but are not limited to sitting benches, picnicking, reading, bird watching and natural areas. Active uses include, but are not limited to playgrounds, sports fields and courts, running and walking areas.

Applicant's Response:
General Development Plan Sht GDP-C1.0 identifies active open space between the two northerly buildings, and the Geologic Hazard setback area contains a pedestrian pathway. Portions of the Geologic Hazard setback area will be planted with NROD mitigation plantings. The steep slope open space area on the east edge of Parcel B is intended to remain in its natural state.

> *e. Land area to be used for the open space area that is required in this section shall not include required setback areas, required landscaping, streets, rights-of-way, driveways, or parking spaces.*

Applicant's Response:
The Geologic Hazard setback area is not a setback required by the city. Instead, it is a setback recommended by the geotechnical engineer to protect against long-term slope stability concerns. Accordingly, it is not considered a building setback for the purpose of this section. However, even if the Geologic Hazard setback area is excluded from open space consideration (not likely, since the project is required to provide a pedestrian pathway), the steep slope area east of the top of slope is more than adequate to satisfy the open space requirements.

> *f. Unless dedicated to the public, the applicant shall also provide an irrevocable legal mechanism for the maintenance of the open space and any related landscaping and facilities. The applicant shall submit, for City review and approval, all proposed deed restrictions or other legal instruments used to reserve open space and maintenance of open space and any related landscaping and facilities.*

Applicant's Response:
Development of Parcel B will be described in more detail with a separate Detailed Development Plan application. Maintenance of the required open space will be addressed with Parcel B's Detailed Development Plan.

> *9. For projects with a residential use component, the proposed general development plan includes a mix of residential uses such that no single residential use exceeds seventy-five percent of the total proposed units. The mix of residential uses shall provide variety of dwelling types and sizes that are integrated throughout the site, rather than isolated from one another, with smooth transitions between residential types including appropriate setbacks, landscaping or screening as necessary, while maintaining street and pedestrian connectivity between all residential uses. Tenancy (i.e. ownership versus rental) shall not be a consideration in determination of the mix of residential use. For the purposes of this section, residential uses include single-family detached, duplex, triplex, quadplex, townhouse, cottage cluster, and multi-family.*

Applicant's Response:
Development of Parcel B will be described in more detail with a separate Detailed Development Plan application. The multi-family units for Parcel B will include a mixture of unit sizes/configurations consistent with this code section.

17.65.060 - Detailed development plan.

A. Submittal Requirements.

1. A transportation impact study documenting the on- and off-site transportation impacts, as specified in OCMC 17.65.050.B.1.h.i. If such an analysis was submitted as part of the general development plan process, the scope of the report may be limited to any changes which have occurred during the interim and any information listed below which was not a part of the initial study.

The on-site portion of the analysis shall include the location, dimensions and names of all proposed streets, alleys, other public ways, sidewalks, bike routes and bikeways, pedestrian/bicycle access ways and other pedestrian and bicycle ways, transit streets and facilities, neighborhood activity centers, and easements on and within two hundred fifty feet of the boundaries of the site. The map shall identify existing subdivisions and development and un-subdivided or unpartitioned land ownerships adjacent to the proposed development site and show how existing streets, alleys, sidewalks, bike routes, pedestrian/bicycle access ways and utilities within two hundred fifty feet may be extended to and/or through the proposed development.

2. The location within the development and in the adjoining streets of existing and proposed sewers, water mains, culverts, drain pipes, underground electric, cable television and telephone distribution lines, gas lines, and the location of existing aerial electric, telephone and television cable lines, if any, to be relocated within the development.

3. For portions of the project that would otherwise be subject to site plan and design review, a site plan or plans, to scale, containing the required information identified in OCMC 17.62.040.

4. For residential portions of the project not otherwise subject to site plan and design review, a site plan or plans, to scale, showing the proposed land uses and densities, building locations, lot patterns, circulation patterns, and open space locations and uses.

5. Any other information the Community Development Director deems necessary to show that the proposed development will comply with all of the applicable Chapter 17 requirements.

B. Approval Criteria. The Community Development Director shall approve an application for detailed development plan approval only upon findings that:

1. All development standards and impact mitigation meet the requirements of the approved general development plan, including conditions of approval.
2. Any other applicable zoning regulations that are not addressed in the general development plan are met, unless an adjustment to those regulations has been applied for and is approved. The approval standards applicable to adjustments required as part of a master plan or planned unit development are contained in OCMC 17.65.070.
3. The detailed development plan conforms with the base zone standards, applicable residential design standards, and applicable standards contained in Chapters 17.62, 17.52, 16.12, and 16.08 unless adjusted as provided in OCMC 17.65.070

Applicant's Response:
Please see our separate response to the Detailed Development Plan submittal for the proposed street and utility improvements and site rough grading.

17.65.070 - Adjustments to development standards.
A. Purpose. In order to implement the purpose of the City's master plan or planned unit development process, which is to foster the growth of major institutions, major residential, commercial or mixed-use development, and other large-scale development, while identifying and mitigating their impacts on surrounding properties and public infrastructure, an applicant may request one or more adjustments to the applicable development regulations as part of the master planning or planned unit development process, and are not required to go through the variance process pursuant to OCMC Chapter 17.60.

B. Procedure. Requests for adjustments shall be processed concurrently with a general development plan. An adjustment request at the detailed development plan review shall cause the detailed development plan to be reviewed as a Type III application.

Applicant's Response:
The applicant acknowledges the adjustment standards of this section.

C. Regulations That May be Adjusted. Adjustments may be allowed for the following items:

1. Dimensional standards of the underlying zone of up to twenty percent, except the perimeter of the development shall meet the underlying zone's setbacks when adjacent to residentially zoned property.
2. Site plan and design standards.
3. Residential design standards.
4. Increase in allowed maximum residential density of up to ten percent.
5. Standards for land division approval.
6. Additional uses allowed with residential projects, or residential component of projects:
a. Notwithstanding the use provisions of the underlying zones, neighborhood commercial uses as defined in Chapter 17.24.020, including restaurants and eating and drinking establishments without a drive-through, retail trade, and services, are permitted on up to ten percent of the net developable area. The neighborhood commercial uses shall be planned and constructed so as to support and be compatible with the entire development and shall not alter the character of the surrounding area so as to substantially preclude, impair or limit the use of surrounding properties for the primary uses listed in the underlying district.
b. Public or private parks and playgrounds, community buildings and/or outdoor recreational facilities, such as swimming pools and tennis courts.
c. Indoor recreational facilities, such as racquetball or tennis courts, fitness centers or swimming pools.
d. Common public and private open space including trails.
e. Primary or accessory uses that are not identified as a permitted or conditional use in the underlying zone but which are defined in the code.

Applicant's Response:
The applicant acknowledges the above regulations that may be adjusted via the masterplan process. The General Development Plan application seeks adjustment to the maximum parking standards as described in our responses to OCMC 17.52.015.

D. Regulations That May Not be Adjusted. Adjustments are prohibited for the following items:

1. To allow a primary or accessory use that is not identified as a permitted, or conditional use in the underlying zone, with the exception of the additional uses permitted under OCMC 17.65.070.C.6 above;

2. To any regulation that contains the word "prohibited";

3. As an exception to a threshold review, such as a Type III review process; and

4. Minimum density for residential sites may not be reduced.

Applicant's Response:
The proposed masterplan General development Plan and Detailed Development Plan submittals do not seek any of the above prohibited adjustments.

E. Approval Criteria. A request for an adjustment to one or more applicable development regulations under this section shall be approved if the review body finds that the applicant has shown the following criteria to be met.

1. Granting the adjustment will equally or better meet the purpose of the regulation to be modified;

Applicant's Response:
Please see our responses to maximum parking adjustment for Parcels A and D in OCMC 17.52.015

2. If more than one adjustment is being requested, the cumulative effect of the adjustments results in a project that is still consistent with the overall purpose of the zone;

Applicant's Response:
Please see our responses to maximum parking adjustment for Parcels A and D in OCMC 17.52.015

3. City-designated Goal 5 resources are protected to the extent otherwise required by Title 17;

Applicant's Response:
Please see our responses to maximum parking adjustment for Parcels A and D in OCMC 17.52.015

4. Any impacts resulting from the adjustment are mitigated such that the development does not create significant adverse impacts on adjacent properties;

Applicant's Response:
Please see our responses to maximum parking adjustment for Parcels A and D in OCMC 17.52.015. Denying the adjustment for maximum parking on Parcels A and D could result in customers from those uses taking up parking spaces from the adjacent Parcel D multi-family development or from

existing commercial and residential uses north of the site. Approval of the maximum parking adjustment request is not expected to have adverse impacts on adjacent properties.

5. If an environmental zone, the proposal has as few significant detrimental environmental impacts on the resource and resource values as is practicable; and

Applicant's Response:
Please see our responses to maximum parking adjustment for Parcels A and D in OCMC 17.52.015. the uses subject to the maximum parking adjustment are not located in an environmental zone.

6. The proposed adjustment is consistent with the Oregon City Comprehensive Plan and a concept plan if applicable.

Applicant's Response:
Please see our responses to maximum parking adjustment for Parcels A and D in OCMC 17.52.015. The requested maximum parking adjustment is consistent with the Comprehensive Plan. The Comprehensive Plan Goals were discussed in our response to OCMC 17.56.010.A.5 (our Conditional Use Approval request). The maximum parking request has similar responses to Comprehensive Plan goals as does the Conditional Use response.

17.65.80 - Amendments to approved plans.
A. When Required. An amendment to an approved general development plan or detailed development plan is required for any use or development that is not in conformance with the applicable plan, as provided below. The approval criteria contained in OCMC 17.65.050 will apply to general development plan amendments, the approval criteria contained in OCMC 17.65.060 will apply to detailed development plan amendments. The thresholds and procedures for amendments are stated below.

Applicant's Response:
The applicant acknowledges the amendment procedures identified in the section.

B. Type III Procedure. Unless the approved general development plan or detailed development plan specifically provides differently, amendments to either plan that require a Type III procedure are:
1. A proposed expansion of the approved boundary;
2. A proposed reduction in the approved boundary that affects a condition of approval, or takes the site out of conformance, or further out of conformance, with a development standard;
3. Proposals that increase the amount, frequency, or scale of a use over ten percent of what was approved (examples include the number of students, patients or members; the number of helicopter flights; the number or size of special events; transportation impacts);
4. New uses not covered in the plan that will increase vehicle trips to the site greater than ten percent of the original amount approved;
5. Increases or decreases in overall floor area of development on the site or number of residential units of over ten percent;
6. A increase/decrease greater than ten percent in the amount of approved or required parking; and

7. Proposed uses or development which were reviewed, but were denied because they were found not to be in conformance with an approved plan.

Applicant's Response:
The applicant acknowledges the amendment procedures identified in the section.

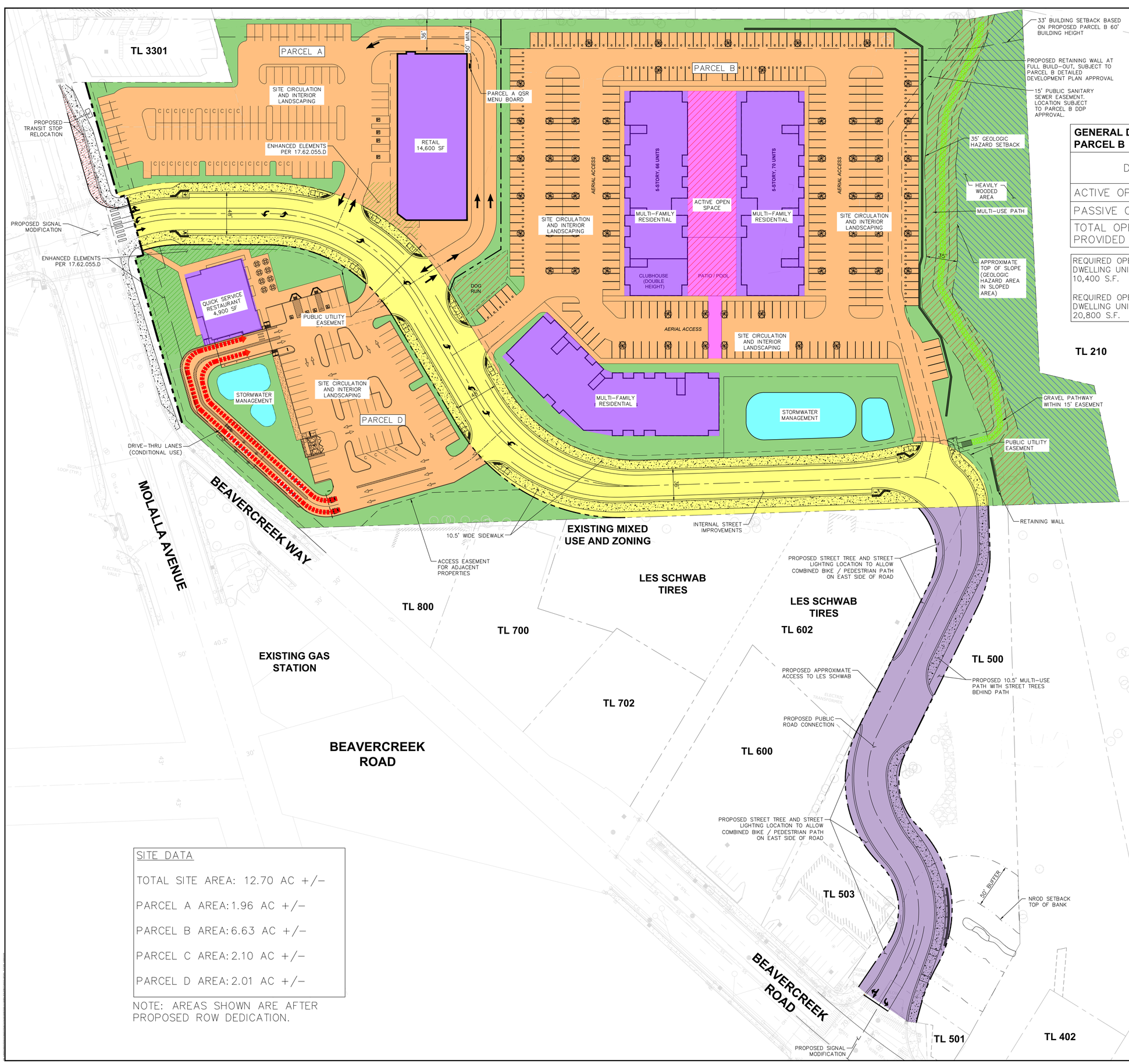
C. Type II Procedure. Unless an approved plan specifically provides otherwise, amendments to a general development plan or detailed development plan not specifically stated in subsection B or D are processed through a Type II procedure.
D. Type I Procedure. Unless an approved plan specifically provides otherwise, the following amendments to a general development plan or detailed development plan shall be processed through a Type I procedure:

1. Accessory uses and structures that meet applicable development regulations;
2. Reconfiguration of approved parking or landscape designs that do not alter the points of ingress or egress, and do not change the number of parking spaces required, so long as the reconfiguration meets applicable development regulations; and
3. Structures for approved uses that do not exceed one thousand five hundred square feet in size and that meet applicable development regulations

Applicant's Response:
The applicant acknowledges the amendment procedures identified in the section.

17.65.090 - Regulations that apply.
An applicant is entitled to rely on land use regulations in effect on the date its general development plan application was initially submitted, pursuant to ORS 227.178(3), as that statute may be amended from time to time. After a general development plan is approved, and so long as that general development plan is in effect, an applicant is entitled to rely on the land use regulations in effect on the date its general development plan application was initially submitted, as provided above, when seeking approval of detailed development plans that implement an approved general development plan. At its option, an applicant may request that a detailed development plan be subject to the land use regulations in effect on the date its detailed development plan is initially submitted.

Applicant's Response:
Application for masterplan approval was made June 27, 2025, and notice of incomplete application was provided July 24, 2025. The applicant intends to resubmit the application materials addressing those items in the incomplete letter within the statutory 180-days to remain vested under the rules in place when the initial application was submitted.



GENERAL DEVELOPMENT PLAN OPEN SPACE - PARCEL B

DESCRIPTION	AREA (SF)	HATCH
ACTIVE OPEN SPACE	35,036	
PASSIVE OPEN SPACE	42,572	
TOTAL OPEN SPACE PROVIDED	77,608	

REQUIRED OPEN SPACE PER 17.62.057.B.2 = 50 S.F. / DWELLING UNIT. AT 208 UNITS, REQUIRED OPEN SPACE IS 10,400 S.F.

REQUIRED OPEN SPACE PER 17.65.050.C.8.b = 100 S.F. / DWELLING UNIT. AT 208 UNITS, REQUIRED OPEN SPACE IS 20,800 S.F.

PHASING

PHASE 1 – MOLALLA AVENUE IMPROVEMENTS, PROPOSED PUBLIC ROAD (AND ASSOCIATED UTILITIES AND EXTENDING TO BEAVERCREEK ROAD), OVERALL SITE ROUGH GRADING, AND PROPOSED STORMWATER MANAGEMENT FACILITY. PHASE 1 DETAILED DEVELOPMENT PLAN IS SUBMITTED CONCURRENTLY WITH THIS GENERAL DEVELOPMENT PLAN.

PHASE 2 – PARCEL D SITE AND UTILITY IMPROVEMENTS, INCLUDING THE PARCEL D STORMWATER MANAGEMENT FACILITY.

PHASE 3 – PARCEL B SITE AND UTILITY IMPROVEMENTS, INCLUDING EXTENSION OF SANITARY SEWER TO NORTHEAST CORNER OF SITE.

PHASE 4 – PARCEL A SITE AND UTILITY IMPROVEMENTS.

PHASES 2–4 ARE MARKET DRIVEN AND CAN BE CONSTRUCTED CONCURRENTLY OR SEPARATELY WITH OTHER PHASES.

PARCELS A, B, AND D LAYOUTS ARE SHOWN SCHEMATICALLY. PARCELS A, B, AND D WILL EACH SUBMIT THEIR OWN DETAILED DEVELOPMENT PLAN FOLLOWING GENERAL DEVELOPMENT PLAN APPROVAL.

GENERAL DEVELOPMENT PLAN DECISIONS:

1. OVERALL GENERAL DEVELOPMENT PLAN APPROVAL
2. CONDITIONAL USE APPROVAL FOR DRIVE-THROUGH FACILITIES ON BOTH PARCELS A AND D
3. MAXIMUM PARKING ADJUSTMENT

SITE DATA

TOTAL SITE AREA: 12.70 AC +/-

PARCEL A AREA: 1.96 AC +/-

PARCEL B AREA: 6.63 AC +/-

PARCEL C AREA: 2.10 AC +/-

PARCEL D AREA: 2.01 AC +/-

NOTE: AREAS SHOWN ARE AFTER PROPOSED ROW DEDICATION.

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture, and Geology, D.P.C.
10135 SE Sunnyside Road Suite 200
Clackamas, OR 97015
T: 503.659.9500 www.langan.com

CLIENT/OWNER

CYPRESS EQUITIES

PROJECT NAME

OREGON CITY MIXED USE GENERAL DEVELOPMENT PLAN

LANGAN PROJECT NUMBER: 794-002-701

PROJECT ADDRESS

1367 MOLALLA AVENUE
OREGON CITY, OR 97045

STAMP

REVISIONS

REV	ISSUED FOR:	DATE
0	GDP SUBMITTAL	11/14/2025
1	GDP SUBMITTAL	12/09/2025
2	GDP SUBMITTAL	03/02/2026

SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

GENERAL DEVELOPMENT PLAN

SHEET NUMBER

GDP-C1.0

APPENDIX E
General Development Plans

Detailed Development Plans

March 2, 2026

CYPRESS EQUITIES OREGON CITY MIXED USE MASTERPLAN - GENERAL DEVELOPMENT PLAN

1367 MOLALLA AVENUE
OREGON CITY, OR 97045



VICNITY MAP

NTS



LOCATION MAP

NTS

PROPERTY DESCRIPTION

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON

VERTICAL BENCHMARK

VERTICAL DATUM IS BASED ON THE CITY OF OREGON CITY BENCHMARK, A BRASS DISK LOCATED BY THE FLAG POLE IN FRONT OF THE OREGON CITY POLICE BUILDING, 320 WARNER MILNE ROAD, ELEVATION 447.729' (NGVD 1929) AND BENCHMARK 0030, A BRASS DISK STAMPED "DAVID EVANS AND ASSOCIATES, INC. GPS STA. LIBRARY 1990".
ELEVATION = 452.739'.

SURVEY MONUMENT PROTECTION

EXISTING SURVEY MONUMENT ARE TO BE PROTECTED DURING CONSTRUCTION OR REPLACED IN ACCORDANCE WITH OREGON REVISED STATUTES 209.140 – 209.155.

GENERAL NOTES

1. ALL WORK AND MATERIALS SHALL COMPLY WITH ALL OREGON CITY REGULATIONS AND CODES AND O.S.H.A. STANDARDS, INCLUDING BUT NOT LIMITED TO THE CURRENT OREGON CITY ROAD DESIGN AND CONSTRUCTION STANDARDS, CLEAN WATER SERVICES DESIGN AND CONSTRUCTION STANDARDS, THE OREGON TRANSPORTATION COMMISSION STANDARDS FOR ACCESSIBLE PARKING DATED AUGUST 2018, AND THE APWA STANDARDS WHICH ARE HEREBY REFERENCED AS PART OF THESE PLANS.

2. THE DESIGN SHOWN IS BASED UPON THE ENGINEER'S UNDERSTANDING OF THE EXISTING CONDITIONS. THE PLAN DOES NOT REPRESENT A DETAILED FIELD SURVEY. THE EXISTING CONDITIONS SHOWN ON THIS PLAN SHEET ARE BASED UPON THE ALTA SURVEY PREPARED BY CES | NW, DATED JULY 9, 2012. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING FIELD CONDITIONS PRIOR TO BIDDING THE PROPOSED SITEWORK IMPROVEMENTS. IF CONFLICTS ARE DISCOVERED, THE CONTRACTOR SHALL NOTIFY THE OWNER/DEVELOPER PRIOR TO INSTALLATION OF ANY PORTION OF THE SITEWORK WHICH WOULD BE AFFECTED. IF CONTRACTOR DOES NOT ACCEPT EXISTING SURVEY, INCLUDING TOPOGRAPHY AS SHOWN ON THE PLANS, WITHOUT EXCEPTION, HE SHALL HAVE MADE, AT HIS OWN EXPENSE, A TOPOGRAPHIC SURVEY BY A REGISTERED LAND SURVEYOR AND SUBMIT IT TO THE OWNER FOR REVIEW.

3. CAUTION – NOTICE TO CONTRACTOR
THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 48 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.

4. IN THE EVENT OF CONFLICTS BETWEEN THE VARIOUS PROVISIONS OF THIS PLAN SET, THE MORE STRINGENT PROVISION APPLY.

5. ATTENTION: OREGON LAW REQUIRES YOU TO FOLLOW RULES ADOPTED BY THE OREGON UTILITY NOTIFICATION CENTER. THOSE RULES ARE SET FORTH IN OAR 952-001-0001 (ADOPTION OF MODEL RULES) THROUGH 952-001-0100 (RECORD KEEPING REQUIREMENTS). YOU MAY OBTAIN COPIES OF THE RULES BY CALLING THE CENTER.
NOTES: THE TELEPHONE NUMBER FOR THE OREGON UTILITY NOTIFICATION CENTER IS (503) 232-1987.

6. A ROAD CLOSURE WILL NO BE PERMITTED WITHOUT A SEPARATE ROAD CLOSURE PERMIT THROUGH WASHINGTON COUNTY TRAFFIC ENGINEERING.

7. THE CONTRACTOR, AT THE TIME OF MEETING WITH COUNTY INSPECTION STAFF FOR A PRE-CONSTRUCTION MEETING, SHALL PROVIDE THEIR WORK TRAFFIC CONTROL PLAN.

8. ACCOMMODATE ALL ROAD USERS AT ALL TIMES INCLUDING MOTORISTS, BICYCLISTS, PEDESTRIANS, AND THOSE WITH DISABILITIES OR IMPAIRMENTS. INSTALL AND MAINTAIN ADDITIONAL TEMPORARY SIGNING AND TRAFFIC CONTROL DEVICES FOR THE CONTROL OF NON-MOTORIZED VEHICLES AND PEDESTRIANS WHERE A REASONABLE VOLUME OF THESE USERS ARE EXPECTED AND WHERE WORK IS EXPECTED TO LAST LONGER THAN ONE HOUR. MAINTAIN SAFE ACCESSIBILITY OR PROVIDE SUITABLE ALTERNATE ROUTES IN, THROUGH, OR AROUND WORK AREAS.

9. ESTABLISH AND MAINTAIN WORK ZONE TRAFFIC CONTROL IN COMPLIANCE WITH THE OREGON TEMPORARY TRAFFIC CONTROL HANDBOOK FOR OPERATIONS OF THREE DAYS OR LESS (DECEMBER 2011) ANY TIME VEHICLE OR PEDESTRIAN TRAFFIC IS INFLUENCED BY THE WORK. FOR WORK REQUIRING DEVICES IN PLACE LONGER THAN THREE (3) DAYS, A SITE SPECIFIC TRAFFIC CONTROL PLAN BASED ON THE PRINCIPLES IN PART 6 OF THE MUTCD, THE OREGON SUPPLEMENT AND ODOT'S 2015 STANDARD DRAWINGS TM800 –TM871, IS REQUIRED. ALL TRAFFIC CONTROL DEVICES SHALL MEET OR EXCEED THE NCHRP 350 REQUIREMENTS FOR CRASHWORTHINESS. COMPLETED SIGNAL SHUT DOWN REQUESTS MUST BE RECEIVED BY THE COUNTY A MINIMUM OF 3 WORKING DAYS PRIOR TO ANY PROPOSED SIGNAL SHUT DOWN.

SHEET INDEX

GDP-C0.0	CIVIL COVER SHEET
GDP-C1.0	GENERAL DEVELOPMENT PLAN
GDP-EX-FAR	FLOOR AREA RATIO EXHIBIT

EXISTING CONDITIONS PLANS

ALTA / BOUNDARY SURVEY SHEETS:

1	BOUNDARY SURVEY
2	TITLE EXCEPTIONS
3	TOPOGRAPHIC SURVEY
4	STORM AND SANITARY SEWER
5	TREE SURVEY

OFF-SITE TOPOGRAPHIC SURVEY SHEETS:

1	TOPOGRAPHIC SURVEY
2	TREE SURVEY
3	EASEMENTS

PROJECT CONTACTS

CONSULTANTS

CIVIL ENGINEER:
LANGAN ENGINEERING
10135 SE SUNNYSIDE RD., SUITE 200
CLACKAMAS, OR 97015
(503) 680-0029
CONTACT: SCOTT FRANKLIN, PE

SURVEYOR
CES | NW
15115 SW SEQUOIA PARKWAY, SUITE 150
TIGARD, OR 97224
(503) 684-0652
CONTACT: RYAN GODSEY

LANDSCAPE ARCHITECT
LANGAN ENGINEERING
18575 JAMBOREE ROAD, SUITE 150
IRVINE, CA 92612
(949) 255-8640
CONTACT: ANNA ILAO

CULTURAL RESOURCES
LANGAN ENGINEERING
104 W ANAPAMU STREET, SUITE 204B
SANTA BARBARA, CA 93101
(805) 957-6013
CONTACT: HEATHER MCDANIEL MCDEVITT

WETLANDS
LANGAN ENGINEERING
104 W ANAPAMU STREET, SUITE 204B
SANTA BARBARA, CA 93101
(805) 957-6034
CONTACT: STEVEN NEUMANN

APPLICANT/DEVELOPER

CYPRESS ACQUISITIONS, LLC
8144 WALNUT HILL LANE, SUITE 1200
DALLAS, TX 75231
(214) 561-8838
CONTACT: KIRK WILLIAMS

GOVERNING AGENCY

OREGON CITY PUBLIC WORKS DEPARTMENT
13895 FIR STREET
OREGON CITY, OR 97045
(503) 204-4631
CONTACT: ERIK NICHOLS

TRAFFIC

TRANSPO GROUP
12131 113TH AVENUE NE, SUITE 203
KIRKLAND, WA 98034
(425) 896-5208
CONTACT: MIKE SWENSON PE, PTOE
KASSI LEINGANG PE

Know what's **below.**
Call before you dig.

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture, and Geology, D.P.C.
10135 SE Sunnyside Road Suite 200
Clackamas, OR 97015
T: 503.659.9500 www.langan.com

CLIENT/OWNER

CYPRESS EQUITIES

PROJECT NAME

OREGON CITY MIXED USE GENERAL DEVELOPMENT PLAN

LANGAN PROJECT NUMBER: 794-002-701

PROJECT ADDRESS

1367 MOLALLA AVENUE
OREGON CITY, OR 97045

STAMP

REVISIONS

REV	ISSUED FOR:	DATE
0	GDP SUBMITTAL	11/14/2025
1	GDP SUBMITTAL	12/09/2025
2	GDP SUBMITTAL	03/02/2026

SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

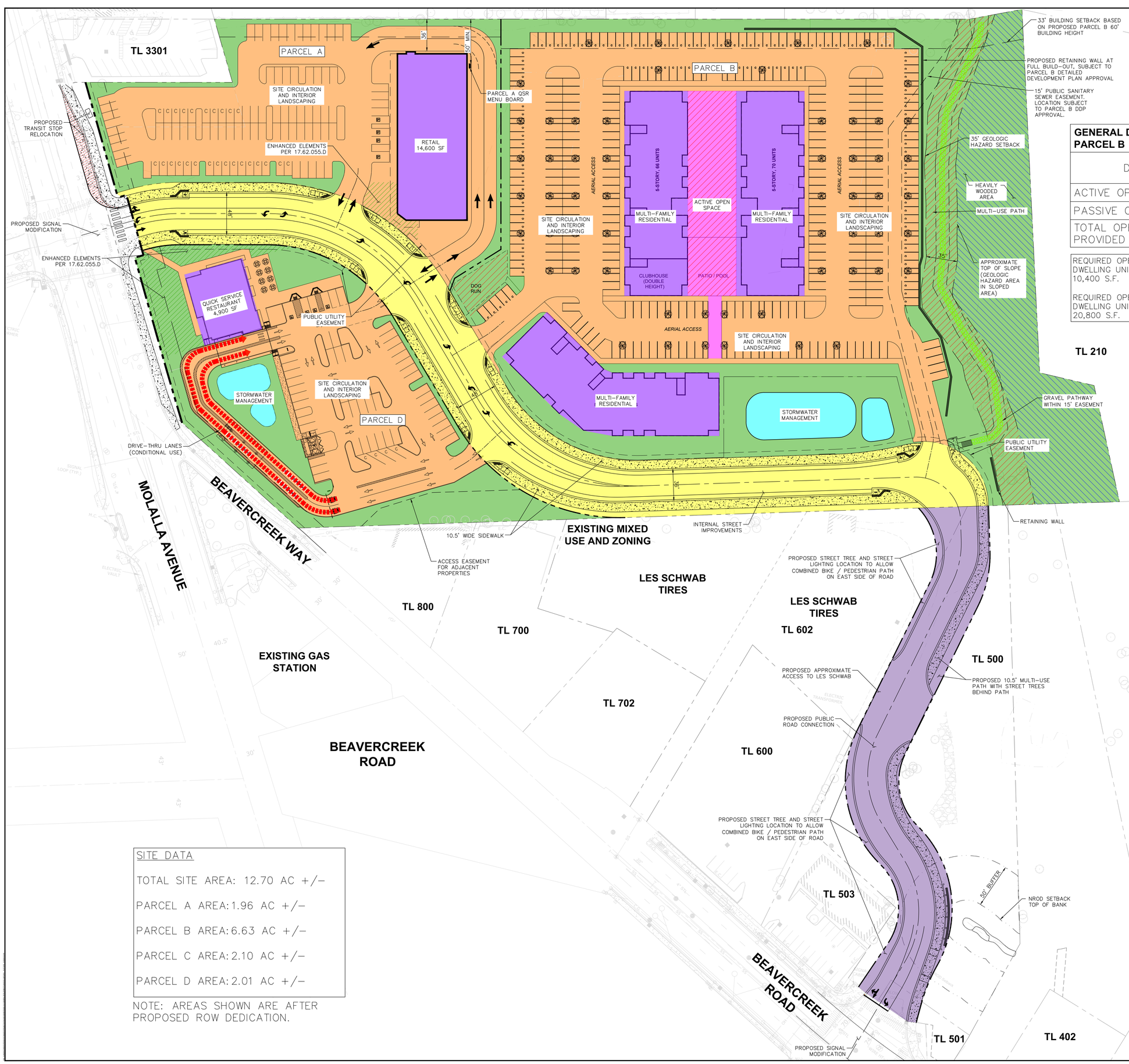
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

CIVIL COVER SHEET

SHEET NUMBER

GDP-C0.0



GENERAL DEVELOPMENT PLAN OPEN SPACE - PARCEL B

DESCRIPTION	AREA (SF)	HATCH
ACTIVE OPEN SPACE	35,036	
PASSIVE OPEN SPACE	42,572	
TOTAL OPEN SPACE PROVIDED	77,608	

REQUIRED OPEN SPACE PER 17.62.057.B.2 = 50 S.F. / DWELLING UNIT. AT 208 UNITS, REQUIRED OPEN SPACE IS 10,400 S.F.

REQUIRED OPEN SPACE PER 17.65.050.C.8.b = 100 S.F. / DWELLING UNIT. AT 208 UNITS, REQUIRED OPEN SPACE IS 20,800 S.F.

PHASING

PHASE 1 – MOLALLA AVENUE IMPROVEMENTS, PROPOSED PUBLIC ROAD (AND ASSOCIATED UTILITIES AND EXTENDING TO BEAVERCREEK ROAD), OVERALL SITE ROUGH GRADING, AND PROPOSED STORMWATER MANAGEMENT FACILITY. PHASE 1 DETAILED DEVELOPMENT PLAN IS SUBMITTED CONCURRENTLY WITH THIS GENERAL DEVELOPMENT PLAN.

PHASE 2 – PARCEL D SITE AND UTILITY IMPROVEMENTS, INCLUDING THE PARCEL D STORMWATER MANAGEMENT FACILITY.

PHASE 3 – PARCEL B SITE AND UTILITY IMPROVEMENTS, INCLUDING EXTENSION OF SANITARY SEWER TO NORTHEAST CORNER OF SITE.

PHASE 4 – PARCEL A SITE AND UTILITY IMPROVEMENTS.

PHASES 2–4 ARE MARKET DRIVEN AND CAN BE CONSTRUCTED CONCURRENTLY OR SEPARATELY WITH OTHER PHASES.

PARCELS A, B, AND D LAYOUTS ARE SHOWN SCHEMATICALLY. PARCELS A, B, AND D WILL EACH SUBMIT THEIR OWN DETAILED DEVELOPMENT PLAN FOLLOWING GENERAL DEVELOPMENT PLAN APPROVAL.

GENERAL DEVELOPMENT PLAN DECISIONS:

1. OVERALL GENERAL DEVELOPMENT PLAN APPROVAL
2. CONDITIONAL USE APPROVAL FOR DRIVE-THROUGH FACILITIES ON BOTH PARCELS A AND D
3. MAXIMUM PARKING ADJUSTMENT

SITE DATA

TOTAL SITE AREA: 12.70 AC +/-

PARCEL A AREA: 1.96 AC +/-

PARCEL B AREA: 6.63 AC +/-

PARCEL C AREA: 2.10 AC +/-

PARCEL D AREA: 2.01 AC +/-

NOTE: AREAS SHOWN ARE AFTER PROPOSED ROW DEDICATION.

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Clackamas, OR 97015
T: 503.659.9500 www.langan.com

CLIENT/OWNER

CYPRESS EQUITIES

PROJECT NAME

OREGON CITY MIXED USE GENERAL DEVELOPMENT PLAN

LANGAN PROJECT NUMBER: 794-002-701

PROJECT ADDRESS

1367 MOLALLA AVENUE
OREGON CITY, OR 97045

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SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

GENERAL DEVELOPMENT PLAN

SHEET NUMBER

GDP-C1.0

HILLTOP AVENUE

TL 2300

TL 2400
ZONE R-2

TL 2500

TL 2600

TL 2700

TL 2800

TL 2900

ZONE R-10

TL 3000

TL 3100

TL 3301

20' BUILDING SETBACK (BASED ON PROPOSED BUILDING HEIGHT)

33' BUILDING SETBACK (BASED ON PROPOSED BUILDING HEIGHT)

NO-BUILD EASEMENT

PARCEL A
RETAIL
14,600 SF

SANITARY SEWER EASEMENT

PARCEL B
MULTI-FAMILY
RESIDENTIAL
230,800 SF

OPEN SPACE

STEEP SLOPES

PROPOSED PUBLIC RIGHT OF WAY

ROW DEDICATION

TL 210

PARCEL D
QSR
4,900 SF

STORMWATER MANAGEMENT

ACCESS EASEMENT TO ADJACENT PROPERTIES SOUTH OF SUBJECT PROPERTY

MOLALLA AVENUE

BEAVERCREEK WAY

EXISTING MIXED USE AND ZONING

LES SCHWAB TIRES

TL 800

TL 700

LES SCHWAB TIRES

TL 602

TL 500

EXISTING GAS STATION

TL 702

TL 600

BEAVERCREEK ROAD

PROPOSED PUBLIC RIGHT OF WAY

AREA LEGEND

DESCRIPTION	AREA (SF)
TOTAL SITE AREA	560,272
STEEP SLOPES	42,745
GEOLOGIC HAZARD SETBACK	20,111
NO-BUILD EASEMENT	8,245
ROW DEDICATION	6,878
ROW / PUBLIC STORM FACILITY	98,275
SETBACKS / PUE	36,360
SANITARY SEWER EASEMENT	6,729
NET DEVELOPABLE AREA	340,929
BUILDING AREA	250,300
FAR (BLDG/NET)	0.73

NOTE: MINIMUM MULTI-FAMILY TOTAL BUILDING SIZE (INCLUDING ALL STORIES) = 66,844 S.F. IN ORDER TO ACHIEVE MINIMUM 0.25 FAR

0 20 40 80
SCALE: 1 inch = 40 ft.

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SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

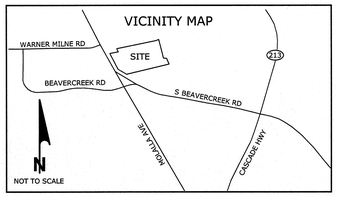
FLOOR AREA RATIO EXHIBIT

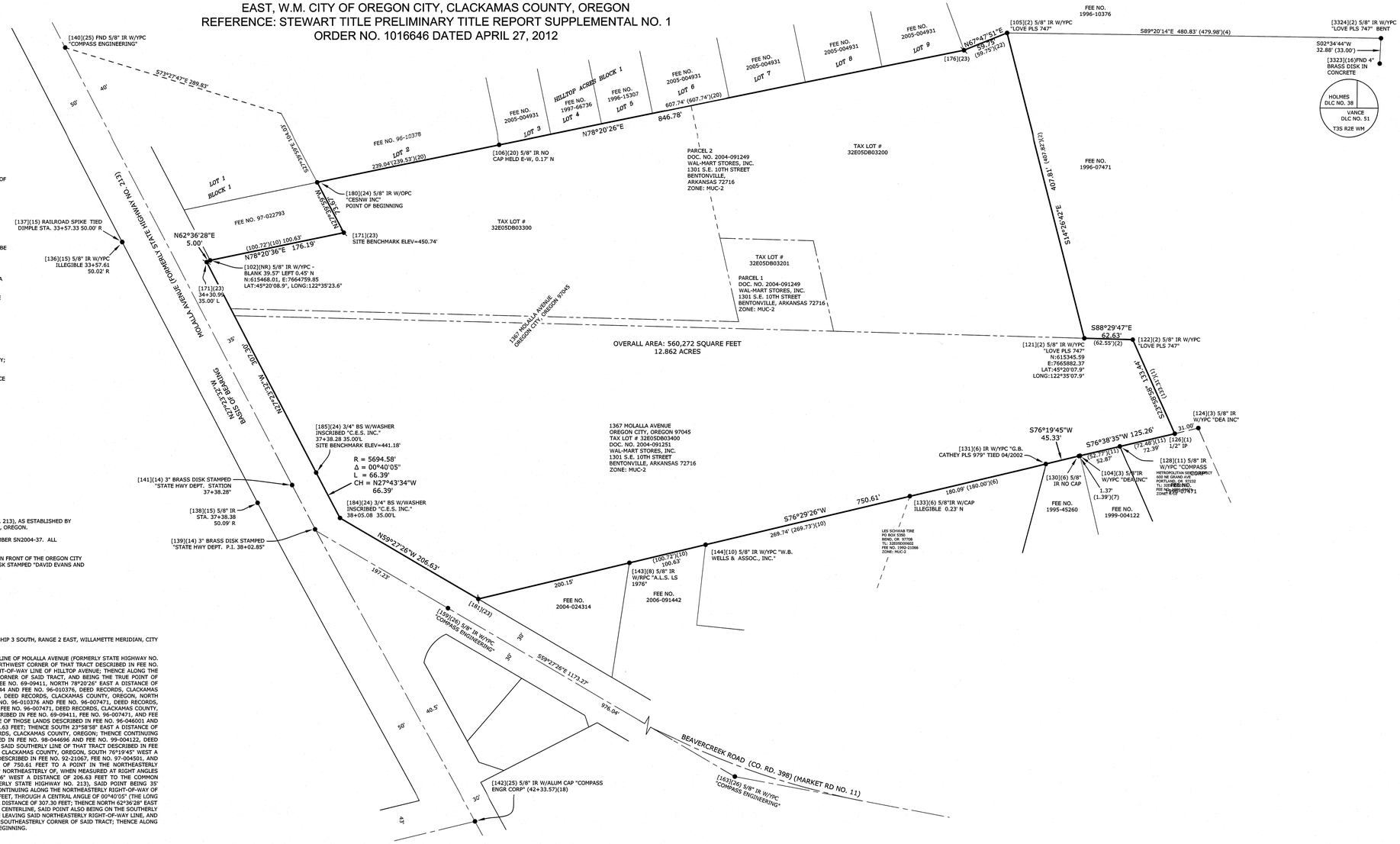
SHEET NUMBER

GDP-EX-FAR

ALTA/ACSM SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON
REFERENCE: STEWART TITLE PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 1
ORDER NO. 1016646 DATED APRIL 27, 2012





CERTIFICATION FOR SURVEY

1. THE SURVEY WAS MADE ON THE GROUND DURING APRIL AND MAY OF 2012, AND CORRECTLY SHOWS THE AREA OF THE SUBJECT PROPERTY, THE LOCATION AND TYPE OF ALL BUILDINGS, STRUCTURES AND OTHER IMPROVEMENTS SITUATED ON THE SUBJECT PROPERTY.

2. EXCEPT AS SHOWN ON THE SURVEY, THERE ARE NO OBSERVABLE, ABOVE GROUND ENCROACHMENTS BY THE IMPROVEMENTS ON THE SUBJECT PROPERTY UPON ADJOINING PROPERTIES, STREETS OR ALLEYS, OR BY THE IMPROVEMENTS ON ADJOINING PROPERTIES, STREETS OR ALLEYS UPON THE SUBJECT PROPERTY.

3. THE LOCATION OF EACH EASEMENT, RIGHT OF WAY, SERVITUDE, AND OTHER MATTER AFFECTING THE SUBJECT PROPERTY AND LISTED IN STEWART TITLE COMPANY, PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 1, ORDER NUMBER 1016646, DATED APRIL 27, 2012, WITH RESPECT TO THE SUBJECT PROPERTY, HAS BEEN SHOWN ON THE SURVEY, TOGETHER WITH THE APPROPRIATE RECORDING REFERENCES, TO THE EXTENT THAT SUCH MATTERS CAN BE LOCATED. THE PROPERTY SHOWN ON THE SURVEY IS THE PROPERTY DESCRIBED IN THAT TITLE REPORT.

4. THE SUBJECT PROPERTY HAS ACCESS TO AND FROM DULY DEDICATED AND ACCEPTED PUBLIC STREETS.

5. THE MEASURED BEARINGS AND DISTANCES SHOWN HEREON FORMS A MATHEMATICALLY CLOSED FIGURE WITH A MINIMUM LATITUDE AND DEPARTURE CLOSURE ERROR OF 1 IN 50,000.

6.THIS SITE LIES WITHIN WITHIN THE LIMITS OF FEMA MAP NUMBER 41005C0279D, WHICH IS NOT PRINTED SINCE THE ENTIRE MAP IS IN ZONE 'X' AS REITERATED ON FEMA MAP NUMBER 41005C1ND0A, EFFECTIVE DATE: JUNE 17, 2008.

7.SUBJECT PROPERTY IS ZONED, MUC-2 "MIXED USE CORRIDOR"

8. NO ORTHOPHOTOGRAPHY, PHOTOGRAMMETRIC MAPPING, LASER SCANNING, OR SIMILAR PRODUCTS WERE UTILIZED IN THE PREPARATION OF THIS SURVEY.

I HEREBY CERTIFY TO PACLAND; WAL-MART STORES, INC., A DELAWARE CORPORATION; WAL-MART REAL ESTATE BUSINESS TRUST, A DELAWARE STATUTORY TRUST; WAL-MART TRS, LLC, A DELAWARE LIMITED LIABILITY COMPANY; STEWART TITLE GUARANTY COMPANY;

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2011 "MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS", JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 1-6, 7(a), 7(b)(1), 7(c), 8, 9, 10(a), 11(b), 13, 14, 15-19, 20(a), 21 AND 22 OF TABLE 'A' THEREOF. THE FIELD WORK WAS COMPLETED ON JULY 9, 2012.

CES/NW MAKES NO WARRANTIES AS TO MATTER OF UNWRITTEN TITLE SUCH AS ACQUIESCENCE, ESTOPPEL, ADVERSE POSSESSION, ETC.

RYAN H. GODSEY
PROFESSIONAL LAND SURVEYOR
REGISTRATION NO.(OR) 65604

NARRATIVE

THE BASIS OF BEARINGS IS THE MONUMENTED CENTERLINE OF MOLALLA AVENUE (FORMERLY STATE HIGHWAY NO. 213), AS ESTABLISHED BY MONUMENTS NO. 140 AND NO. 139 AS SHOWN HEREON PER SN 2010-176, SURVEY RECORDS, CLACKAMAS COUNTY, OREGON.

THE PURPOSE OF THIS SURVEY IS TO RETRACE THE BOUNDARIES AS SHOWN ON CLACKAMAS COUNTY SURVEY NUMBER SN2004-37. ALL MONUMENTS SHOWN WERE VISITED IN THE PROCESS OF THIS RETRACEMENT.

VERTICAL DATUM IS BASED ON A CITY OF OREGON CITY BENCHMARK, A BRASS DISK LOCATED BY THE FLAG POLE IN FRONT OF THE OREGON CITY POLICE BUILDING, 320 WARNER MILNE RD, ELEVATION 447.729' (NGVD 1929) AND BENCHMARK 0030, A BRASS DISK STAMPED "DAVID EVANS AND ASSOCIATES, INC. GPS STA. LIBRARY 1990" ELEVATION = 452.739'

LEGAL DESCRIPTION PER TITLE REPORT

A TRACT OF LAND SITUATED IN THE SOUTHWEST QUARTER AND THE SOUTHEAST QUARTER OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, WILLAMETTE MERIDIAN, CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON, SAID TRACT IS MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT A THREE INCH BRASS DISK SET BY THE OREGON STATE HIGHWAY DEPARTMENT IN THE CENTERLINE OF MOLALLA AVENUE (FORMERLY STATE HIGHWAY NO. 213) AT ENGINEER'S STATION 31+00; THENCE SOUTH 73°27'47" EAST A DISTANCE OF 289.83 FEET TO THE NORTHWEST CORNER OF THAT TRACT DESCRIBED IN FEE NO. 96-010378, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SAID POINT ALSO BEING ON THE SOUTHERLY RIGHT-OF-WAY LINE OF HILLTOP AVENUE; THENCE ALONG THE WESTERLY LINE OF SAID TRACT, SOUTH 27°39'59" EAST A DISTANCE OF 104.03 FEET TO THE SOUTHWEST CORNER OF SAID TRACT, AND BEING THE TRUE POINT OF BEGINNING; THENCE ALONG THE NORTHERLY LINE OF THOSE TRACTS DESCRIBED IN FEE NO. 72-08888 AND FEE NO. 69-09411, NORTH 78°20'26" EAST A DISTANCE OF 846.78 FEET TO THE COMMON CORNER OF THOSE LANDS DESCRIBED IN FEE NO. 69-09411, FEE NO. 95-073144 AND FEE NO. 96-010376, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE SOUTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-010376, DEED RECORDS, CLACKAMAS COUNTY, OREGON, NORTH 67°47'51" EAST A DISTANCE OF 59.75 FEET TO THE COMMON CORNER OF THOSE LANDS DESCRIBED IN FEE NO. 96-010376 AND FEE NO. 96-007471, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE CONTINUING ALONG THE WESTERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-007471, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 14°26'42" EAST A DISTANCE OF 407.81 FEET TO THE COMMON CORNER OF THOSE LANDS DESCRIBED IN FEE NO. 69-09411, FEE NO. 96-007471, AND FEE NO. 96-046001, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE CONTINUING ALONG THE COMMON LINE OF THOSE LANDS DESCRIBED IN FEE NO. 96-046001 AND FEE NO. 96-007471, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 88°29'47" EAST A DISTANCE OF 62.63 FEET; THENCE SOUTH 23°58'58" EAST A DISTANCE OF 133.44 FEET TO THE SOUTHEASTERLY CORNER OF THAT TRACT DESCRIBED IN FEE NO. 96-046001, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE CONTINUING ALONG THE SOUTHERLY LINE OF SAID TRACT, AND ALONG THE NORTHERLY LINE OF THOSE LANDS DESCRIBED IN FEE NO. 98-044696 AND FEE NO. 99-004122, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 76°38'35" WEST A DISTANCE OF 125.26 FEET; THENCE ALONG SAID SOUTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-046001, AND THE NORTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 95-045260, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 76°19'45" WEST A DISTANCE OF 45.33 FEET; THENCE ALONG SAID SOUTHERLY LINE, AND THE NORTHERLY LINE OF THOSE LANDS DESCRIBED IN FEE NO. 97-004501, AND FEE NO. 98-041108, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 76°29'26" WEST A DISTANCE OF 750.61 FEET TO A POINT IN THE NORTHEASTERLY RIGHT-OF-WAY OF BEAVERCREEK ROAD (MARKET ROAD NO. 11) (COUNTY ROAD NO. 398), SAID POINT BEING 30' NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, THE CENTERLINE OF SAID ROAD; THENCE ALONG SAID NORTHEASTERLY RIGHT-OF-WAY, NORTH 59°27'26" WEST A DISTANCE OF 206.63 FEET TO THE COMMON NORTHEASTERLY RIGHT-OF-WAY INTERSECTION OF SAID BEAVERCREEK ROAD AND MOLALLA AVENUE (FORMERLY STATE HIGHWAY NO. 213), SAID POINT BEING 35' NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, SAID CENTERLINE OF MOLALLA AVENUE; THENCE CONTINUING ALONG THE NORTHEASTERLY RIGHT-OF-WAY OF SAID MOLALLA AVENUE, ALONG THE ARC OF A 5694.58 FOOT RADIUS CURVE TO THE RIGHT A DISTANCE OF 66.39 FEET, THROUGH A CENTRAL ANGLE OF 00°40'05" (THE LONG CHORD OF WHICH BEARS NORTH 27°43'34" WEST A DISTANCE OF 66.39 FEET); THENCE NORTH 27°23'32" WEST A DISTANCE OF 307.30 FEET; THENCE NORTH 62°36'28" EAST A DISTANCE OF 5.00 FEET TO A POINT 40 FEET NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, SAID CENTERLINE, SAID POINT ALSO BEING ON THE SOUTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 97-022793, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE LEAVING SAID NORTHEASTERLY RIGHT-OF-WAY LINE, AND CONTINUING ALONG SAID SOUTHERLY TRACT LINE, NORTH 78°20'26" EAST A DISTANCE OF 176.19 FEET TO THE SOUTHEASTERLY CORNER OF SAID TRACT; THENCE ALONG THE EASTERLY LINE OF SAID TRACT, NORTH 27°39'59" WEST A DISTANCE OF 73.67 FEET TO THE TRUE POINT OF BEGINNING.

CONTAINING AN AREA OF 560,272 SQUARE FEET, OR 12.862 ACRES, MORE OR LESS.

RECORD DESCRIPTIONS

2004-091249 PARCEL 1
A TRACT OF LAND SITUATED IN THE SOUTHWEST 1/4 AND THE SOUTHEAST 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, WILLAMETTE MERIDIAN, CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON. SAID TRACT IS MORE PARTICULARLY DESCRIBED AS FOLLOW:

COMMENCING AT THE EXTREME SOUTHERLY CORNER OF TRACT DESCRIBED IN CLACKAMAS COUNTY DEED BOOK "O", PAGE 265, SAID POINT BEING IN THE CENTERLINE OF MOLALLA AVENUE; THENCE SOUTH 88°29'47" EAST A DISTANCE OF 39.98 FEET TO A POINT BEING 35 FEET NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, THE CENTERLINE OF SAID ROAD, SAID POINT BEING THE TRUE POINT OF BEGINNING; THENCE ALONG THE NORTHEASTERLY RIGHT-OF-WAY OF SAID MOLALLA AVENUE, NORTH 27°23'32" WEST A DISTANCE OF 10.28 FEET; THENCE ALONG THE SOUTHERLY LINE THAT TRACT DESCRIBED IN FEE NO. 72-08888 DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 88°29'47" EAST A DISTANCE OF 653.92 FEET TO THE SOUTHEAST CORNER OF SAID TRACT; THENCE ALONG THE EASTERLY LINE OF SAID TRACT, NORTH 12°38'23" WEST A DISTANCE OF 110.72 FEET TO THE NORTHWEST CORNER OF THAT TRACT DESCRIBED IN FEE NO. 81-19662, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE NORTHERLY LINE OF SAID TRACT, SOUTH 88°29'47" EAST A DISTANCE OF 120.00 FEET TO THE NORTHEAST CORNER OF SAID TRACT; THENCE ALONG THE EASTERLY LINE OF SAID TRACT, SOUTH 12°38'23" EAST A DISTANCE OF 120.00 FEET TO A POINT ON THE NORTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-046001, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE NORTHERLY LINE OF SAID TRACT, NORTH 88°29'47" WEST A DISTANCE OF 771.22 FEET TO THE TRUE POINT OF BEGINNING.

CONTAINING AN AREA OF 19,837 SQUARE FEET, OR 0.455 ACRES, MORE OR LESS.

2004-091249 PARCEL 2
A TRACT OF LAND SITUATED IN THE SOUTHWEST 1/4 AND THE SOUTHEAST 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, WILLAMETTE MERIDIAN, CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON. SAID TRACT IS MORE PARTICULARLY DESCRIBED AS FOLLOW:

COMMENCING AT THE EXTREME SOUTHERLY CORNER OF TRACT DESCRIBED IN CLACKAMAS COUNTY DEED BOOK "O", PAGE 265, SAID POINT BEING IN THE CENTERLINE OF MOLALLA AVENUE; THENCE SOUTH 88°29'47" EAST A DISTANCE OF 39.98 FEET TO A POINT BEING 35 FEET NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, THE CENTERLINE OF SAID ROAD; THENCE ALONG THE NORTHEASTERLY RIGHT-OF-WAY OF SAID MOLALLA AVENUE, NORTH 27°23'32" WEST A DISTANCE OF 67.85 FEET; THENCE NORTH 62°36'28" EAST A DISTANCE OF 5.00 FEET TO A POINT 40 FEET NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, SAID CENTERLINE, SAID POINT ALSO BEING ON THE SOUTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 97-022793, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE LEAVING SAID NORTHEASTERLY RIGHT-OF-WAY LINE, AND CONTINUING ALONG SAID SOUTHERLY LINE, NORTH 78°20'26" EAST A DISTANCE OF 176.19 FEET TO THE SOUTHWEST CORNER OF THAT TRACT DESCRIBED IN FEE NO. 96-010378, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE NORTHERLY LINE OF THOSE TRACTS DESCRIBED IN FEE NO. 72-08888 AND FEE NO. 69-09411, NORTH 78°20'26" EAST A DISTANCE OF 846.78 FEET TO THE COMMON CORNER OF THOSE LANDS DESCRIBED IN FEE NO. 69-09411, FEE NO. 95-073144 AND FEE NO. 96-010376, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE SOUTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-010376, DEED RECORDS, CLACKAMAS COUNTY, OREGON, NORTH 67°47'51" EAST A DISTANCE OF 59.75 FEET TO THE COMMON CORNER OF THOSE LANDS DESCRIBED IN FEE NO. 96-010376 AND FEE NO. 96-007471, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE CONTINUING ALONG THE WESTERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-007471, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 14°26'42" EAST A DISTANCE OF 407.81 FEET TO THE COMMON CORNER OF THOSE TRACTS DESCRIBED IN FEE NO. 69-09411, FEE NO. 96-007471, AND FEE NO. 96-046001, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE SOUTHERLY LINE OF THAT TRACT OF LAND DESCRIBED IN FEE NO. 69-09411, DEED RECORDS, CLACKAMAS COUNTY, OREGON, NORTH 88°29'47" WEST A DISTANCE OF 322.36 FEET TO THE SOUTHEAST CORNER OF THAT TRACT DESCRIBED IN FEE NO. 81-19662, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE EASTERLY LINE OF SAID TRACT DESCRIBED IN FEE NO. 81-19662, NORTH 1238'23" WEST A DISTANCE OF 120.00 FEET; THENCE ALONG THE NORTHERLY LINE OF SAID TRACT, NORTH 8829'47" WEST A DISTANCE OF 120.00 FEET; THENCE ALONG THE WESTERLY LINE OF SAID TRACT, SOUTH 12°38'23" EAST A DISTANCE OF 110.72 FEET TO THE SOUTHEAST CORNER OF THAT TRACT DESCRIBED IN FEE NO. 72-08888, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE SOUTHERLY LINE OF SAID TRACT DESCRIBED IN FEE NO. 72-08888, NORTH 8829'47" WEST A DISTANCE OF 653.92 FEET TO THE TRUE POINT OF BEGINNING.

CONTAINING AN AREA OF 256,397 SQUARE FEET, OR 5.886 ACRES, MORE OR LESS.

2004-091251
A TRACT OF LAND SITUATED IN THE SOUTHWEST 1/4 AND THE SOUTHEAST 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, WILLAMETTE MERIDIAN, CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON. SAID TRACT IS MORE PARTICULARLY DESCRIBED AS FOLLOW:

COMMENCING AT THE EXTREME SOUTHERLY CORNER OF TRACT DESCRIBED IN CLACKAMAS COUNTY DEED BOOK "O", PAGE 265, SAID POINT BEING IN THE CENTERLINE OF MOLALLA AVENUE; THENCE SOUTH 88°29'47" EAST A DISTANCE OF 39.98 FEET TO A POINT BEING 35 FEET NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, THE CENTERLINE OF SAID ROAD, SAID POINT BEING THE TRUE POINT OF BEGINNING; THENCE ALONG THE SOUTHERLY LINE OF THOSE LANDS DESCRIBED IN FEE NO. 81-19662, FEE NO. 69-09411, AND FEE NO. 96-007471 DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 88°29'47" EAST A DISTANCE OF 1156.21 FEET; THENCE SOUTH 23°58'58" EAST A DISTANCE OF 133.44 FEET TO THE SOUTHEASTERLY CORNER OF THAT TRACT DESCRIBED IN FEE NO. 96-046001, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE CONTINUING ALONG THE SOUTHERLY LINE OF SAID TRACT, AND ALONG THE NORTHERLY LINE OF THOSE LANDS DESCRIBED IN FEE NO. 98-044696 AND FEE NO. 99-004122, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 76°38'35" WEST A DISTANCE OF 125.26 FEET; THENCE ALONG SAID SOUTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-046001, AND THE NORTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 95-045260, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 76°19'45" WEST A DISTANCE OF 45.33 FEET; THENCE ALONG SAID SOUTHERLY LINE, AND THE NORTHERLY LINE OF THOSE LANDS DESCRIBED IN FEE NO. 92-21067, FEE NO. 97-004501, AND FEE NO. 98-041108, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 76°29'26" WEST A DISTANCE OF 750.61 FEET TO A POINT IN THE NORTHEASTERLY RIGHT-OF-WAY OF BEAVERCREEK ROAD (MARKET ROAD NO. 11) (COUNTY ROAD NO. 398), SAID POINT BEING 30' NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, THE CENTERLINE OF SAID ROAD; THENCE ALONG SAID NORTHEASTERLY RIGHT-OF-WAY, NORTH 59°27'26" WEST A DISTANCE OF 206.63 FEET TO THE COMMON NORTHEASTERLY RIGHT-OF-WAY INTERSECTION OF SAID BEAVERCREEK ROAD AND MOLALLA AVENUE (FORMERLY STATE HIGHWAY NO. 213), SAID POINT BEING 35' NORTHEASTERLY OF, WHEN MEASURED AT RIGHT ANGLES TO, SAID CENTERLINE OF MOLALLA AVENUE; THENCE CONTINUING ALONG THE NORTHEASTERLY RIGHT-OF-WAY OF SAID MOLALLA AVENUE, ALONG THE ARC OF A 5694.58 FOOT RADIUS CURVE TO THE RIGHT A DISTANCE OF 66.39 FEET, THROUGH A CENTRAL ANGLE OF 00°40'05" (THE LONG CHORD OF WHICH BEARS NORTH 27°43'34" WEST A DISTANCE OF 66.39 FEET); THENCE NORTH 27°23'32" WEST A DISTANCE OF 229.17 FEET TO THE TRUE POINT OF BEGINNING.

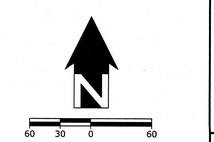
CONTAINING AN AREA OF 284,038 SQUARE FEET, OR 6.521 ACRES, MORE OR LESS.

REFERENCES

(1) PS-3291
(2) PS-24613
(3) PS-22135
(4) PS-27403
(5) PARTITION PLAT NO. 1996-14
(6) PS-18026
(7) PS-26512
(8) PS-23880
(9) PARTITION PLAT NO. 1992-49
(10) PS-24728
(11) PS-27729
(12) PS-28185
(13) PS-16481
(14) OREGON STATE HIGHWAY DEPARTMENT DRG. NO. 8B-12-9 DEC. 1958
(15) PS-27047
(16) BT BOOK 12, PAGE 6
(17) LP 060 SUPPLEMENTAL
(18) PS-25313
(19) PS-24286
(20) HILLTOP ACRES, PLAT BOOK 37 PAGE 26
(21) PS-18187
(22) PS-26713
(23) SN29636
(24) SN2004-377
(25) SN2010-176
(26) SN2008-034

LEGEND

● = FOUND SURVEY MONUMENT AS NOTED
◥ = FOUND 5/8" IRON ROD W/ORANGE PLASTIC CAP MARKED "CES NW, INC." PER S.N. 29636
BS W/WASHER = BRASS SCREW WITH WASHER
L = LENGTH ALONG ARC
W/YPC = WITH YELLOW PLASTIC CAP
DOC. NO. = DOCUMENT NUMBER, CLACKAMAS COUNTY RECORDS
FTC = FROM TRUE CORNER
NR = RECORD NOT LOCATED
PS = PRIVATE SURVEY NUMBER AS FILED, CLACKAMAS COUNTY SURVEYOR'S OFFICE
SN = SURVEY NUMBER AS FILED, CLACKAMAS COUNTY SURVEYOR'S OFFICE
FEE NO. RECORDING NUMBER, CLACKAMAS COUNTY RECORDER
###.## = DENOTES MEASURED DISTANCE
(###.##')(#) = DENOTES RECORD DISTANCE PER REFERENCE NUMBER
###.##'(#) = DENOTES MEASURED AND RECORD DISTANCE(HELD) PER REFERENCE NUMBER
[###](#) = DENOTES FOUND MONUMENT NUMBER AND REFERENCE NUMBER



SHEET INDEX

SHEET 1 - VICINITY MAP, BOUNDARY SURVEY & SURVEYORS CERT
SHEET 2 - ZONING & EXCEPTIONS
SHEET 3 - SITE TOPOGRAPHIC FEATURES, UTILITIES & ELEVATIONS
SHEET 4 - STORM & SANITARY SEWER
SHEET 5 - TREE SURVEY

REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON DECEMBER 13, 2007 RYAN H. GODSEY 65604
RENEWS: 6/30/13

OREGON CITY
PROJECT NO. 3051-00

PACLAND
6400 SE LAKE ROAD, SUITE 300
PORTLAND, OR 97222

CES|NW
13190 SW 68TH PKWY, STE 150
TIGARD, OREGON 97223
(503)968-6655 www.cesnw.com

ALTA SURVEY

REVISIONS

2689-ALTA.DWG

DATE: 07-09-12
CHECKED BY: RHG
2689
283
PROJECT NO. 3051-00:
DRAWN BY:

BOUNDARY SURVEY

SHEET 1
OF 5

ALTA/ACSM SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2
EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON
REFERENCE: STEWART TITLE PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 1
ORDER NO. 1016646 DATED APRIL 27, 2012

SPECIAL EXCEPTIONS

6. CITY LIENS, IF ANY, OF THE CITY OF OREGON CITY.

7. PERSONAL PROPERTY TAXES, IF ANY

8. COVENANTS, CONDITIONS, RESTRICTIONS AND EASEMENTS IN DECLARATION OF RESTRICTIONS, AND ANY AMENDMENTS THERETO:
RECORDED: JUNE 3, 1981
RECORDING NO.: 81015230
(PLOTTED BUILDING RESTRICTION)

9. AN EASEMENT CREATED BY JUDGEMENT, AND THE TERMS AND CONDITIONS THEREOF:
ENTERED: DECEMBER 20, 1996
SUIT NO.: CV96-09-321
IN FAVOR OF: THE CITY OF OREGON CITY
FOR: RIGHT OF WAY
AFFECTS: THE WESTERLY PORTION OF SAID PREMISES
(PLOTTED RIGHT-OF-WAY EASEMENT)

10. EASEMENT AND THE TERMS AND CONDITIONS THEREOF:
GRANTEE: LES SCHWAB PROFIT SHARING TRUST
PURPOSE: INGRESS AND EGRESS
AFFECTS: REFERENCE SAID DOCUMENT FOR PARTICULARS
RECORDED: OCTOBER 1, 2004
RECORDING NO.: 2004091594
(NOT PLOTTED - EASEMENT AREA NOT CLEARLY DEFINED)

11. ANY UNRECORDED LEASEHOLDS, RIGHT OF VENDORS AND HOLDERS OF SECURITY INTEREST ON PERSONAL PROPERTY INSTALLED UPON SAID PROPERTY, AND RIGHT OF TENANTS TO REMOVE TRADE FIXTURES AT THE EXPIRATION OF THE TERM.

12. EVIDENCE OF THE INDEMNITY AND AUTHORITY OF THE OFFICES OF WAL-MART STORES, INC., A DELAWARE CORPORATION TO EXECUTE THE FORTHCOMING INSTRUMENT MUST BE SUBMITTED.

ZONING
MUC-2 - MIXED-USE CORRIDOR
OREGON CITY OREGON - MUNICIPAL CODE CHAPTER 17.29

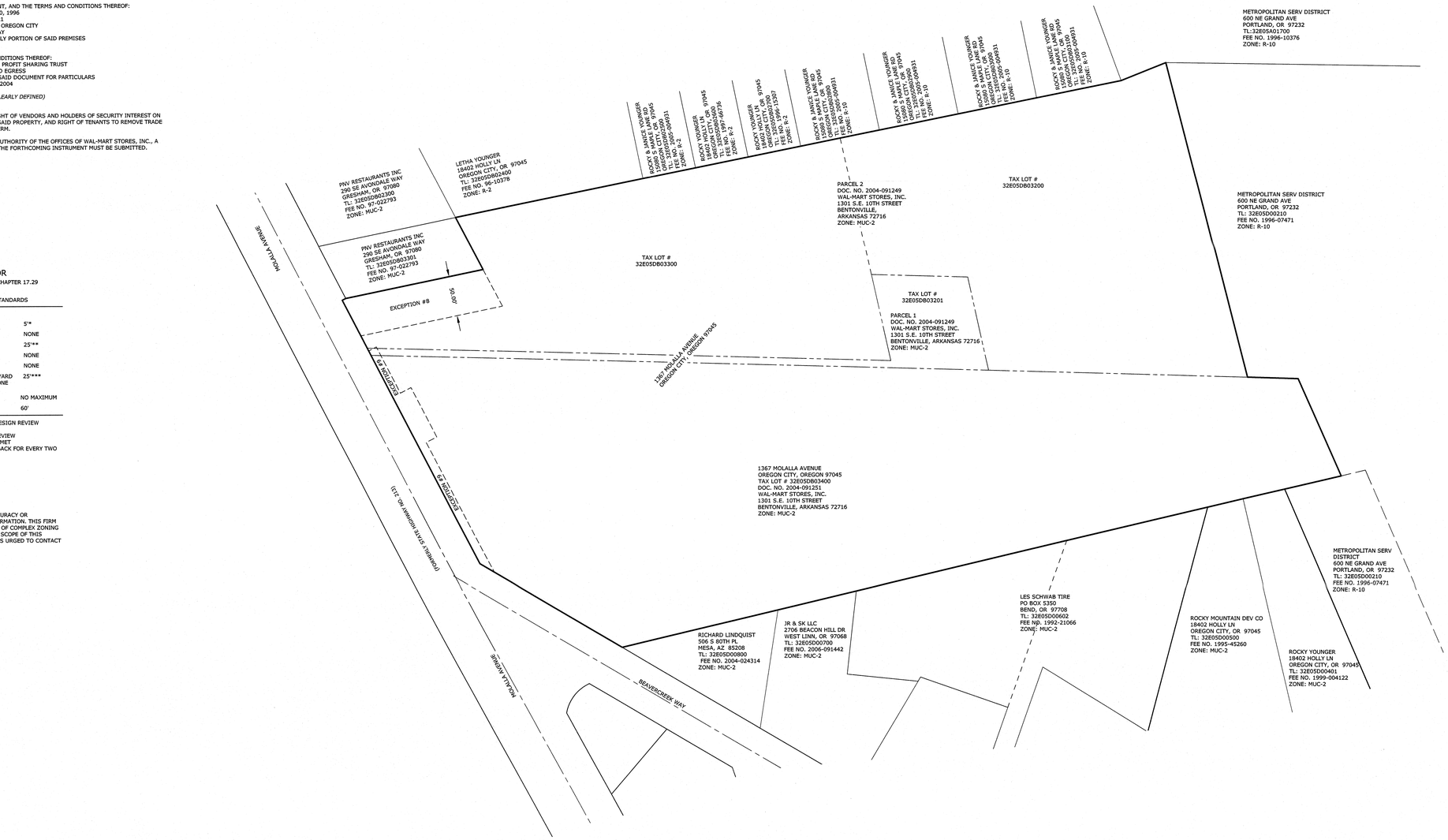
SETBACKS 17.29.060 DIMENSIONAL STANDARDS

MAXIMUM ALLOWABLE SETBACKS:	
FRONT YARD	5'*
INTERIOR SIDE YARD	NONE
CORNER SIDE YARD ABUTTING STREET	25'**
REAR YARD	NONE
REAR YARD	NONE
MINIMUM REQUIRED INTERIOR AND REAR YARD SETBACKS IF ABUTTING A RESIDENTIAL ZONE	25'***
MAXIMUM BUILDING SQUARE FOOTAGE	NO MAXIMUM
MAXIMUM BUILDING HEIGHT	60'

*MAY BE EXPANDED WITH SITE PLAN AND DESIGN REVIEW REQUIREMENTS OF SECTION 17.62.055
**PROVIDED THE SITE PLAN AND DESIGN REVIEW REQUIREMENTS OF SECTION 17.62.055 ARE MET
***PLUS ONE FOOT ADDITIONAL YARD SETBACK FOR EVERY TWO FEET OF BUILDING HEIGHT OVER 35'

CITY OF OREGON CITY
PLANNING DEPARTMENT
221 MOLALLA AVENUE, SUITE 200
OREGON CITY, OR 97045
503-722-3789

NO REPRESENTATION IS MADE FOR THE ACCURACY OR COMPLETENESS OF SAID THIRD PARTY INFORMATION. THIS FIRM IS NOT AN EXPERT IN THE INTERPRETATION OF COMPLEX ZONING ORDINANCES. COMPLIANCE IS BEYOND THE SCOPE OF THIS SURVEY. ANY USER OF SAID INFORMATION IS URGED TO CONTACT THE LOCAL AGENCY DIRECTLY.



60 30 0 60
1" = 60'

REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
DECEMBER 13, 2007
RYAN H. GOOSEY
65604
RENEWS: 6/30/13

OREGON CITY
PROJECT NO. 3051-00

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6400 SE LAKE ROAD, SUITE 300
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13190 SW 68TH PKWY, STE 150
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(503)968-6655 www.cesnw.com

ALTA SURVEY

REVISIONS

2689-ALTA.DWG

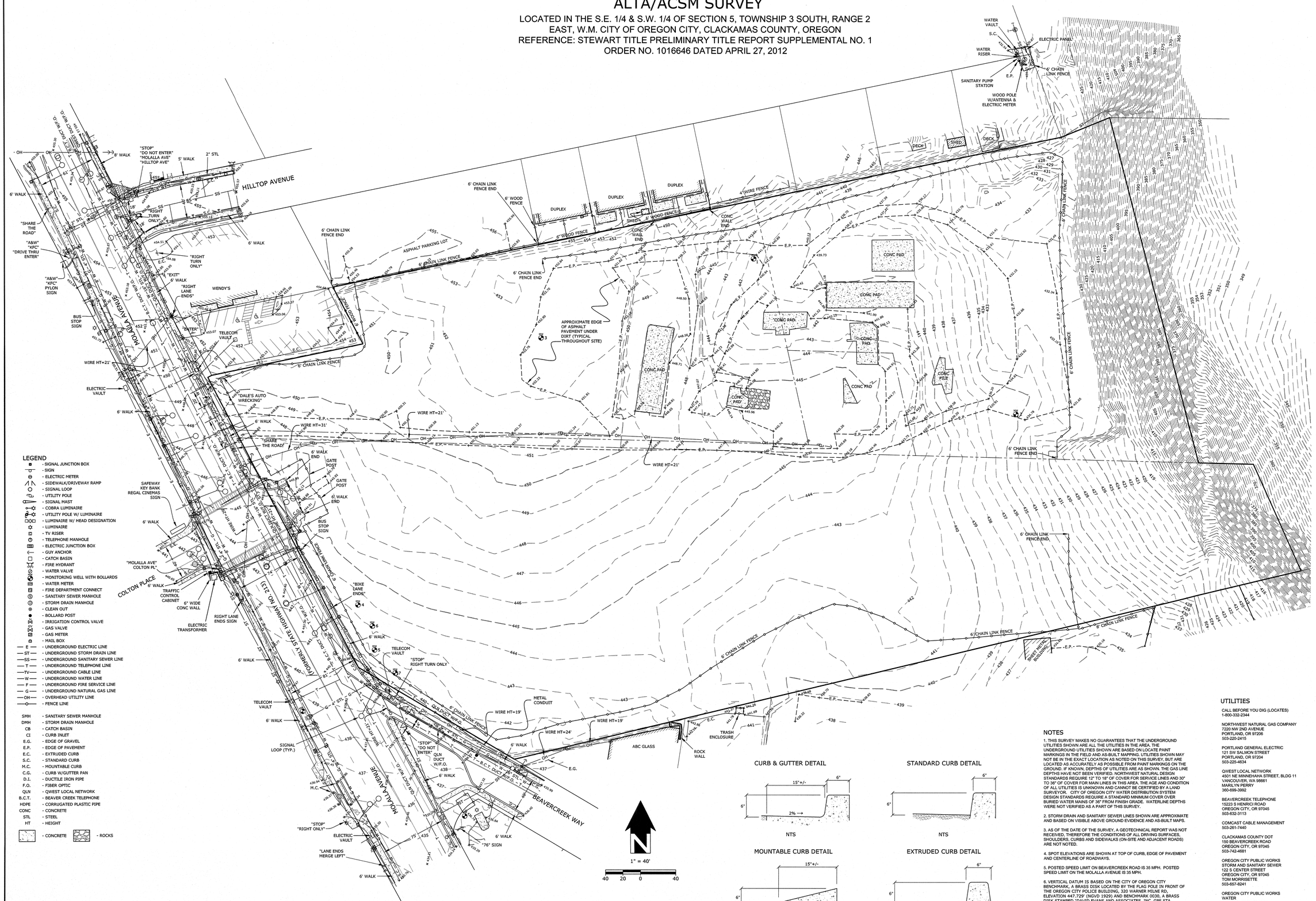
PROJECT NO. 3051-00: 2689
DRAWN BY: JBJ
DATE: 07-09-12
CHECKED BY: RHG

TITLE EXCEPTIONS

SHEET 2
OF 5

ALTA/ACSM SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON
REFERENCE: STEWART TITLE PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 1 ORDER NO. 1016646 DATED APRIL 27, 2012



LEGEND

- SIGNAL JUNCTION BOX
- SIGN
- ELECTRIC METER
- SIDEWALK/DRIVEWAY RAMP
- SIGNAL LOOP
- UTILITY POLE
- SIGNAL MAST
- COBRA LUMINAIRE
- UTILITY POLE W/ LUMINAIRE
- LUMINAIRE W/ HEAD DESIGNATION
- LUMINAIRE
- TV RISER
- TELEPHONE MANHOLE
- ELECTRIC JUNCTION BOX
- GUY ANCHOR
- CATCH BASIN
- FIRE HYDRANT
- WATER VALVE
- MONITORING WELL WITH BOLLARDS
- WATER METER
- FIRE DEPARTMENT CONNECT
- SANITARY SEWER MANHOLE
- STORM DRAIN MANHOLE
- CLEAN OUT
- BOLLARD POST
- IRRIGATION CONTROL VALVE
- GAS VALVE
- GAS METER
- MAIL BOX
- E — UNDERGROUND ELECTRIC LINE
- ST — UNDERGROUND STORM DRAIN LINE
- SS — UNDERGROUND SANITARY SEWER LINE
- T — UNDERGROUND TELEPHONE LINE
- TV — UNDERGROUND CABLE LINE
- W — UNDERGROUND WATER LINE
- F — UNDERGROUND FIRE SERVICE LINE
- G — UNDERGROUND NATURAL GAS LINE
- OH — OVERHEAD UTILITY LINE
- FENCE LINE

SMH	SANITARY SEWER MANHOLE
DMH	STORM DRAIN MANHOLE
CB	CATCH BASIN
CI	CURB INLET
E.G.	EDGE OF GRAVEL
E.P.	EDGE OF PAVEMENT
E.C.	EXTRUDED CURB
S.C.	STANDARD CURB
M.C.	MOUNTABLE CURB
C.G.	CURB W/GUTTER PAN
D.I.	DUCTILE IRON PIPE
F.O.	FIBER OPTIC
QLN	QWEST LOCAL NETWORK
B.C.T.	BEAVER CREEK TELEPHONE
HDPE	CORRUGATED PLASTIC PIPE
CONC	CONCRETE
STL	STEEL
HT	HEIGHT

- CONCRETE
- ROCKS

CURB & GUTTER DETAIL

NTS

STANDARD CURB DETAIL

NTS

MOUNTABLE CURB DETAIL

NTS

EXTRUDED CURB DETAIL

NTS

NOTES

1. THIS SURVEY MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN ARE ALL THE UTILITIES IN THE AREA. THE UNDERGROUND UTILITIES SHOWN ARE BASED ON LOCATE PAINT MARKINGS IN THE FIELD AND AS-BUILT MAPPING. UTILITIES SHOWN MAY NOT BE IN THE EXACT LOCATION AS NOTED ON THIS SURVEY, BUT ARE LOCATED AS ACCURATELY AS POSSIBLE FROM PAINT MARKINGS ON THE GROUND. IF KNOWN, DEPTHS OF UTILITIES ARE AS SHOWN. THE GAS LINE DEPTHS HAVE NOT BEEN VERIFIED. NORTHWEST NATURAL DESIGN STANDARDS REQUIRE 12" TO 18" OF COVER FOR SERVICE LINES AND 30" TO 36" OF COVER FOR MAIN LINES IN THIS AREA. THE AGE AND CONDITION OF ALL UTILITIES IS UNKNOWN AND CANNOT BE CERTIFIED BY A LAND SURVEYOR. CITY OF OREGON CITY WATER DISTRIBUTION SYSTEM DESIGN STANDARDS REQUIRE A STANDARD MINIMUM COVER OVER BURIED WATER MAINS OF 36" FROM FINISH GRADE. WATERLINE DEPTHS WERE NOT VERIFIED AS A PART OF THIS SURVEY.

2. STORM DRAIN AND SANITARY SEWER LINES SHOWN ARE APPROXIMATE AND BASED ON VISIBLE ABOVE GROUND EVIDENCE AND AS-BUILT MAPS.

3. AS OF THE DATE OF THE SURVEY, A GEOTECHNICAL REPORT WAS NOT RECEIVED, THEREFORE THE CONDITIONS OF ALL DRIVING SURFACES, SHOULDERS, CURBS AND SIDEWALKS (ON-SITE AND ADJACENT ROADS) ARE NOT NOTED.

4. SPOT ELEVATIONS ARE SHOWN AT TOP OF CURB, EDGE OF PAVEMENT AND CENTERLINE OF ROADWAYS.

5. POSTED SPEED LIMIT ON BEAVERCREEK ROAD IS 35 MPH. POSTED SPEED LIMIT ON THE MOLALLA AVENUE IS 35 MPH.

6. VERTICAL DATUM IS BASED ON THE CITY OF OREGON CITY BENCHMARK, A BRASS DISK LOCATED BY THE FLAG POLE IN FRONT OF THE OREGON CITY POLICE BUILDING, 320 WARNER MILNE RD, ELEVATION 447.729' (NGVD 1929) AND BENCHMARK 0030, A BRASS DISK STAMPED "DAVID EVANS AND ASSOCIATES, INC. GPS STA. LIBRARY 1990" ELEVATION = 452.739'

UTILITIES

CALL BEFORE YOU DIG (LOCATES)
1-800-332-2344

NORTHWEST NATURAL GAS COMPANY
7220 NW 2ND AVENUE
PORTLAND, OR 97206
503-220-2415

PORTLAND GENERAL ELECTRIC
121 SW SALMON STREET
PORTLAND, OR 97204
503-225-4634

QWEST LOCAL NETWORK
4501 NE MINNEHAHA STREET, BLDG 11
VANCOUVER, WA 98661
MARILYN PERRY
360-696-3992

BEAVERCREEK TELEPHONE
15223 S HENRICI ROAD
OREGON CITY, OR 97045
503-632-3113

COMCAST CABLE MANAGEMENT
503-261-7440

CLACKAMAS COUNTY DOT
150 BEAVERCREEK ROAD
OREGON CITY, OR 97045
503-742-4681

OREGON CITY PUBLIC WORKS
STORM AND SANITARY SEWER
122 S CENTER STREET
OREGON CITY, OR 97045
TOM MORRISETTE
503-657-8241

OREGON CITY PUBLIC WORKS
WATER
122 S CENTER STREET
OREGON CITY, OR 97045
SCOTT KATRENA
503-657-8241

REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
DECEMBER 15, 2007
RYAN H. GODSEY
65604
RENEWS: 6/30/13

OREGON CITY
PROJECT NO. 3051-00

PACLAND
6400 SE LAKE ROAD, SUITE 300
PORTLAND, OR 97222

CES|NW
13190 SW 68TH PKWY, STE 150
TIGARD, OREGON 97223
(503)968-6655 www.cesnw.com

ALTA SURVEY

REVISIONS	DATE:	CHECKED BY:
7-13-12 UPDATED TO REFLECT COMMENTS	07-09-12	RHG

2689-ALTA.DWG

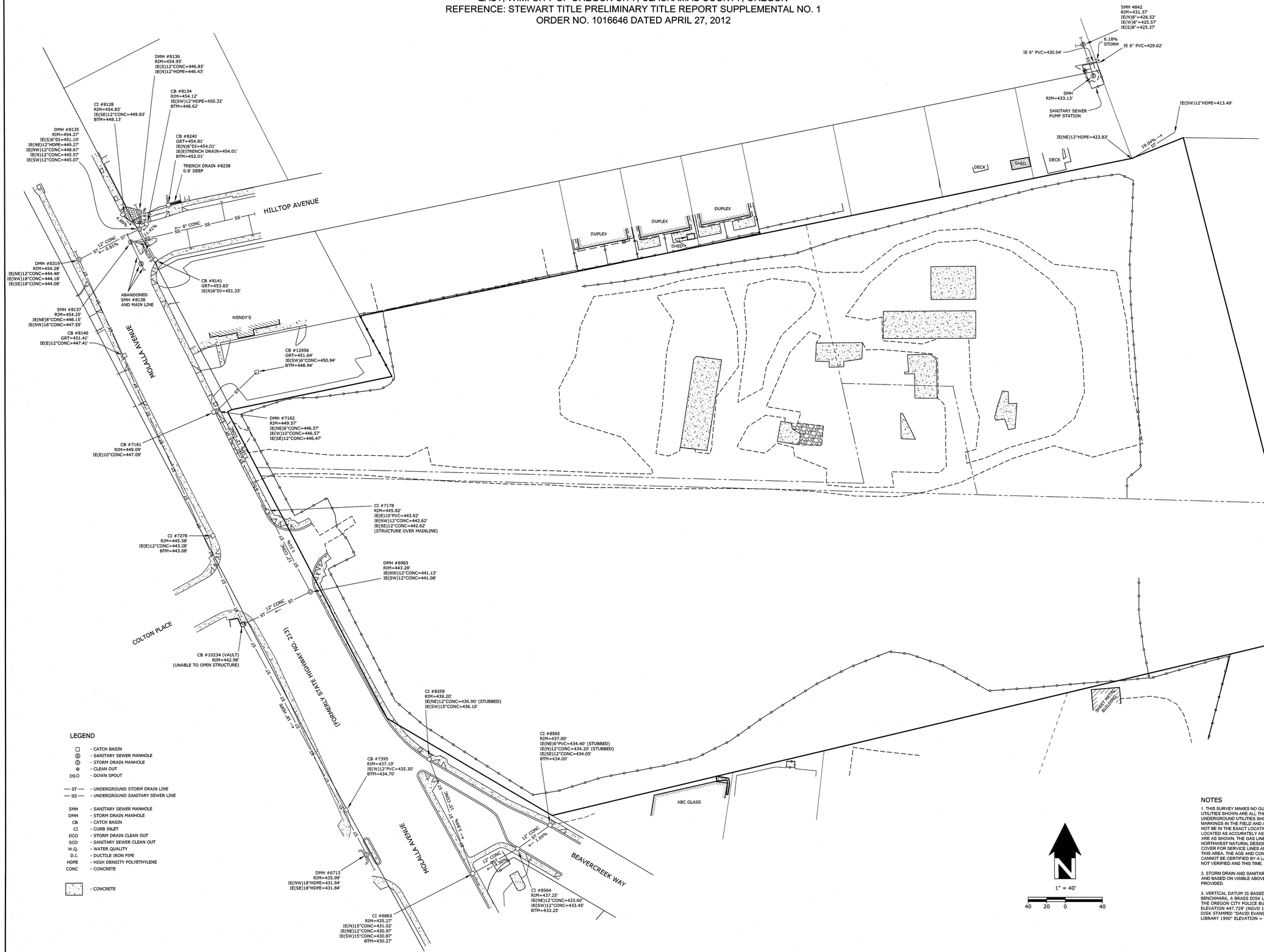
TOPOGRAPHIC SURVEY

PROJECT NO. 3051-00: 2689
DRAWN BY: JBJ

SHEET 3
OF 5

ALTA/ACSM SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON
REFERENCE: STEWART TITLE PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 1
ORDER NO. 1016646 DATED APRIL 27, 2012



LEGEND

- □ - CATCH BASIN
- Ⓢ - SANITARY SEWER MANHOLE
- Ⓒ - STORM DRAIN MANHOLE
- ⊛ - CLEAN OUT
- DSO - DOWN SPOUT
- — ST — - UNDERGROUND STORM DRAIN LINE
- — SS — - UNDERGROUND SANITARY SEWER LINE
- SMH - SANITARY SEWER MANHOLE
- DMH - STORM DRAIN MANHOLE
- CB - CATCH BASIN
- CI - CURB INLET
- DCO - STORM DRAIN CLEAN OUT
- SCO - SANITARY SEWER CLEAN OUT
- W.Q. - WATER QUALITY
- D.I. - DUCTILE IRON PIPE
- HDPE - HIGH DENSITY POLYETHYLENE
- CONC - CONCRETE
- - CONCRETE

NOTES

1. THIS SURVEY MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN ARE ALL THE UTILITIES IN THE AREA. THE UNDERGROUND UTILITIES SHOWN ARE BASED ON LOCATE PAINT MARKINGS IN THE FIELD AND AS-BUILT MAPPING. UTILITIES SHOWN MAY NOT BE IN THE EXACT LOCATION AS NOTED ON THIS SURVEY, BUT ARE LOCATED AS ACCURATELY AS POSSIBLE. IF KNOWN, DEPTHS OF UTILITIES ARE AS SHOWN. THE GAS LINE DEPTHS HAVE NOT BEEN VERIFIED. NORTHWEST NATURAL DESIGN STANDARDS REQUIRE 12" TO 18" OF COVER FOR SERVICE LINES AND 30" TO 36" OF COVER FOR MAIN LINES IN THIS AREA. THE AGE AND CONDITION OF THE UTILITIES IS UNKNOWN AND CANNOT BE CERTIFIED BY A LAND SURVEYOR. WATERLINE DEPTHS WERE NOT VERIFIED AND THIS TIME.

2. STORM DRAIN AND SANITARY SEWER LINES SHOWN ARE APPROXIMATE AND BASED ON VISIBLE ABOVE GROUND EVIDENCE AND AS-BUILT MAPS PROVIDED.

3. VERTICAL DATUM IS BASED ON THE CITY OF OREGON CITY BENCHMARK, A BRASS DISK LOCATED BY THE FLAG POLE IN FRONT OF THE OREGON CITY POLICE BUILDING, 320 WARNER MILNE RD. ELEVATION 447.729' (NGVD 1929) AND BENCHMARK 0030, A BRASS DISK STAMPED "DAVID EVANS AND ASSOCIATES, INC. GPS STA. LIBRARY 1990" ELEVATION = 452.739'

REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
DECEMBER 13, 2007
RYAN H. GODSEY
65604
RENEWS: 6/30/13

OREGON CITY
PROJECT NO. 3051-00

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ALTA SURVEY

REVISIONS

2689-ALTA.DWG

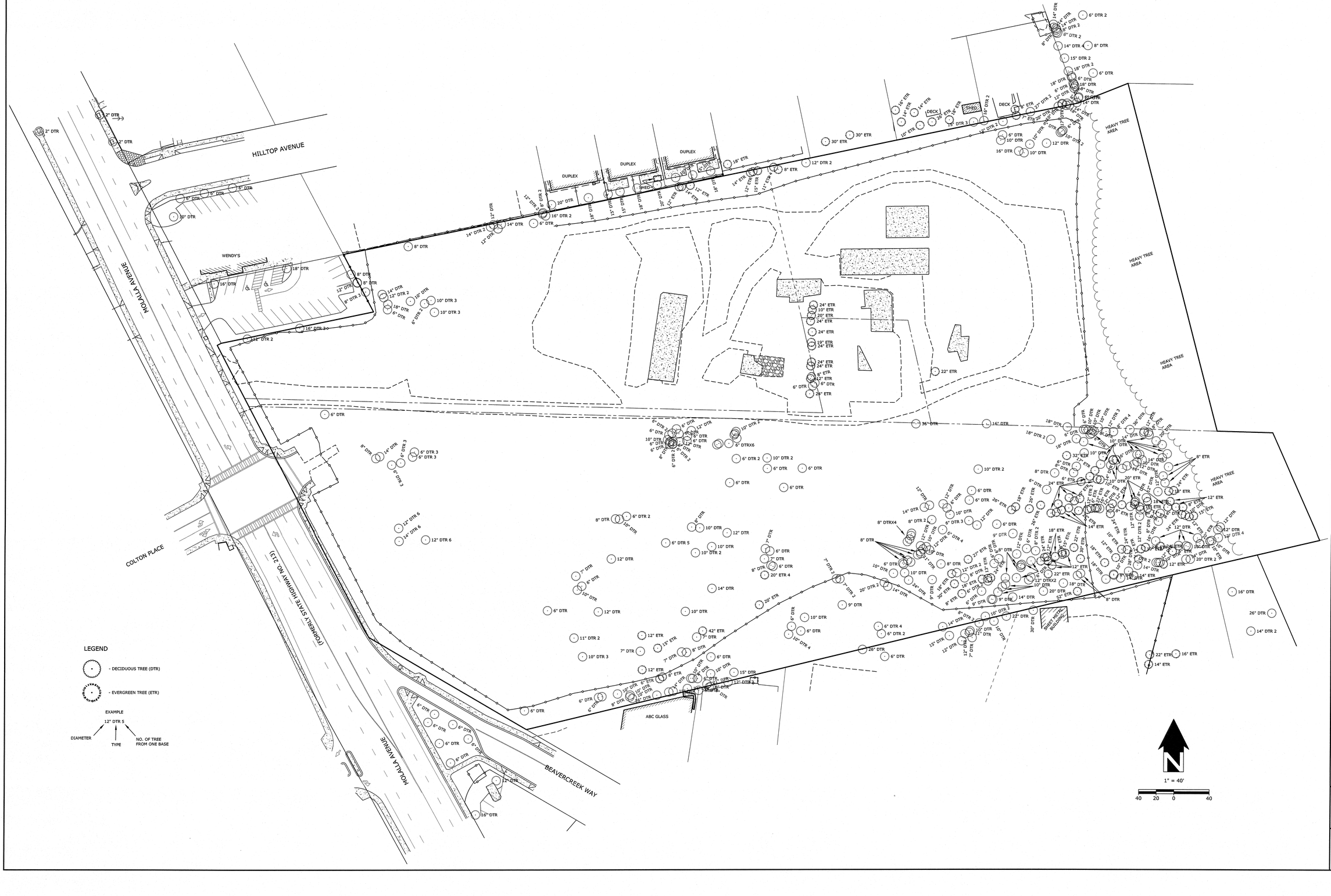
PROJECT NO.: 3051-00 | DATE: 07-09-12
DRAWN BY: JBP | CHECKED BY: RGG
2689

STORM AND SANITARY SEWER

SHEET 4
OF 5

ALTA/ACSM SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2
EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON
REFERENCE: STEWART TITLE PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 1
ORDER NO. 1016646 DATED APRIL 27, 2012



REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
DECEMBER 13, 2007
RYAN H. GODSEY
65604
RENEWS: 6/30/13

OREGON CITY
PROJECT NO. 3051-00

PACLAND
6400 SE LAKE ROAD, SUITE 300
PORTLAND, OR 97222

CES|NW
13190 SW 68TH PKWY, STE 150
TIGARD, OREGON 97223
(503)968-6655 www.cesnw.com

ALTA SURVEY

REVISIONS

2689-ALTA.DWG

TREE SURVEY

PROJECT NO. 3051-00: 2689
DRAWN BY: JBD
DATE: 07-09-12
CHECKED BY: RHG

SHEET 5
OF 5

TOPOGRAPHIC SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2
EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON

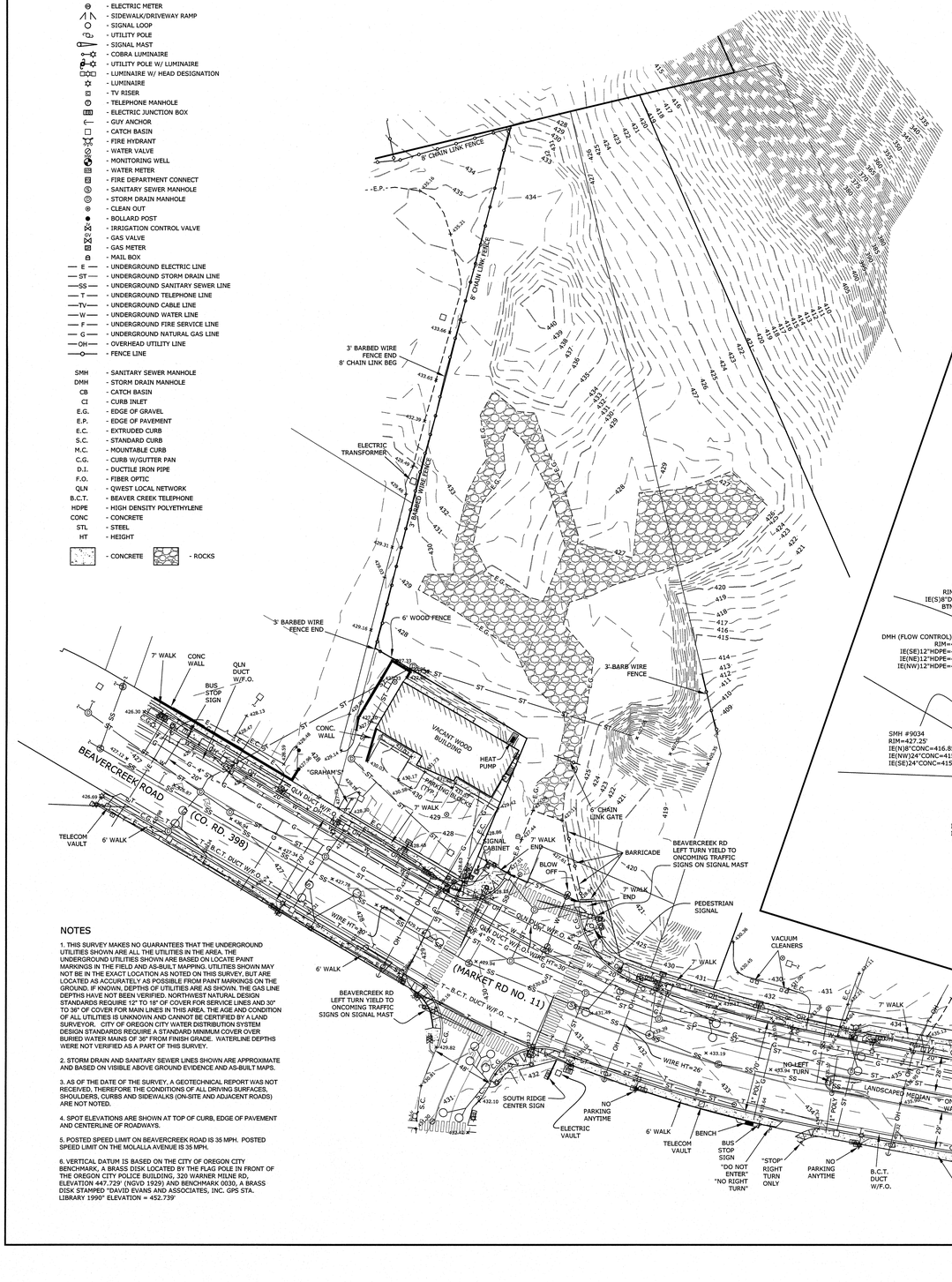
TOPOGRAPHIC SURVEY

LEGEND

- SIGN
- ELECTRIC METER
- SIDEWALK/DRIVEWAY RAMP
- SIGNAL LOOP
- UTILITY POLE
- SIGNAL MAST
- COBRA LUMINAIRE
- UTILITY POLE W/ LUMINAIRE
- LUMINAIRE W/ HEAD DESIGNATION
- LUMINAIRE
- TV RISER
- TELEPHONE MANHOLE
- ELECTRIC JUNCTION BOX
- GUY ANCHOR
- CATCH BASIN
- FIRE HYDRANT
- WATER VALVE
- MONITORING WELL
- WATER METER
- FIRE DEPARTMENT CONNECT
- SANITARY SEWER MANHOLE
- STORM DRAIN MANHOLE
- CLEAN OUT
- BOLLARD POST
- IRRIGATION CONTROL VALVE
- GAS VALVE
- GAS METER
- MAIL BOX
- E — UNDERGROUND ELECTRIC LINE
- ST — UNDERGROUND STORM DRAIN LINE
- SS — UNDERGROUND SANITARY SEWER LINE
- T — UNDERGROUND TELEPHONE LINE
- TV — UNDERGROUND CABLE LINE
- W — UNDERGROUND WATER LINE
- F — UNDERGROUND FIRE SERVICE LINE
- G — UNDERGROUND NATURAL GAS LINE
- OH — OVERHEAD UTILITY LINE
- FENCE LINE

SMH	- SANITARY SEWER MANHOLE
DMH	- STORM DRAIN MANHOLE
CB	- CATCH BASIN
CI	- CURB INLET
E.G.	- EDGE OF GRAVEL
E.P.	- EDGE OF PAVEMENT
E.C.	- EXTRUDED CURB
S.C.	- STANDARD CURB
M.C.	- MOUNTABLE CURB
C.G.	- CURB W/GUTTER PAN
D.I.	- DUCTILE IRON PIPE
F.O.	- FIBER OPTIC
QLN	- QWEST LOCAL NETWORK
B.C.T.	- BEAVER CREEK TELEPHONE
HDPE	- HIGH DENSITY POLYETHYLENE
CONC	- CONCRETE
STL	- STEEL
HT	- HEIGHT

- CONCRETE
- ROCKS



NOTES

1. THIS SURVEY MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN ARE ALL THE UTILITIES IN THE AREA. THE UNDERGROUND UTILITIES SHOWN ARE BASED ON LOCATE PAINT MARKINGS IN THE FIELD AND AS-BUILT MAPPING. UTILITIES SHOWN MAY NOT BE IN THE EXACT LOCATION AS NOTED ON THIS SURVEY, BUT ARE LOCATED AS ACCURATELY AS POSSIBLE FROM PAINT MARKINGS ON THE GROUND. IF KNOWN, DEPTHS OF UTILITIES ARE AS SHOWN. THE GAS LINE DEPTHS HAVE NOT BEEN VERIFIED. NORTHWEST NATURAL DESIGN STANDARDS REQUIRE 12" TO 18" OF COVER FOR SERVICE LINES AND 30" TO 36" OF COVER FOR MAIN LINES IN THIS AREA. THE AGE AND CONDITION OF ALL UTILITIES IS UNKNOWN AND CANNOT BE CERTIFIED BY A LAND SURVEYOR. CITY OF OREGON CITY WATER DISTRIBUTION SYSTEM DESIGN STANDARDS REQUIRE A STANDARD MINIMUM COVER OVER BURIED WATER MAINS OF 36" FROM FINISH GRADE. WATERLINE DEPTHS WERE NOT VERIFIED AS A PART OF THIS SURVEY.

2. STORM DRAIN AND SANITARY SEWER LINES SHOWN ARE APPROXIMATE AND BASED ON VISIBLE ABOVE GROUND EVIDENCE AND AS-BUILT MAPS.

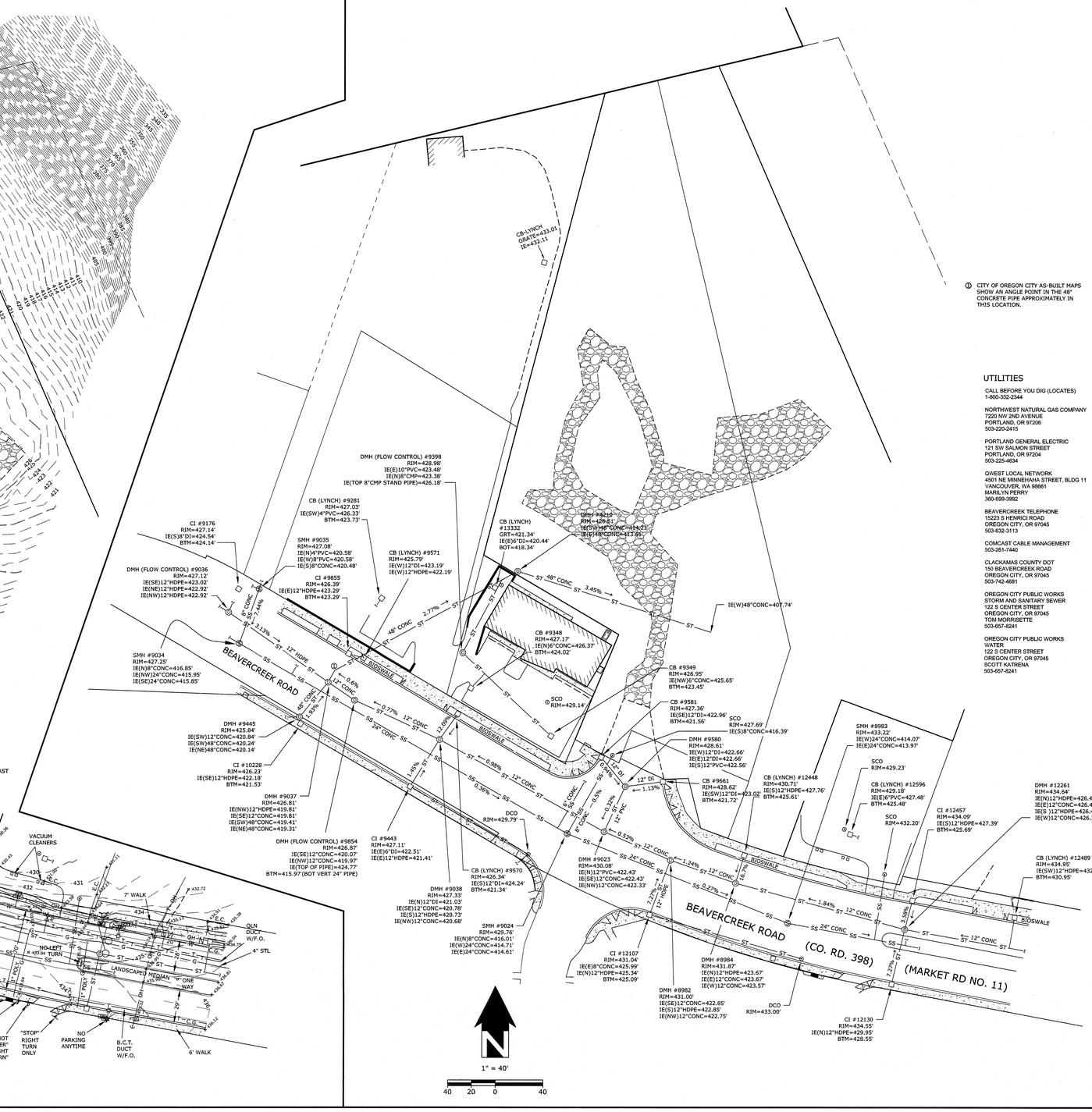
3. AS OF THE DATE OF THE SURVEY, A GEOTECHNICAL REPORT WAS NOT RECEIVED, THEREFORE THE CONDITIONS OF ALL DRIVING SURFACES, SHOULDERS, CURBS AND SIDEWALKS (ON-SITE AND ADJACENT ROADS) ARE NOT NOTED.

4. SPOT ELEVATIONS ARE SHOWN AT TOP OF CURB, EDGE OF PAVEMENT AND CENTERLINE OF ROADWAYS.

5. POSTED SPEED LIMIT ON BEAVERCREEK ROAD IS 35 MPH. POSTED SPEED LIMIT ON THE MOLALLA AVENUE IS 35 MPH.

6. VERTICAL DATUM IS BASED ON THE CITY OF OREGON CITY BENCHMARK, A BRASS DISK LOCATED BY THE FLAG POLE IN FRONT OF THE OREGON CITY POLICE BUILDING, 320 WARNER MILNE RD, ELEVATION 447.729' (NGVD 1929) AND BENCHMARK 0030, A BRASS DISK STAMPED "DAVID EVANS AND ASSOCIATES, INC. GPS STA. LIBRARY 1990" ELEVATION = 452.739'

STORM AND SANITARY SEWER



① CITY OF OREGON CITY AS-BUILT MAPS SHOW AN ANGLE POINT IN THE 48" CONCRETE PIPE APPROXIMATELY IN THIS LOCATION.

UTILITIES

CALL BEFORE YOU DIG (LOCATES)
1-800-332-2344

NORTHWEST NATURAL GAS COMPANY
7220 NW 2ND AVENUE
PORTLAND, OR 97206
503-220-2415

PORTLAND GENERAL ELECTRIC
121 SW SALMON STREET
PORTLAND, OR 97204
503-225-4634

QWEST LOCAL NETWORK
4501 NE MINNEHAHA STREET, BLDG 11
VANCOUVER, WA 98661
MARILYN PERRY
360-699-3992

BEAVERCREEK TELEPHONE
15223 S HENRICI ROAD
OREGON CITY, OR 97045
503-632-3113

COMCAST CABLE MANAGEMENT
503-261-7440

CLACKAMAS COUNTY DOT
150 BEAVERCREEK ROAD
OREGON CITY, OR 97045
503-742-4681

OREGON CITY PUBLIC WORKS
STORM AND SANITARY SEWER
122 S CENTER STREET
OREGON CITY, OR 97045
TOM MORRISETTE
503-657-8241

OREGON CITY PUBLIC WORKS
WATER
122 S CENTER STREET
OREGON CITY, OR 97045
SCOTT KATRENA
503-657-8241

REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
DECEMBER 13, 2007
RYAN H. GODSEY
65604
RENEWS: 6/30/13

OREGON CITY
PROJECT NO. 3051-00

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CES NW
13190 SW 68TH PKWY, STE 150
TIGARD, OREGON 97223
(503)968-6655 www.cesnw.com

REVISIONS	DATE:	CHECKED BY:
7-13-12 REVISED ADA RAMP PER COMMENTS	07-09-12	KNG
2689-ALTA.DWG	2689	JBD

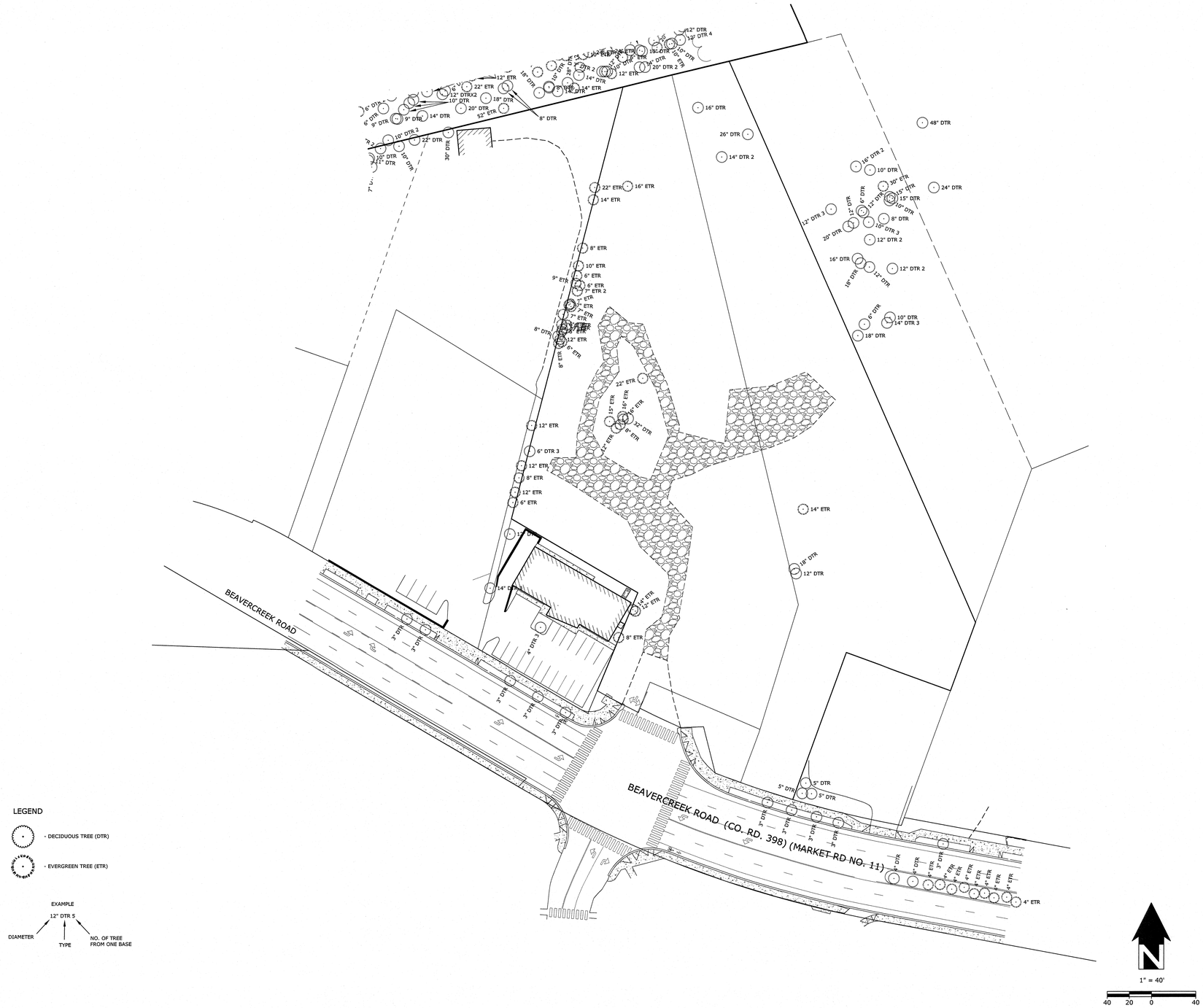
PROJECT NO. 3051-00
DRAWN BY:

TOPOGRAPHIC SURVEY

SHEET 1
OF 3

TOPOGRAPHIC SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2
EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON



REGISTERED PROFESSIONAL LAND SURVEYOR
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TOPOGRAPHIC SURVEY

REVISIONS

2689-ALTA.DWG

PROJECT NO. 3051-00: 2689
DATE: 07-09-12
DRAWN BY: JBJ
CHECKED BY: RHG

TREE SURVEY

SHEET 2 OF 3

TOPOGRAPHIC SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON

SPECIAL EXCEPTIONS AS SHOWN ON PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 2, ORDER NUMBER 01049-4020, DATED JUNE 13, 2012

6. CITY LIENS, IF ANY, OF THE CITY OF OREGON CITY.

7. ACCORDING TO THE RECORD, THE SUBJECT PROPERTY APPEARS TO LIE WITHIN THE BOUNDARIES OF THE OREGON CITY URBAN RENEWAL/NEIGHBORHOOD DEVELOPMENT DISTRICT OF THE CITY OF OREGON CITY.

8. EASEMENT AND THE TERMS AND CONDITIONS THEREOF:
   GRANTEE: METRO, A MUNICIPAL CORPORATION
   PURPOSE: ACCESS EASEMENT
   AFFECTS: TAX LOT 500 AND THE NORTHERLY PORTION OF TAX LOT 401
   RECORDED: MAY 21, 1998
   FEE NO.: 98044597
(15' WIDE ACCESS EASEMENT - LOCATION NOT CLEARLY DEFINED)

9. EASEMENT AND THE TERMS AND CONDITIONS THEREOF:
   GRANTEE: STEVEN N. MOLNER
   PURPOSE: PRIVATE UTILITY EASEMENT
   AFFECTS: PORTION OF TAX LOT 401
   RECORDED: SEPTEMBER 10, 1999
   FEE NO.: 99089214
(PLOTTED)

10. ORDINANCE NO. 00-1013 AND THE TERMS AND CONDITIONS THEREOF:
    RECORDED: MAY 18, 2000
    RECORDING NO.: 2000032147
(NOT SURVEY RELATED)

11. ANY UNRECORDED LEASEHOLDS, RIGHT OF VENDORS AND HOLDERS OF SECURITY INTEREST ON PERSONAL PROPERTY INSTALLED UPON SAID PROPERTY, AND RIGHT OF TENANTS TO REMOVE TRADE FIXTURES AT THE EXPIRATION OF THE TERM.

12. THE ATTACHED COMMERCIAL TITLE AFFIDAVIT MUST BE COMPLETED IN FULL, NOTARIZED, AND SUBMITTED TO THE COMPANY FOR REVIEW PRIOR TO CLOSING.

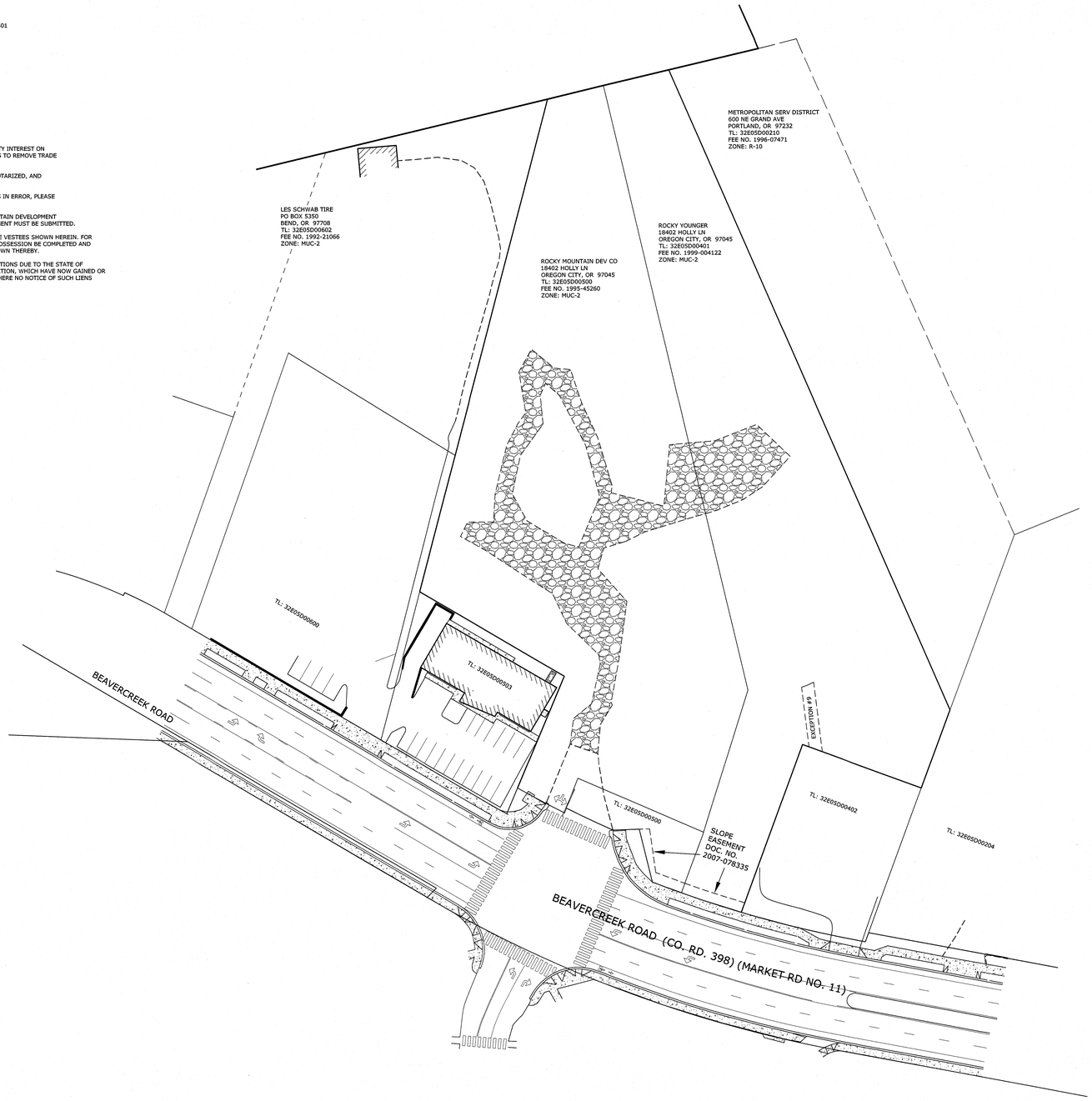
13. WE FIND NO TRUST DEEDS OF RECORD FOR THIS PROPERTY. IF THE COMPANY IS IN ERROR, PLEASE NOTIFY YOUR TITLE OFFICER IMMEDIATELY.

14. EVIDENCE OF THE IDENTITY AND AUTHORITY OF THE OFFICERS OF ROCKY MOUNTAIN DEVELOPMENT COMPANY, AS OREGON CORPORATION TO EXECUTE THE FORTHCOMING INSTRUMENT MUST BE SUBMITTED.

15. PARTIES IN POSSESSION, OR CLAIMING TO BE IN POSSESSION, OTHER THAN THE VESTEES SHOWN HEREIN. FOR PURPOSE OF ALTA EXTENDED COVERAGE, WE WILL REQUIRE AN AFFIDAVIT OF POSSESSION BE COMPLETED AND RETURNED TO US. EXCEPTION MAY BE TAKEN TO SUCH MATTERS AS MAY BE SHOWN THEREBY.

16. STATUTORY LIENS FOR LABOR OR MATERIALS, INCLUDING LIENS FOR CONTRIBUTIONS DUE TO THE STATE OF OREGON FOR UNEMPLOYMENT COMPENSATION AND FOR WORKMEN'S COMPENSATION, WHICH HAVE NOW GAINED OR HEREAFTER MAY GAIN PRIORITY OVER THE LIEN OF THE INSURED MORTGAGE WHERE NO NOTICE OF SUCH LIENS APPEAR OF RECORD.

TL = TAX LOT NUMBER, CLACKAMAS COUNTY



1" = 40'

40 20 0 40

REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
DECEMBER 13, 2007
RYAN H. GODSEY
65604
RENEWS: 6/30/13

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TOPOGRAPHIC SURVEY

REVISIONS

2689-ALTA.DWG

PROJECT NO. 3051-00: 2689
DRAWN BY: JBJ
DATE: 07-09-12
CHECKED BY: RHG

EASEMENTS

SHEET 3
OF 3

CYPRESS EQUITIES OREGON CITY MIXED USE MASTERPLAN - DETAILED DEVELOPMENT PLAN

1367 MOLALLA AVENUE
OREGON CITY, OR 97045



VICNITY MAP
NTS



LOCATION MAP
NTS

PROPERTY DESCRIPTION

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON

VERTICAL BENCHMARK

VERTICAL DATUM IS BASED ON THE CITY OF OREGON CITY BENCHMARK, A BRASS DISK LOCATED BY THE FLAG POLE IN FRONT OF THE OREGON CITY POLICE BUILDING, 320 WARNER MILNE ROAD, ELEVATION 447.729' (NGVD 1929) AND BENCHMARK 0030, A BRASS DISK STAMPED "DAVID EVANS AND ASSOCIATES, INC. GPS STA. LIBRARY 1990".
ELEVATION = 452.739'.

SURVEY MONUMENT PROTECTION

EXISTING SURVEY MONUMENT ARE TO BE PROTECTED DURING CONSTRUCTION OR REPLACED IN ACCORDANCE WITH OREGON REVISED STATUTES 209.140 – 209.155.

GENERAL NOTES

1. ALL WORK AND MATERIALS SHALL COMPLY WITH ALL OREGON CITY REGULATIONS AND CODES AND O.S.H.A. STANDARDS, INCLUDING BUT NOT LIMITED TO THE CURRENT OREGON CITY ROAD DESIGN AND CONSTRUCTION STANDARDS, CLEAN WATER SERVICES DESIGN AND CONSTRUCTION STANDARDS, THE OREGON TRANSPORTATION COMMISSION STANDARDS FOR ACCESSIBLE PARKING DATED AUGUST 2018, AND THE APWA STANDARDS WHICH ARE HEREBY REFERENCED AS PART OF THESE PLANS.

2. THE DESIGN SHOWN IS BASED UPON THE ENGINEER'S UNDERSTANDING OF THE EXISTING CONDITIONS. THE PLAN DOES NOT REPRESENT A DETAILED FIELD SURVEY. THE EXISTING CONDITIONS SHOWN ON THIS PLAN SHEET ARE BASED UPON THE ALTA SURVEY PREPARED BY CES | NW, DATED JULY 9, 2012. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING FIELD CONDITIONS PRIOR TO BIDDING THE PROPOSED SITEWORK IMPROVEMENTS. IF CONFLICTS ARE DISCOVERED, THE CONTRACTOR SHALL NOTIFY THE OWNER/DEVELOPER PRIOR TO INSTALLATION OF ANY PORTION OF THE SITEWORK WHICH WOULD BE AFFECTED. IF CONTRACTOR DOES NOT ACCEPT EXISTING SURVEY, INCLUDING TOPOGRAPHY AS SHOWN ON THE PLANS, WITHOUT EXCEPTION, HE SHALL HAVE MADE, AT HIS OWN EXPENSE, A TOPOGRAPHIC SURVEY BY A REGISTERED LAND SURVEYOR AND SUBMIT IT TO THE OWNER FOR REVIEW.

3. CAUTION – NOTICE TO CONTRACTOR
THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 48 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.

4. IN THE EVENT OF CONFLICTS BETWEEN THE VARIOUS PROVISIONS OF THIS PLAN SET, THE MORE STRINGENT PROVISION APPLY.

5. ATTENTION: OREGON LAW REQUIRES YOU TO FOLLOW RULES ADOPTED BY THE OREGON UTILITY NOTIFICATION CENTER. THOSE RULES ARE SET FORTH IN OAR 952–001–0001 (ADOPTION OF MODEL RULES) THROUGH 952–001–0100 (RECORD KEEPING REQUIREMENTS). YOU MAY OBTAIN COPIES OF THE RULES BY CALLING THE CENTER.
NOTES: THE TELEPHONE NUMBER FOR THE OREGON UTILITY NOTIFICATION CENTER IS (503) 232–1987.

6. A ROAD CLOSURE WILL NO BE PERMITTED WITHOUT A SEPARATE ROAD CLOSURE PERMIT THROUGH WASHINGTON COUNTY TRAFFIC ENGINEERING.

7. THE CONTRACTOR, AT THE TIME OF MEETING WITH COUNTY INSPECTION STAFF FOR A PRE–CONSTRUCTION MEETING, SHALL PROVIDE THEIR WORK TRAFFIC CONTROL PLAN.

8. ACCOMMODATE ALL ROAD USERS AT ALL TIMES INCLUDING MOTORISTS, BICYCLISTS, PEDESTRIANS, AND THOSE WITH DISABILITIES OR IMPAIRMENTS. INSTALL AND MAINTAIN ADDITIONAL TEMPORARY SIGNING AND TRAFFIC CONTROL DEVICES FOR THE CONTROL OF NON–MOTORIZED VEHICLES AND PEDESTRIANS WHERE A REASONABLE VOLUME OF THESE USERS ARE EXPECTED AND WHERE WORK IS EXPECTED TO LAST LONGER THAN ONE HOUR. MAINTAIN SAFE ACCESSIBILITY OR PROVIDE SUITABLE ALTERNATE ROUTES IN, THROUGH, OR AROUND WORK AREAS.

9. ESTABLISH AND MAINTAIN WORK ZONE TRAFFIC CONTROL IN COMPLIANCE WITH THE OREGON TEMPORARY TRAFFIC CONTROL HANDBOOK FOR OPERATIONS OF THREE DAYS OR LESS (DECEMBER 2011) ANY TIME VEHICLE OR PEDESTRIAN TRAFFIC IS INFLUENCED BY THE WORK. FOR WORK REQUIRING DEVICES IN PLACE LONGER THAN THREE (3) DAYS, A SITE SPECIFIC TRAFFIC CONTROL PLAN BASED ON THE PRINCIPLES IN PART 6 OF THE MUTCD, THE OREGON SUPPLEMENT AND ODOT'S 2015 STANDARD DRAWINGS TM800 – TM871, IS REQUIRED. ALL TRAFFIC CONTROL DEVICES SHALL MEET OR EXCEED THE NCHRP 350 REQUIREMENTS FOR CRASHWORTHINESS. COMPLETED SIGNAL SHUT DOWN REQUESTS MUST BE RECEIVED BY THE COUNTY A MINIMUM OF 3 WORKING DAYS PRIOR TO ANY PROPOSED SIGNAL SHUT DOWN.

SHEET INDEX

DDP-C0.0	CIVIL COVER SHEET
DDP-C0.1	PRELIMINARY ROUGH GRADING AND EROSION CONTROL PLAN
DDP-C1.0	CIVIL SITE PLAN
DDP-C1.1	MOLALLA AVENUE STREET PLAN AND TYPICAL SECTIONS
DDP-C1.2	PROPOSED PUBLIC ROAD PLAN, PROFILE, AND TYPICAL SECTIONS
DDP-C1.3	PROPOSED PUBLIC ROAD PLAN, PROFILE, AND TYPICAL SECTIONS
DDP-C1.4	TRUCK TURNING - LEFT TURN ONTO BEAVERCREEK ROAD
DDP-C1.5	TRUCK TURNING - RIGHT TURN ONTO BEAVERCREEK ROAD
DDP-C2.0	PRELIMINARY CIVIL GRADING AND DRAINAGE PLAN
DDP-C3.0	PRELIMINARY CIVIL UTILITY PLAN
DDP-L0.1	TREE REMOVAL PLAN
DDP-L0.2	ARBORIST REPORT MAP
DDP-L0.3	ARBORIST REPORT TABLES
DDP-L1.0	OVERALL LANDSCAPE PLAN
DDP-L2.0	OVERALL LIGHTING PLAN

EXISTING CONDITIONS PLANS

ALTA / BOUNDARY SURVEY SHEETS:

1	BOUNDARY SURVEY
2	TITLE EXCEPTIONS
3	TOPOGRAPHIC SURVEY
4	STORM AND SANITARY SEWER
5	TREE SURVEY

OFF-SITE TOPOGRAPHIC SURVEY SHEETS:

1	TOPOGRAPHIC SURVEY
2	TREE SURVEY
3	EASEMENTS

PROJECT CONTACTS

CONSULTANTS

CIVIL ENGINEER:
LANGAN ENGINEERING
10135 SE SUNNYSIDE RD., SUITE 200
CLACKAMAS, OR 97015
(503) 680–0029
CONTACT: SCOTT FRANKLIN, PE

SURVEYOR
CES | NW
15115 SW SEQUOIA PARKWAY, SUITE 150
TIGARD, OR 97224
(503) 684–0652
CONTACT: RYAN GODSEY

LANDSCAPE ARCHITECT
LANGAN ENGINEERING
18575 JAMBOREE ROAD, SUITE 150
IRVINE, CA 92612
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CONTACT: ANNA ILAO

CULTURAL RESOURCES
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104 W ANAPAMU STREET, SUITE 204B
SANTA BARBARA, CA 93101
(805) 957–6013
CONTACT: HEATHER MCDANIEL MCDEVITT

WETLANDS
LANGAN ENGINEERING
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SANTA BARBARA, CA 93101
(805) 957–6034
CONTACT: STEVEN NEUMANN

APPLICANT/DEVELOPER

CYPRESS ACQUISITIONS, LLC
8144 WALNUT HILL LANE, SUITE 1200
DALLAS, TX 75231
(214) 561–8838
CONTACT: KIRK WILLIAMS

GOVERNING AGENCY

OREGON CITY PUBLIC WORKS DEPARTMENT
13895 FIR STREET
OREGON CITY, OR 97045
(503) 204–4631
CONTACT: ERIK NICHOLS

TRAFFIC

TRANSPO GROUP
12131 113TH AVENUE NE, SUITE 203
KIRKLAND, WA 98034
(425) 896–5208
CONTACT: MIKE SWENSON PE, PTOE
KASSI LEINGANG PE

Know what's **below.**
Call before you dig.

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture, and Geology, D.P.C.
10135 SE Sunnyside Road Suite 200
Clackamas, OR 97015
T: 503.659.9500 www.langan.com

CLIENT/OWNER
CYPRESS EQUITIES

PROJECT NAME
OREGON CITY MIXED USE DETAILED DEVELOPMENT PLAN

LANGAN PROJECT NUMBER: 794-002-701
PROJECT ADDRESS
1367 MOLALLA AVENUE
OREGON CITY, OR 97045

STAMP

REVISIONS

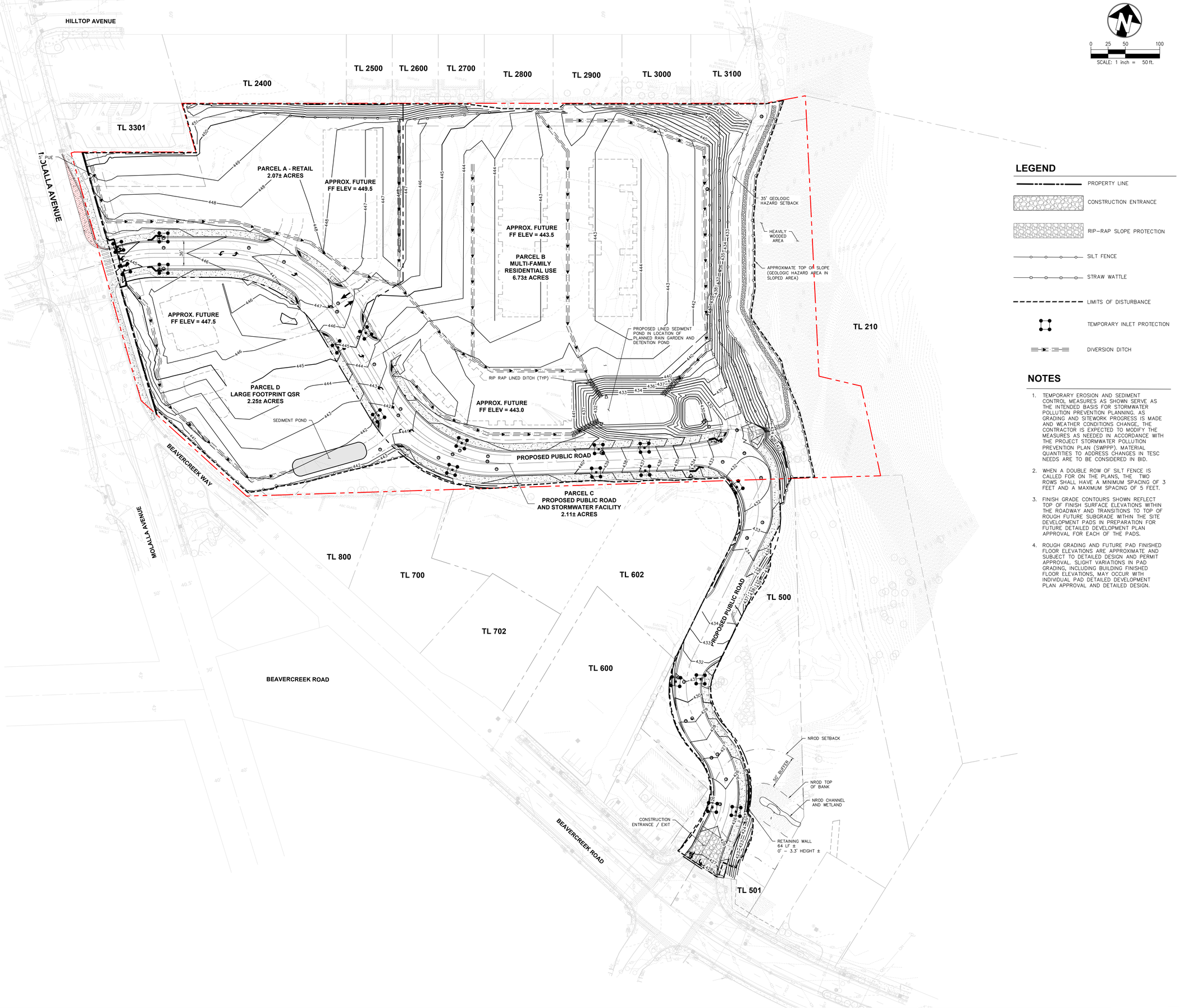
REV	ISSUED FOR:	DATE
0	DDP SUBMITTAL	11/14/2025
1	DDP SUBMITTAL	12/09/2025
2	DDP SUBMITTAL	03/02/2026

SECTION, TOWNSHIP, RANGE:
SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME
CIVIL COVER SHEET

SHEET NUMBER
DDP-C0.0



0 25 50 100

SCALE: 1 inch = 50 ft.

LEGEND

- PROPERTY LINE
- CONSTRUCTION ENTRANCE
- RIP–RAP SLOPE PROTECTION
- SILT FENCE
- STRAW WATTLE
- LIMITS OF DISTURBANCE
- TEMPORARY INLET PROTECTION
- DIVERSION DITCH

NOTES

1. TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES AS SHOWN SERVE AS THE INTENDED BASIS FOR STORMWATER POLLUTION PREVENTION PLANNING. AS GRADING AND SITEWORK PROGRESS IS MADE AND WEATHER CONDITIONS CHANGE, THE CONTRACTOR IS EXPECTED TO MODIFY THE MEASURES AS NEEDED IN ACCORDANCE WITH THE PROJECT STORMWATER POLLUTION PREVENTION PLAN (SWPPP). MATERIAL QUANTITIES TO ADDRESS CHANGES IN TESC NEEDS ARE TO BE CONSIDERED IN BID.
2. WHEN A DOUBLE ROW OF SILT FENCE IS CALLED FOR ON THE PLANS, THE TWO ROWS SHALL HAVE A MINIMUM SPACING OF 3 FEET AND A MAXIMUM SPACING OF 5 FEET.
3. FINISH GRADE CONTOURS SHOWN REFLECT TOP OF FINISH SURFACE ELEVATIONS WITHIN THE ROADWAY AND TRANSITIONS TO TOP OF ROUGH FUTURE SUBGRADE WITHIN THE SITE DEVELOPMENT PADS IN PREPARATION FOR FUTURE DETAILED DEVELOPMENT PLAN APPROVAL FOR EACH OF THE PADS.
4. ROUGH GRADING AND FUTURE PAD FINISHED FLOOR ELEVATIONS ARE APPROXIMATE AND SUBJECT TO DETAILED DESIGN AND PERMIT APPROVAL. SLIGHT VARIATIONS IN PAD GRADING, INCLUDING BUILDING FINISHED FLOOR ELEVATIONS, MAY OCCUR WITH INDIVIDUAL PAD DETAILED DEVELOPMENT PLAN APPROVAL AND DETAILED DESIGN.

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CLIENT/OWNER

CYPRESS EQUITIES

PROJECT NAME

OREGON CITY MIXED USE DETAILED DEVELOPMENT PLAN

LANGAN PROJECT NUMBER: 794-002-701

PROJECT ADDRESS

1367 MOLALLA AVENUE
OREGON CITY, OR 97045

STAMP

REVISIONS

REV	ISSUED FOR:	DATE
0	DDP SUBMITTAL	11/14/2025
1	DDP SUBMITTAL	12/09/2025
2	DDP SUBMITTAL	03/02/2026

SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

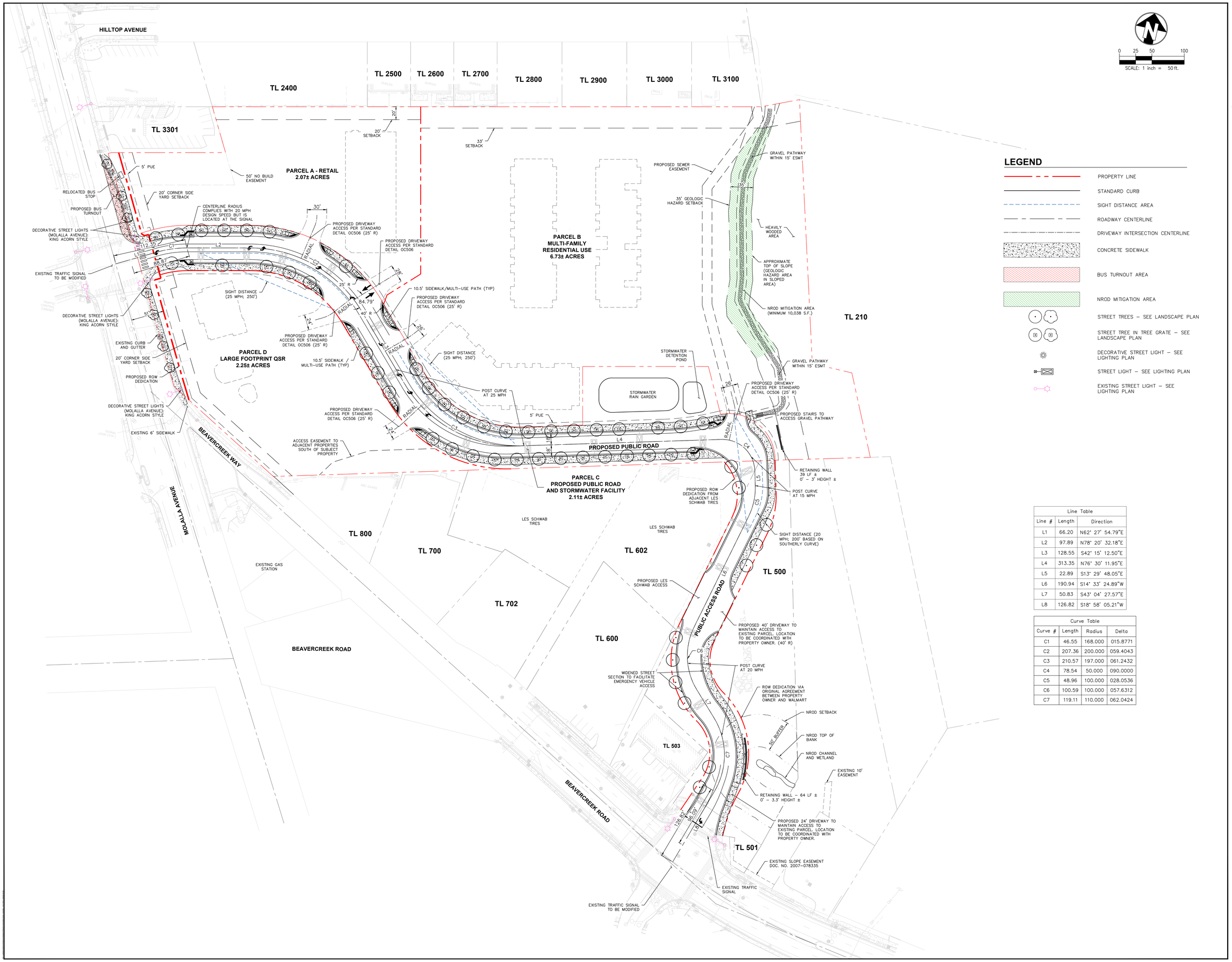
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

PRELIMINARY ROUGH GRADING AND EROSION CONTROL PLAN

SHEET NUMBER

DDP-C0.1



LEGEND

- PROPERTY LINE
- STANDARD CURB
- SIGHT DISTANCE AREA
- ROADWAY CENTERLINE
- DRIVEWAY INTERSECTION CENTERLINE
- CONCRETE SIDEWALK
- BUS TURNOUT AREA
- NROD MITIGATION AREA
- STREET TREES – SEE LANDSCAPE PLAN
- STREET TREE IN TREE GRATE – SEE LANDSCAPE PLAN
- DECORATIVE STREET LIGHT – SEE LIGHTING PLAN
- STREET LIGHT – SEE LIGHTING PLAN
- EXISTING STREET LIGHT – SEE LIGHTING PLAN

Line Table		
Line #	Length	Direction
L1	66.20	N62° 27' 54.79"E
L2	97.89	N78° 20' 32.18"E
L3	128.55	S42° 15' 12.50"E
L4	313.35	N76° 30' 11.95"E
L5	22.89	S13° 29' 48.05"E
L6	190.94	S14° 33' 24.89"W
L7	50.83	S43° 04' 27.57"E
L8	126.82	S18° 58' 05.21"W

Curve Table			
Curve #	Length	Radius	Delta
C1	46.55	168.000	015.8771
C2	207.36	200.000	059.4043
C3	210.57	197.000	061.2432
C4	78.54	50.000	090.0000
C5	48.96	100.000	028.0536
C6	100.59	100.000	057.6312
C7	119.11	110.000	062.0424

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CLIENT/OWNER

CYPRESS EQUITIES

PROJECT NAME

OREGON CITY MIXED USE DETAILED DEVELOPMENT PLAN

LANGAN PROJECT NUMBER: 794-002-701

PROJECT ADDRESS

1367 MOLALLA AVENUE
OREGON CITY, OR 97045

STAMP

REVISIONS

REV	ISSUED FOR:	DATE
0	DDP SUBMITTAL	11/14/2025
1	DDP SUBMITTAL	12/09/2025
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SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

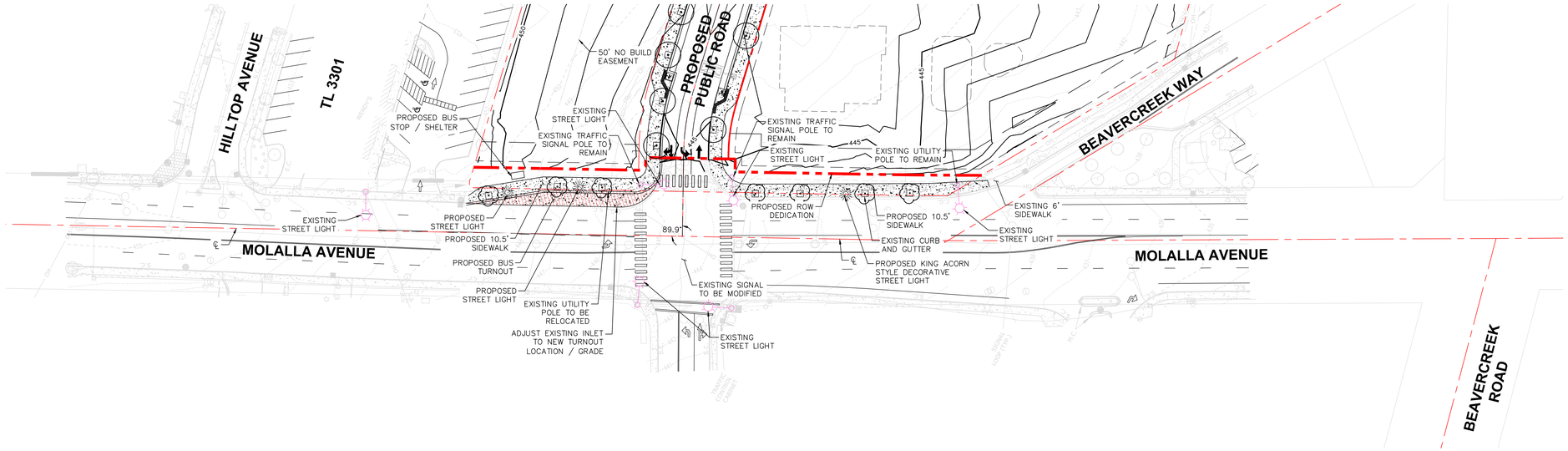
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

CIVIL SITE PLAN

SHEET NUMBER

DDP-C1.0

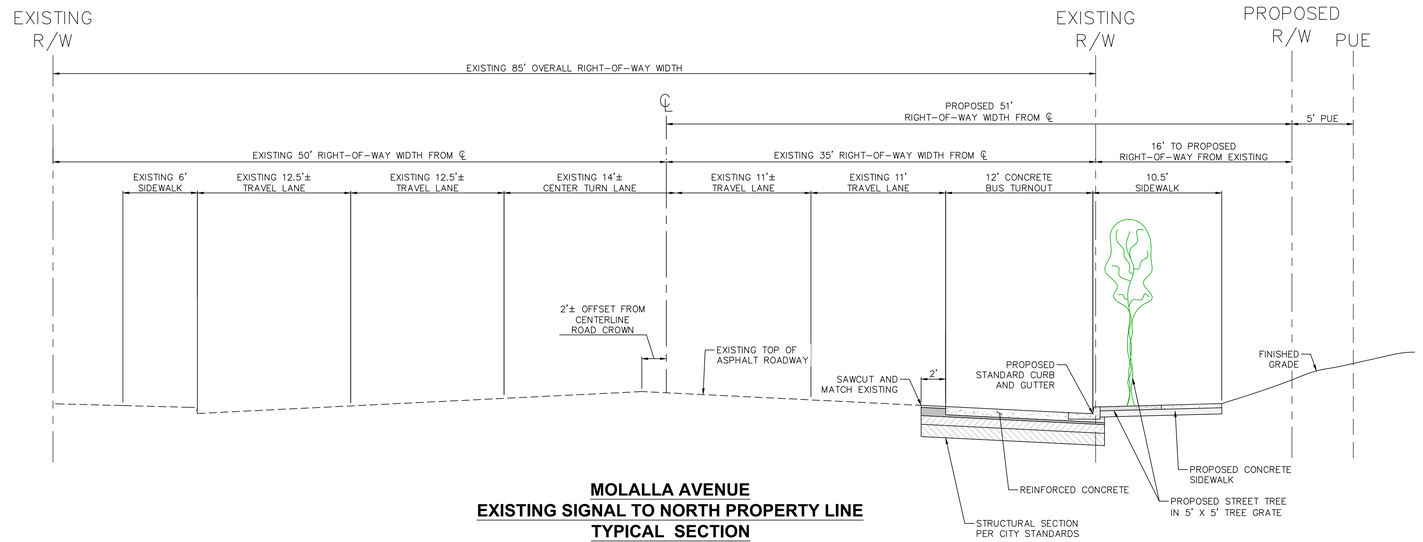


0 20 40 80

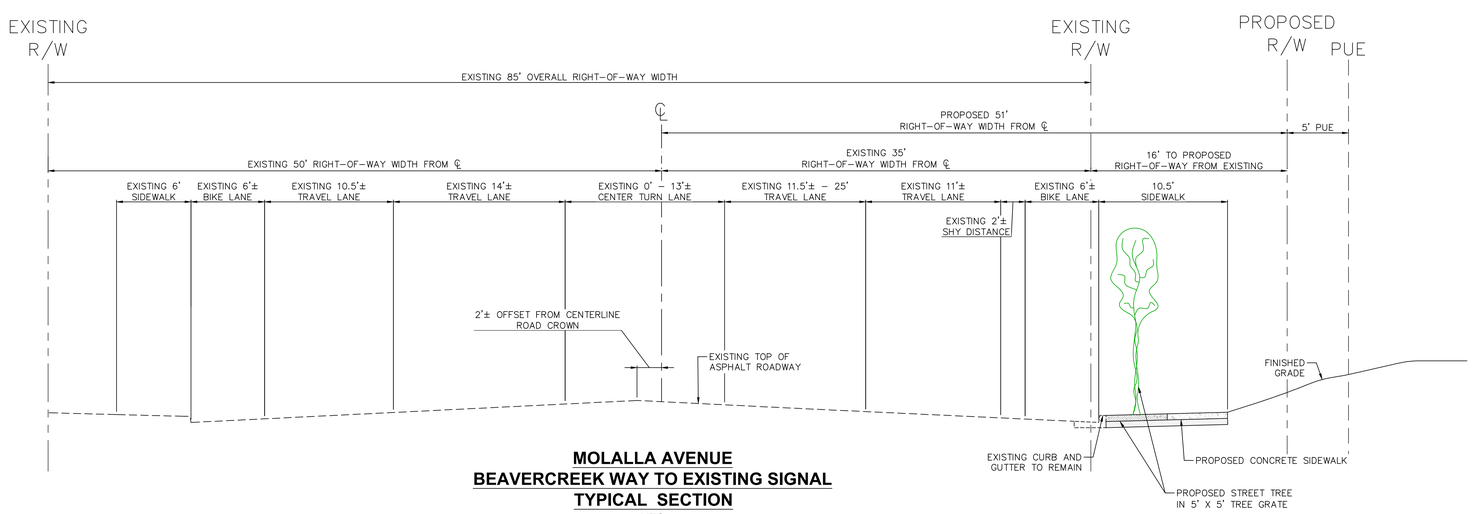
SCALE: 1 inch = 40 ft.

LEGEND

- PROPERTY LINE
- STANDARD CURB
- ROAD CENTER LINE
- 5' PUE
- CONCRETE SIDEWALK
- STREET TREE IN TREE GRATE – SEE LANDSCAPE PLAN
- DECORATIVE STREET LIGHT – SEE LIGHTING PLAN
- STREET LIGHT – SEE LIGHTING PLAN
- EXISTING STREET LIGHT – SEE LIGHTING PLAN



MOLALLA AVENUE
EXISTING SIGNAL TO NORTH PROPERTY LINE
TYPICAL SECTION
NTS



MOLALLA AVENUE
BEAVERCREEK WAY TO EXISTING SIGNAL
TYPICAL SECTION
NTS

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SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

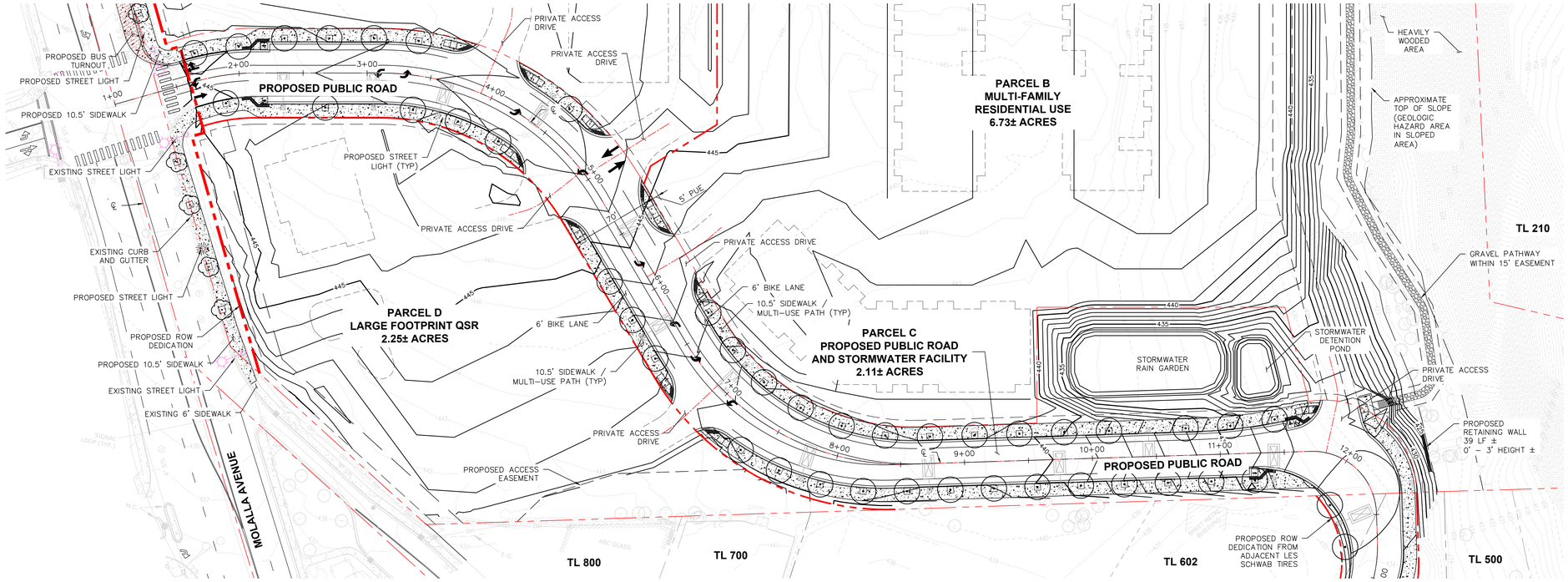
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

MOLALLA AVENUE STREET PLAN AND TYPICAL SECTIONS

SHEET NUMBER

DDP-C1.1



SCALE: 1 inch = 40 ft.

LEGEND

- PROPERTY LINE
- STANDARD CURB
- ROAD CENTER LINE
- 5' PUE
- CONCRETE SIDEWALK
- STREET TREES – SEE LANDSCAPE PLAN
- STREET TREE IN TREE GRATE – SEE LANDSCAPE PLAN
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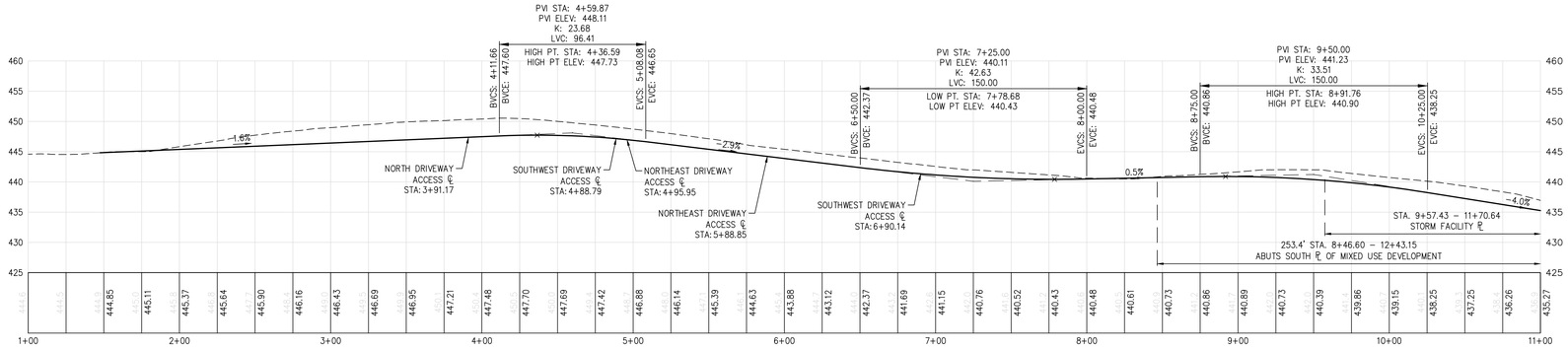
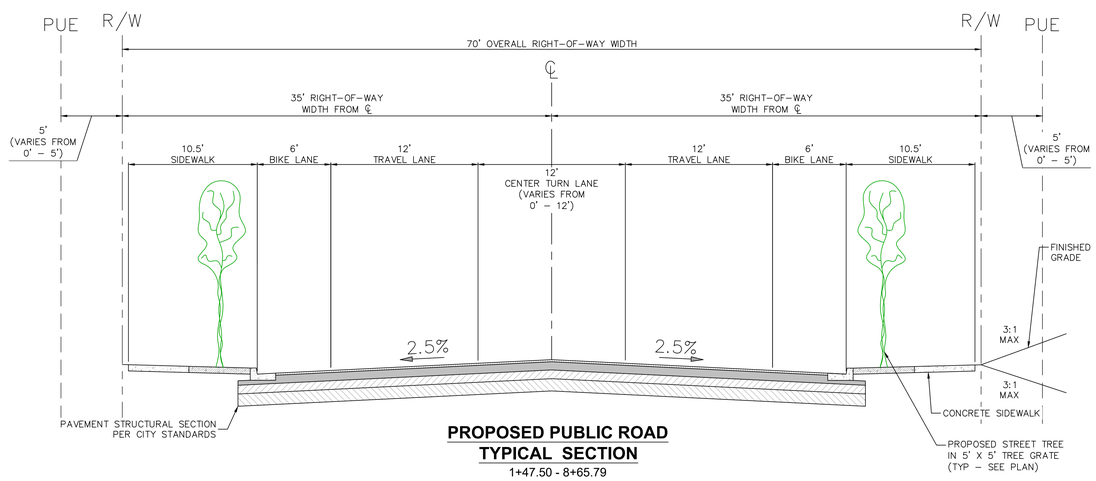


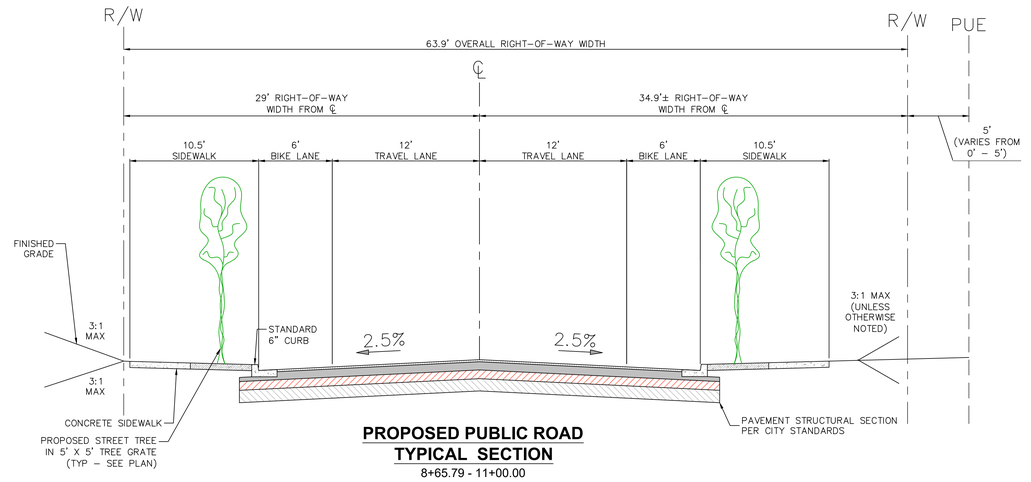
PROPOSED PUBLIC ROAD PROFILE

SCALE:
HORIZONTAL: 1" = 40'
VERTICAL: 1" = 10'



PROPOSED PUBLIC ROAD TYPICAL SECTION

1+47.50 - 8+65.79
NTS



PROPOSED PUBLIC ROAD TYPICAL SECTION

8+65.79 - 11+00.00
NTS

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SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

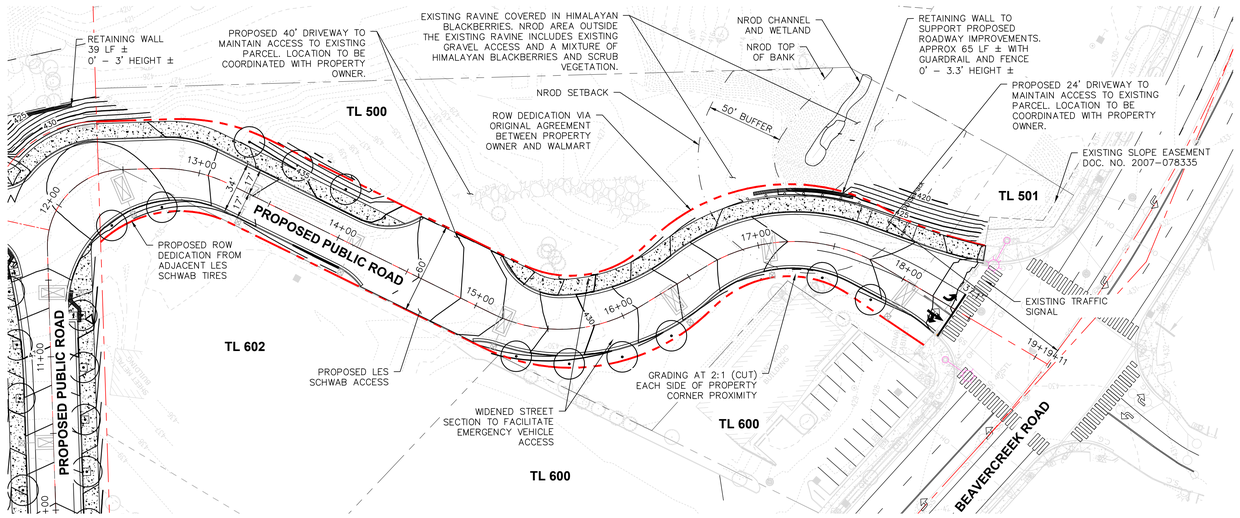
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

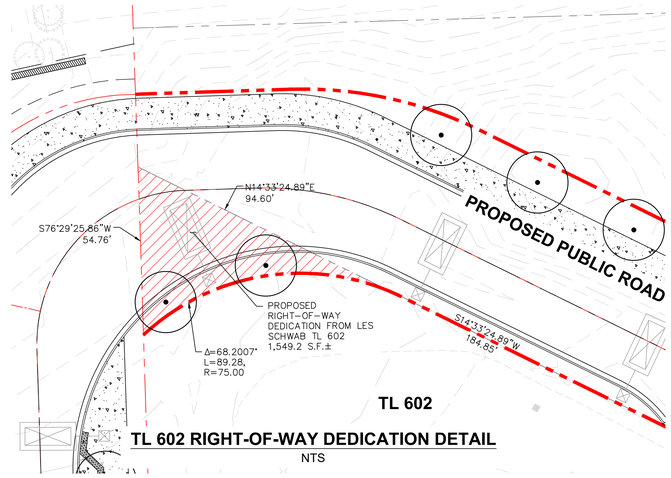
SHEET NAME

PROPOSED PUBLIC ROAD PLAN, PROFILE, AND TYPICAL SECTIONS

SHEET NUMBER

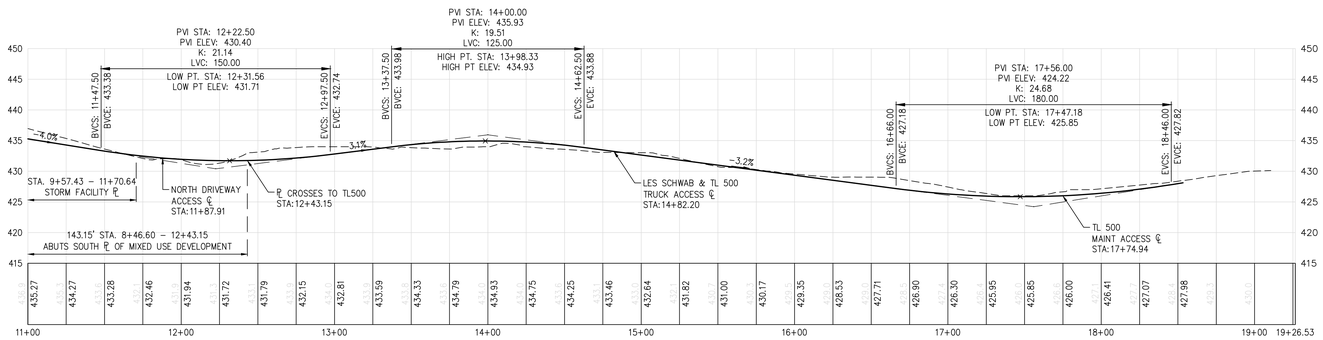
DDP-C1.2





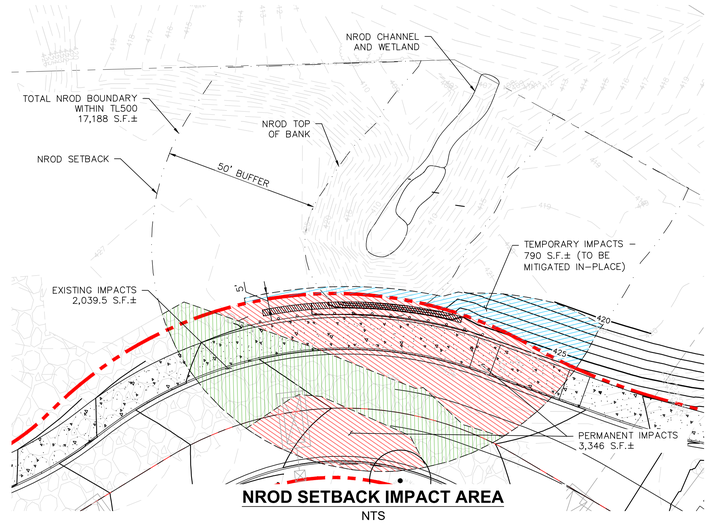
TL 602 RIGHT-OF-WAY DEDICATION DETAIL

NTS



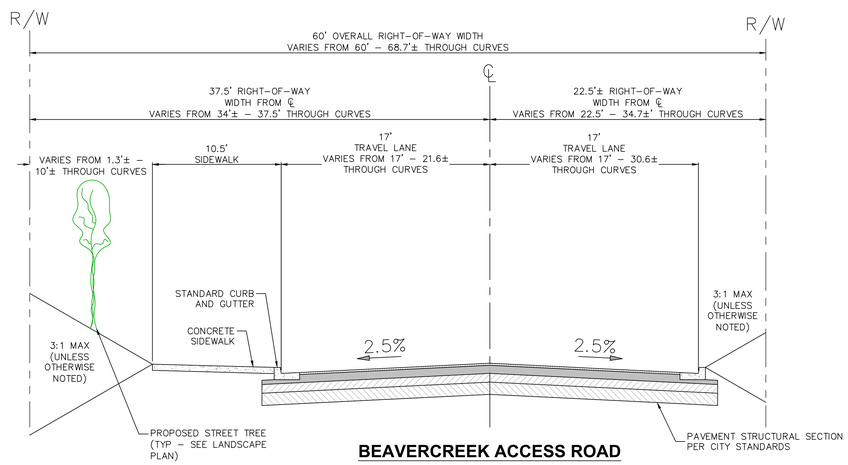
PROPOSED PUBLIC ROAD PROFILE

SCALE:
HORIZONTAL: 1" = 40'
VERTICAL: 1" = 10'



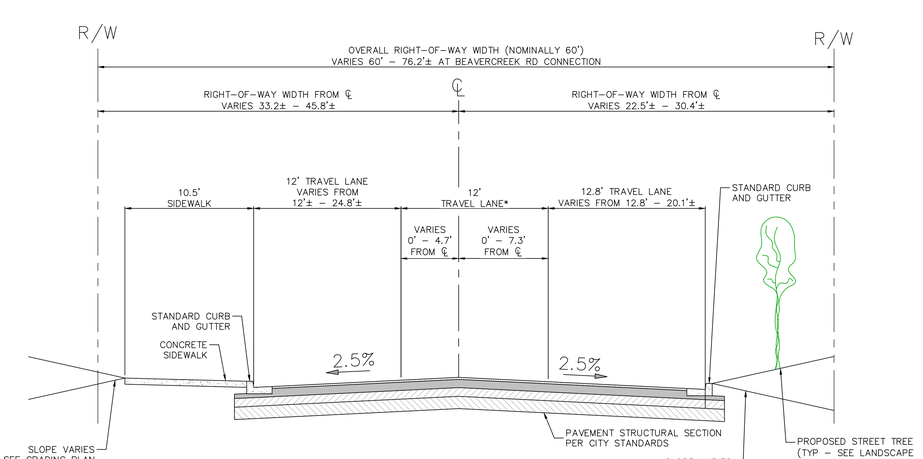
NROD SETBACK IMPACT AREA

NTS



BEAVERCREEK ACCESS ROAD TYPICAL SECTION

12+33.65 - 14+92.03
NTS



BEAVERCREEK ACCESS ROAD TYPICAL SECTION

14+92.03 - 18+59
NTS

NOTES:

* CENTER TRAVEL LANE BEGINS AT STATION 17+39.33.

LEGEND

- PROPERTY LINE
- STANDARD CURB
- ROAD CENTER LINE
- 5' PUE
- CONCRETE SIDEWALK
- STREET TREES – SEE LANDSCAPE PLAN
- STREET TREE IN TREE GRATE – SEE LANDSCAPE PLAN
- DECORATIVE STREET LIGHT – SEE LIGHTING PLAN
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CLIENT/OWNER

CYPRESS EQUITIES

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PROJECT ADDRESS

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SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

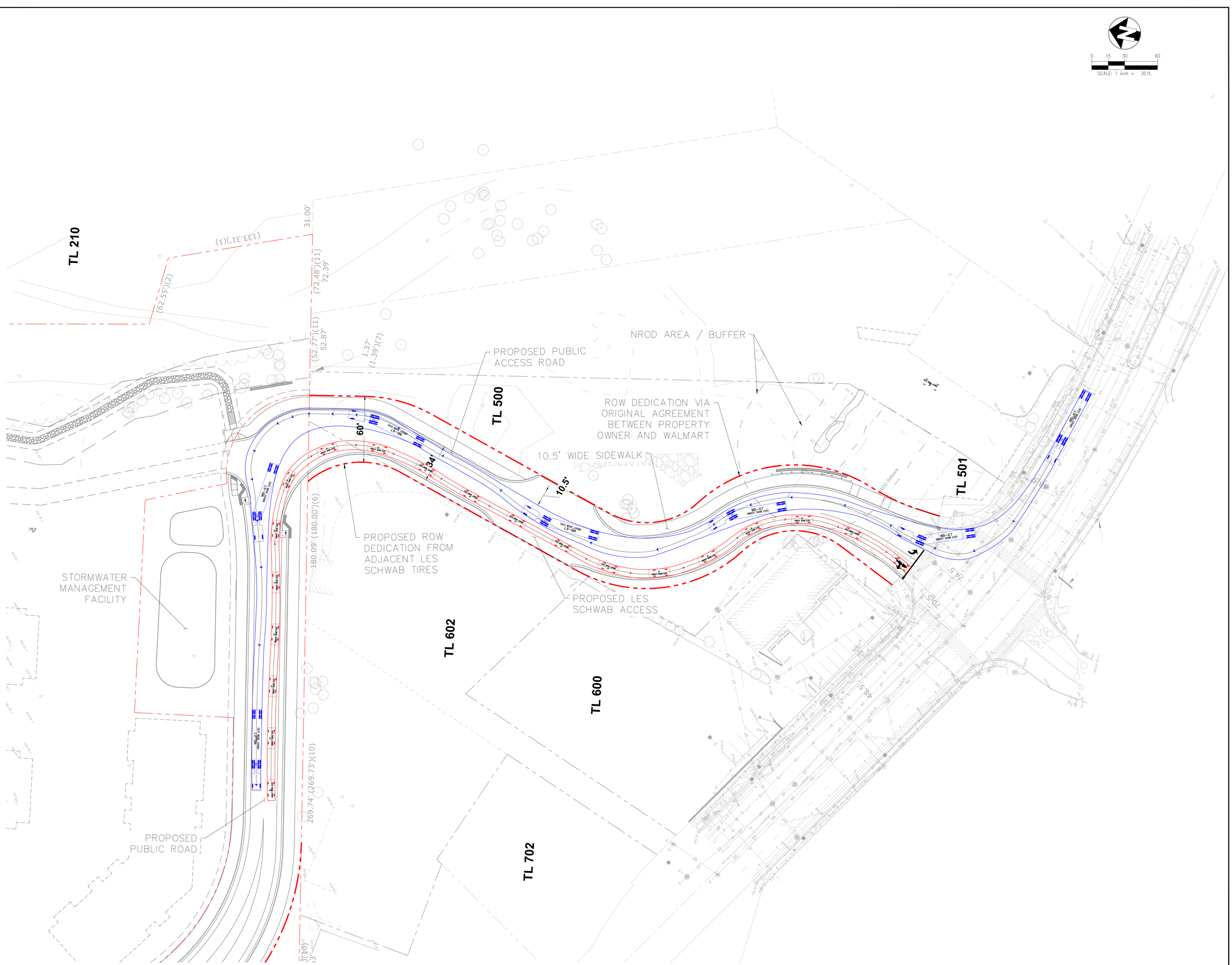
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

PROPOSED PUBLIC ROAD PLAN, PROFILE, AND TYPICAL SECTIONS

SHEET NUMBER

DDP-C1.3



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SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

TRUCK TURNING - RIGHT TURN ONTO PROPOSED PUBLIC ROAD

SHEET NUMBER

DDP-C1.4

0 15 30 60

SCALE: 1 inch = 30 ft.

TL 210

(133.31')(1)

31.00'

(62.55')(2)

(72.48')(11)
72.39'

(52.77')(11)
52.87'

1.37'
(1.39')(7)

PROPOSED PUBLIC ACCESS ROAD

NROD AREA / BUFFER

TL 500

ROW DEDICATION VIA ORIGINAL AGREEMENT BETWEEN PROPERTY OWNER AND WALMART

10.5' WIDE SIDEWALK

60'

34'

10.5'

TL 501

ROD Setback

180.09' (180.00')(6)

PROPOSED ROW DEDICATION FROM ADJACENT LES SCHWAB TIRES

PROPOSED LES SCHWAB ACCESS

STORMWATER MANAGEMENT FACILITY

TL 602

TL 600

TL 702

269.74' (269.73')(10)

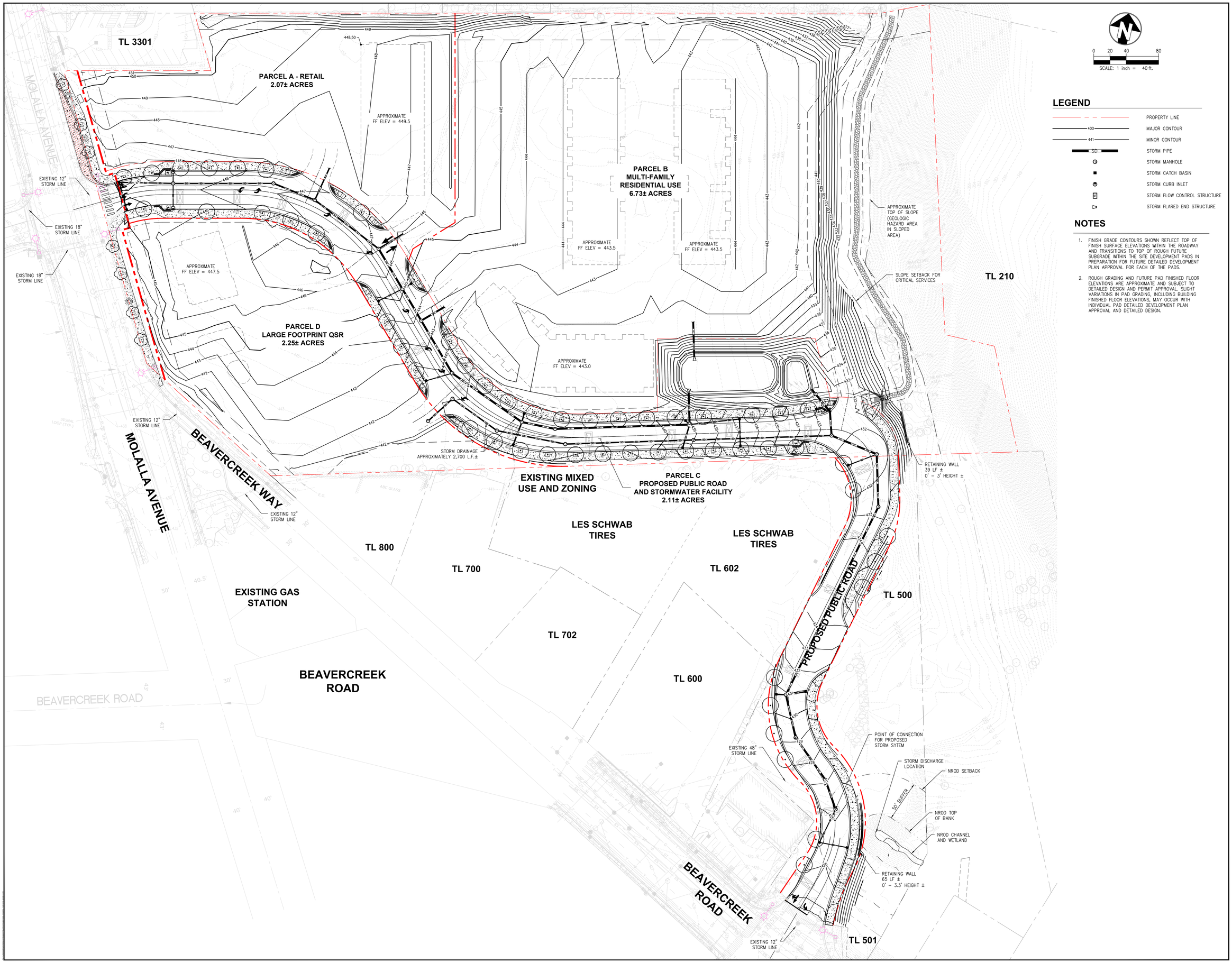
PROPOSED PUBLIC ROAD

(10)

WB-67
ORDOT 2006 (US)

WB-67
ORDOT 2006 (US)

WB-67
ORDOT 2006 (US



LEGEND

- PROPERTY LINE
- MAJOR CONTOUR
- MINOR CONTOUR
- STORM PIPE
- STORM MANHOLE
- STORM CATCH BASIN
- STORM CURB INLET
- STORM FLOW CONTROL STRUCTURE
- STORM FLARED END STRUCTURE

NOTES

1. FINISH GRADE CONTOURS SHOWN REFLECT TOP OF FINISH SURFACE ELEVATIONS WITHIN THE ROADWAY AND TRANSITIONS TO TOP OF ROUGH FUTURE SUBGRADE WITHIN THE SITE DEVELOPMENT PADS IN PREPARATION FOR FUTURE DETAILED DEVELOPMENT PLAN APPROVAL FOR EACH OF THE PADS.
2. ROUGH GRADING AND FUTURE PAD FINISHED FLOOR ELEVATIONS ARE APPROXIMATE AND SUBJECT TO DETAILED DESIGN AND PERMIT APPROVAL. SLIGHT VARIATIONS IN PAD GRADING, INCLUDING BUILDING FINISHED FLOOR ELEVATIONS, MAY OCCUR WITH INDIVIDUAL PAD DETAILED DEVELOPMENT PLAN APPROVAL AND DETAILED DESIGN.

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SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

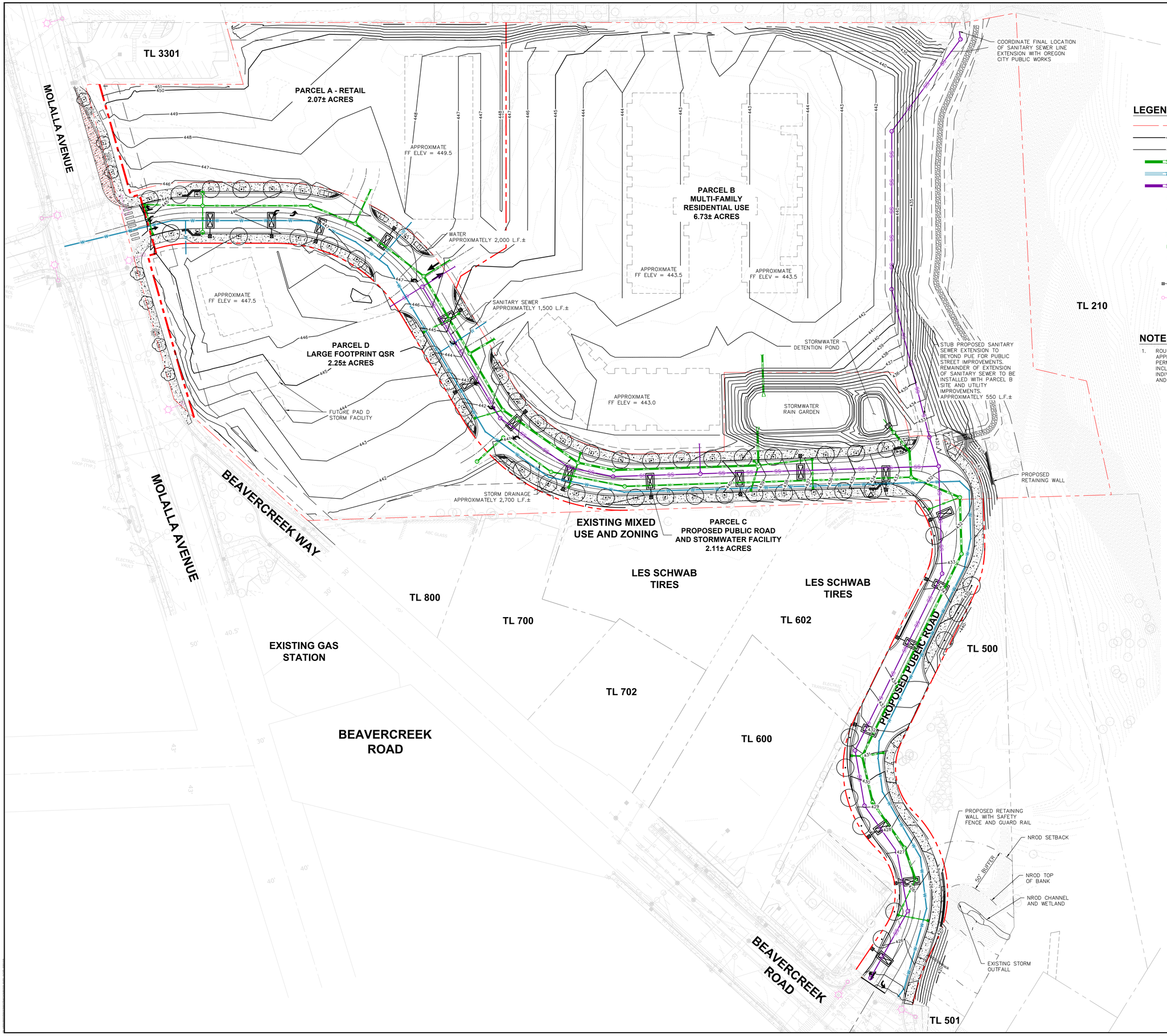
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

PRELIMINARY CIVIL GRADING AND DRAINAGE PLAN

SHEET NUMBER

DDP-C2.0



NOTES

1. ROUGH GRADING AND FUTURE PAD FF ELEVATIONS ARE APPROXIMATE AND SUBJECT TO DETAILED DESIGN AND PERMIT APPROVAL. SLIGHT VARIATIONS IN PAD GRADING, INCLUDING BUILDING FF ELEVATIONS, MAY OCCUR WITH INDIVIDUAL PAD DETAILED DEVELOPMENT PLAN APPROVAL AND DETAILED DESIGN.

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811

SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

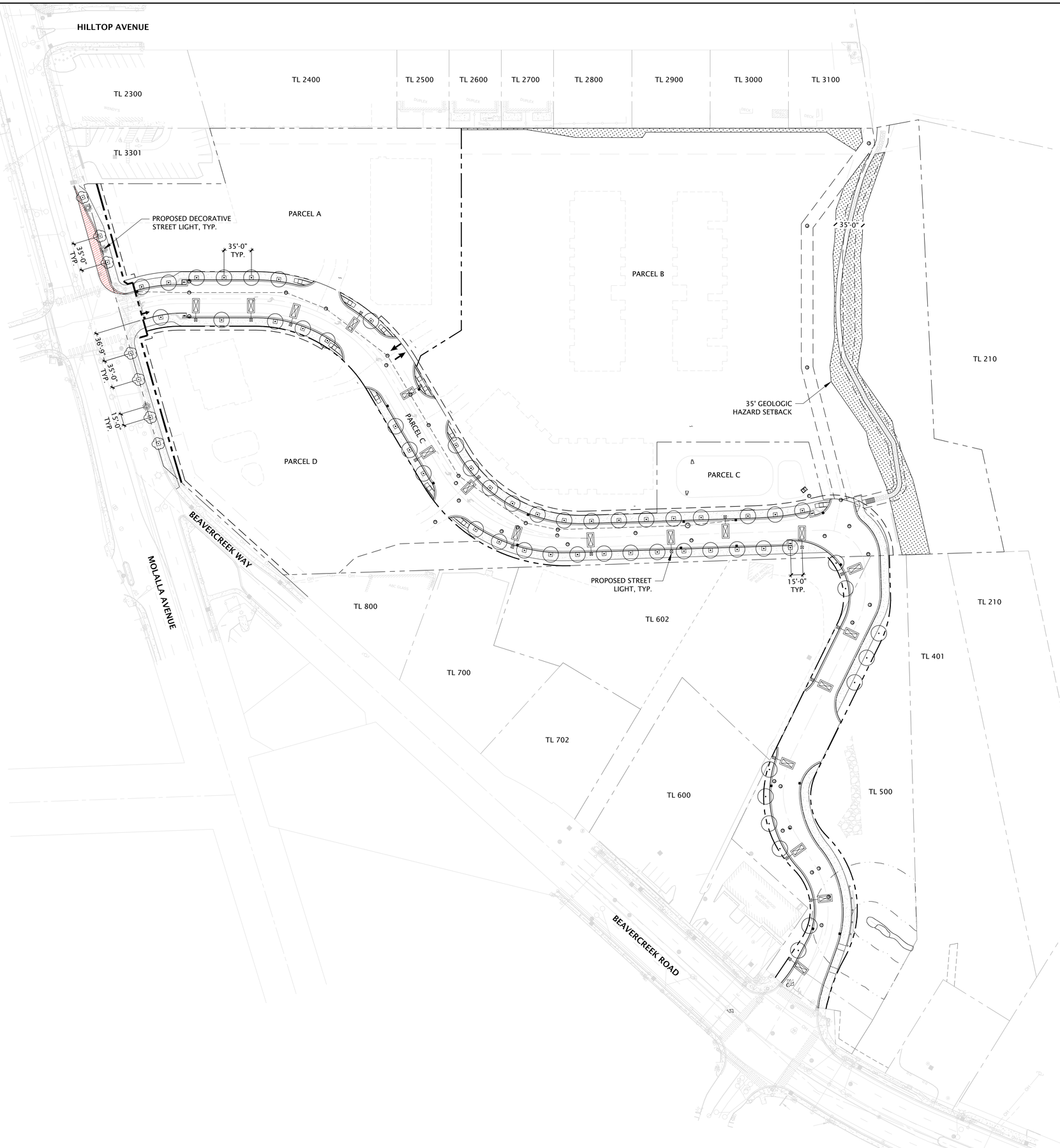
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

PRELIMINARY CIVIL UTILITY PLAN

SHEET NUMBER

DDP-C3.0



0 25 50 100

SCALE: 1 inch = 50 ft.

PLANT SCHEDULE

SYMBOL	QTY	BOTANICAL / COMMON NAME	SIZE
SHRUBS			
	53	GINKGO BILOBA 'PRINCETON SENTRY' / PRINCETON SENTRY MAIDENHAIR TREE	3" CAL.
	7	ACER BUERGERIANUM / TRIDENT MAPLE	3" CAL.
		PLANTING AREA FOR TREE MITIGATION AND NROD MITIGATION	

LEGEND

SYMBOL	DESCRIPTION
	TREE GRATE PER CITY STANDARD
	PROPERTY LINE
	RIGHT OF WAY
	EASEMENT
	NROD SETBACK

NOTES:

1. SOIL AMENDMENTS ARE PER SOILS REPORT.
2. ALL NEW PLANTING AREAS TO BE IRRIGATED IF REQUIRED BY THE CITY ENGINEER.
3. ROOT BARRIERS SHALL BE PROVIDED FOR ALL TREES THAT WILL BE LOCATED WITHIN SIX FEET OF ANY STRUCTURE, PAVEMENT, OR ALTERNATE MATERIAL SUCH AS WATERLINES, BUILDING FOUNDATIONS, CONCRETE FLATWORK, OR TURF AREA.
4. ALL TREES SHALL BE STAKED WITH AT LEAST TWO STAKES ONE SHALL BE LOCATED ON THE PREVAILING WINDWARD SIDE.
5. SCOPE OF WORK IS ONLY FOR THE RIGHT-OF-WAY. PRIVATE/ONSITE IS EXCLUDED.
6. PARCEL A, B, AND D TO HAVE THEIR OWN DETAILED MITIGATION PLAN.

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SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

REVIEWED BY: A.ILAO
DESIGNED BY: D.LOPEZ

SHEET NAME

OVERALL LANDSCAPE PLAN

SHEET NUMBER

DDP-L1.0



0 25 50 100

SCALE: 1 inch = 50 ft.

LEGEND

SYMBOL	DESCRIPTION
×	TREE TO BE REMOVED
⊙	EXISTING EVERGREEN TREE
⊙	EXISTING DECIDUOUS TREE
——— — — ———	PROPERTY LINE
- - - - - - - - - - - -	LIMITS OF DISTURBANCE

NOTES:

1. NUMBER OF TREES TO BE REMOVED: 375±
2. SEE ARBORIST REPORT FROM WALTER H. KNAPP & ASSOCIATES, LLC DATED FEBRUARY 20, 2013.
3. ARBORIST REPORT TO BE UPDATED IN CONJUNCTION WITH FINAL DESIGN TO CONFIRM WHETHER IMPACTS FROM FINAL OFF-SITE STREET IMPROVEMENT DESIGN IMPACTS FINDINGS WITHIN THE REPORT.

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811

SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

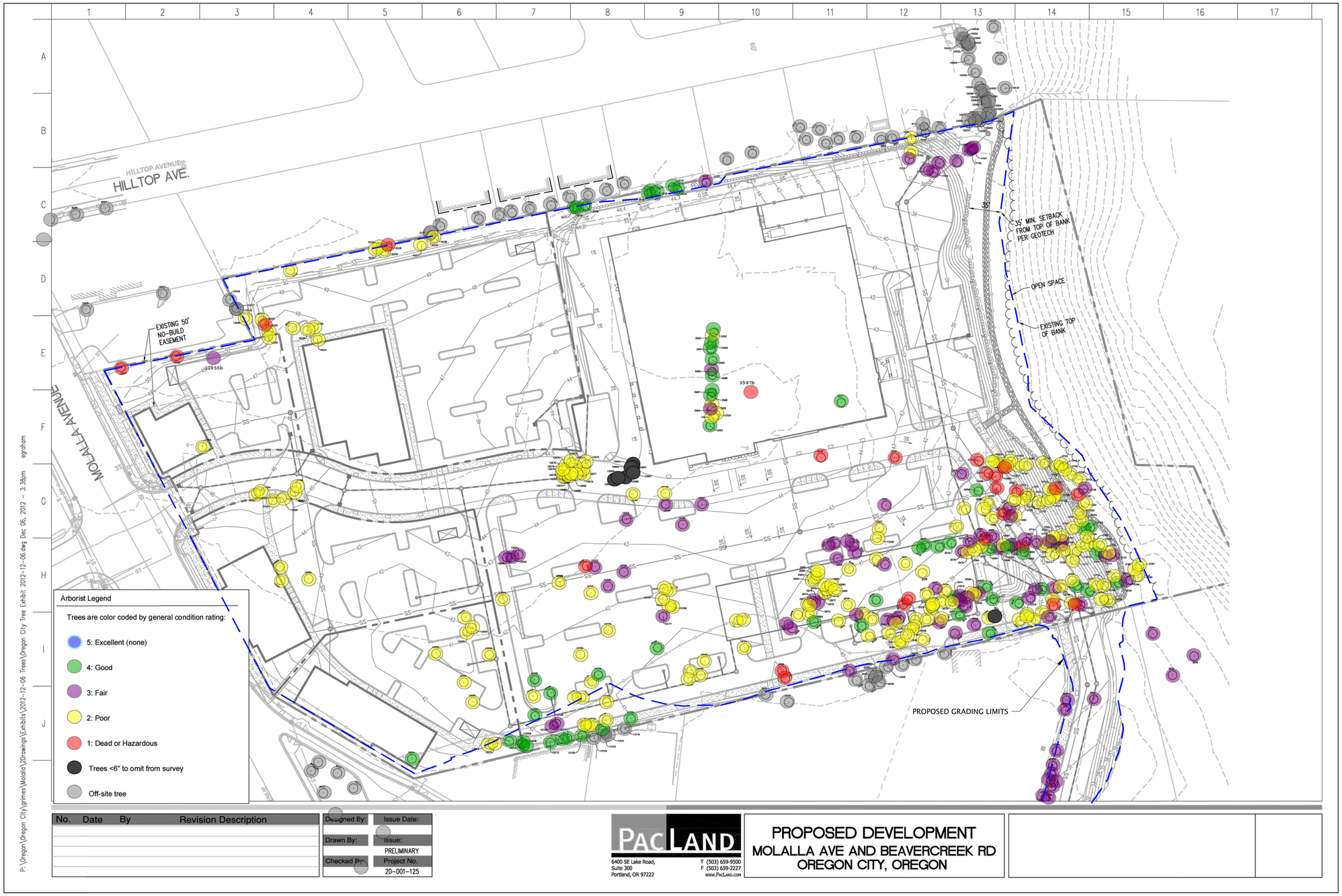
REVIEWED BY: A.ILAO
DESIGNED BY: D.LOPEZ

SHEET NAME

TREE REMOVAL PLAN

SHEET NUMBER

DDP-L0.1



P:\Oregon\Oregon City\grimes\Molalla\2Drawings\Exhibits\2012-12-06 Trees\Oregon City Tree Exhibit 2012-12-06.dwg Dec 06, 2012 - 3:38pm egraham

No.	Date	By	Revision Description

Designed By:	Issue Date:
Drawn By:	Issue: PRELIMINARY
Checked By:	Project No. 20-001-125

PACLAND
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PROPOSED DEVELOPMENT
MOLALLA AVE AND BEAVERCREEK RD
OREGON CITY, OREGON

NOTES:
1. THIS SHEET IS FOR REFERENCE ONLY. SEE ARBORIST REPORT FROM WALTER H. KNAPP & ASSOCIATES, LLC DATED FEBRUARY 20, 2013.

LANGAN
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CLIENT/OWNER

CYPRESS EQUITIES

PROJECT NAME

OREGON CITY MIXED USE DETAILED DEVELOPMENT PLAN

LANGAN PROJECT NUMBER: 794-002-701

PROJECT ADDRESS

1367 MOLALLA AVENUE
OREGON CITY, OR 97045

STAMP

REVISIONS

REV	ISSUED FOR:	DATE
0	DDP SUBMITTAL	11/14/2025
1	DDP SUBMITTAL	12/09/2025
2	DDP SUBMITTAL	03/02/2026

811

SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

REVIEWED BY: A.ILAO
DESIGNED BY: D.LOPEZ

SHEET NAME

ARBORIST REPORT MAP

SHEET NUMBER

DDP-L0.2

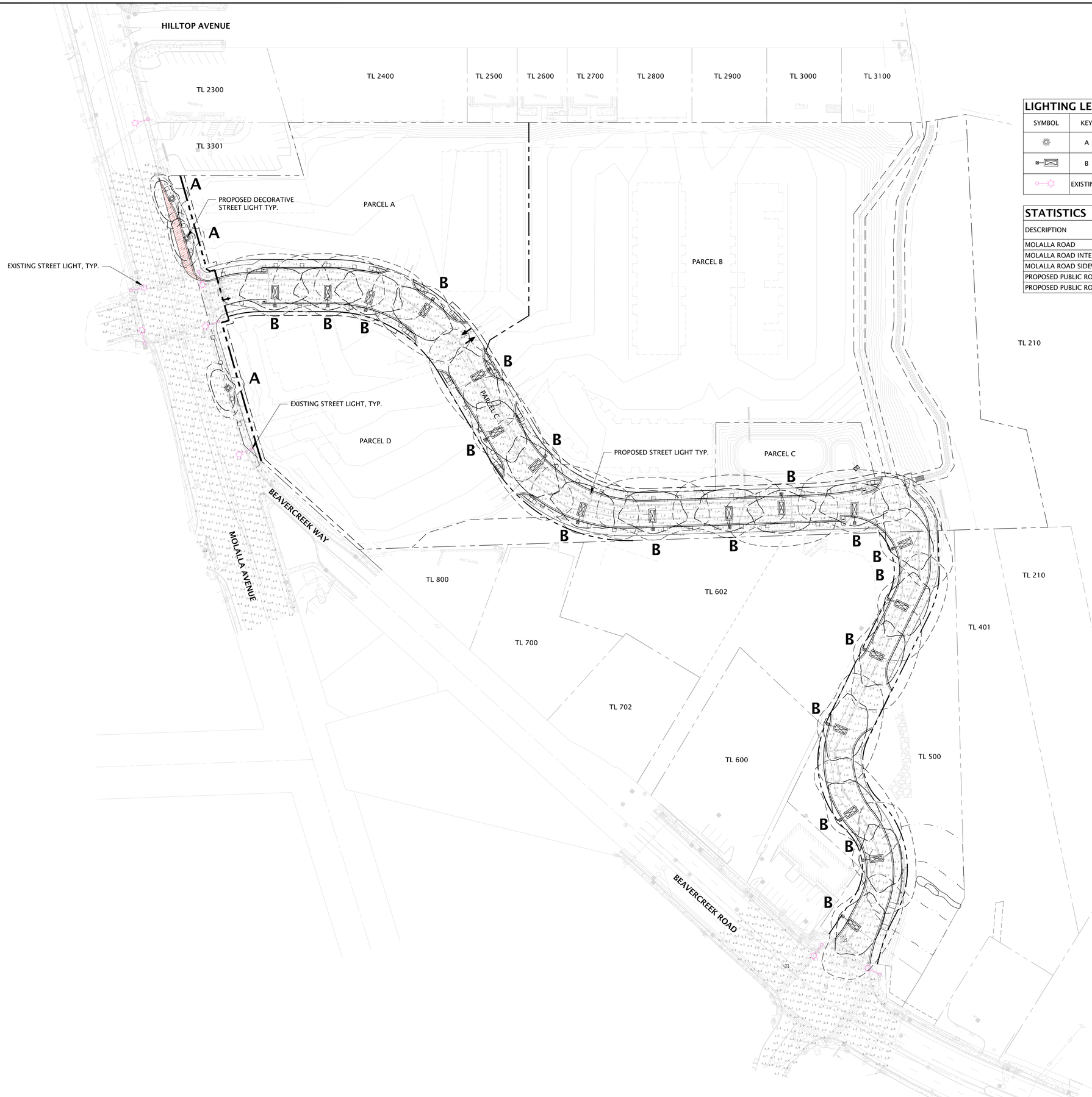
No.	Outside (O) or Within (W) Construction	Common Name	Species Name	DBH[1]	C-Rad[2]	Cond[3]	Comments	Invasive Species	Treatment	Mitigation
2931	O	Oregon white oak	*Quercus garryana*	26		0	not accessible		off-site	0
2932	O	adjacent tree		6		0			off-site	0
2935	O	adjacent tree		7		0			off-site	0
2936	O	adjacent tree		10	10	0			off-site	0
2937	O	adjacent tree		12	12	0			off-site	0
2938	O	adjacent tree		11	10	0			off-site	0
2939	O	adjacent tree		12	12	0			off-site	0
2940	O	adjacent tree		15	12	0			off-site	0
2941	W	bigleaf maple	*Acer macrophyllum*	14	12	3			retain	0
2953	O	adjacent tree		22		0			off-site	0
2954	O	adjacent tree		10	10	0			off-site	0
2955	W	bigleaf maple	*Acer macrophyllum*	10	10	3			retain	0
2956	O	adjacent tree		11	10	0			off-site	0
2957	W	sweet cherry	*Prunus avium*	8	8	1		Yes	remove	0
2958	W	Scouler's willow	*Salix scouleriana*	12	12	1			remove	0
2966	O	bigleaf maple	*Acer macrophyllum*	14	14	3			remove	6
2967	O	bigleaf maple	*Acer macrophyllum*	28	22	3			remove	12
2968	O	sweet cherry	*Prunus avium*	10	10	2		Yes	remove	0
2969	O	sweet cherry	*Prunus avium*	10	10	2		Yes	remove	0
2970	O	bigleaf maple	*Acer macrophyllum*	24	20	4			remove	9
2971	O	bigleaf maple	*Acer macrophyllum*	9	9	2			remove	3
2972	O	sweet cherry	*Prunus avium*	6		2		Yes	remove	0
2973	O	bigleaf maple	*Acer macrophyllum*	8	8	2			remove	3
2974	O	bigleaf maple	*Acer macrophyllum*	10	8	3			remove	3
2975	O	bigleaf maple	*Acer macrophyllum*	10	8	3			remove	3
2976	O	bigleaf maple	*Acer macrophyllum*	8	8	2			remove	3
2977	O	bigleaf maple	*Acer macrophyllum*	8	8	2			remove	3
2978	O	bigleaf maple	*Acer macrophyllum*	11		2			remove	3
2979	O	bigleaf maple	*Acer macrophyllum*	10	10	2			remove	3
2980	O	bigleaf maple	*Acer macrophyllum*	10	10	2			remove	3
2981	O	bigleaf maple	*Acer macrophyllum*	12	10	2			remove	3
2982	O	bigleaf maple	*Acer macrophyllum*	12	15	2			remove	3
2983	O	bigleaf maple	*Acer macrophyllum*	10	8	2			remove	3
2984	O	bigleaf maple	*Acer macrophyllum*	10	8	2			remove	3
2985	O	bigleaf maple	*Acer macrophyllum*	10	8	2			remove	3
2986	O	bigleaf maple	*Acer macrophyllum*	10	8	2			remove	3
2987	O	bigleaf maple	*Acer macrophyllum*	14	10	3			remove	6
2988	O	bigleaf maple	*Acer macrophyllum*	12	10	3			remove	3
2989	O	Oregon ash	*Fraxinus latifolia*	11	10	3			remove	3
2990	O	bigleaf maple	*Acer macrophyllum*	12	8	3			remove	3
2991	O	bigleaf maple	*Acer macrophyllum*	6		3			remove	3
2992	O	bigleaf maple	*Acer macrophyllum*	10	10	3			remove	3
2996	O	adjacent tree		30		0			off-site	0
2998	W	bigleaf maple	*Acer macrophyllum*	20		3			remove	3
2999	W	bigleaf maple	*Acer macrophyllum*	18		3			remove	2
3000	W	Douglas-fir	*Pseudotsuga menziesii*	52	20	4			remove	5
3005	O	Douglas-fir	*Pseudotsuga menziesii*	30		4			remove	12
3006	O	Douglas-fir	*Pseudotsuga menziesii*	22		4			remove	9
3007	O	Douglas-fir	*Pseudotsuga menziesii*	8		2			remove	3
3008	O	Douglas-fir	*Pseudotsuga menziesii*	15	10	3			remove	6
3009	O	Douglas-fir	*Pseudotsuga menziesii*	8		2			remove	3
3010	O	Douglas-fir	*Pseudotsuga menziesii*	20		3			remove	9
3011	O	Douglas-fir	*Pseudotsuga menziesii*	15		3			remove	6
3012	O	Douglas-fir	*Pseudotsuga menziesii*	18		3			remove	6
3013	O	Douglas-fir	*Pseudotsuga menziesii*	12		3			remove	3
3014	O	Douglas-fir	*Pseudotsuga menziesii*	24	15	4			remove	9
3015	O	Douglas-fir	*Pseudotsuga menziesii*	15		2	old broken top		remove	6
3016	W	Douglas-fir	*Pseudotsuga menziesii*	22	12	4			remove	3
3017	W	bigleaf maple	*Acer macrophyllum*	15		3			remove	0
3018	W	sweet cherry	*Prunus avium*	12		2		Yes	remove	0
3019	O	sweet cherry	*Prunus avium*	6		2		Yes	remove	0
3021	O	sweet cherry	*Prunus avium*	8		2		Yes	remove	0
3022	O	sweet cherry	*Prunus avium*	8		2		Yes	remove	0
3023	O	sweet cherry	*Prunus avium*	8		2		Yes	remove	0
3024	O	sweet cherry	*Prunus avium*	11	10	2		Yes	remove	0
3026	O	sweet cherry	*Prunus avium*	12	10	2		Yes	remove	0

No.	Outside (O) or Within (W) Construction	Common Name	Species Name	DBH[1]	C-Rad[2]	Cond[3]	Comments	Invasive Species	Treatment	Mitigation
3027	O	sweet cherry	*Prunus avium*	6		2		Yes	remove	0
3028	O	bigleaf maple	*Acer macrophyllum*	9	8	2	broken top		remove	3
3030	O	sweet cherry	*Prunus avium*	6		1	dead	Yes	remove	0
3031	O	sweet cherry	*Prunus avium*	6		1	dying, not viable	Yes	remove	0
3032	O	Douglas-fir	*Pseudotsuga menziesii*	27	20	4			remove	12
3033	O	bigleaf maple	*Acer macrophyllum*	8	8	2			remove	3
3034	O	bigleaf maple	*Acer macrophyllum*	12	12	2			remove	3
3035	O	Douglas-fir	*Pseudotsuga menziesii*	18		3			remove	6
3036	O	bigleaf maple	*Acer macrophyllum*	8		2			remove	3
3037	O	Douglas-fir	*Pseudotsuga menziesii*	30		4			remove	12
3038	W	Douglas-fir	*Pseudotsuga menziesii*	8		2			remove	1
3039	W	pear	*Pyrus* spp.	6		2			remove	1
3040	O	Douglas-fir	*Pseudotsuga menziesii*	18	10	3			remove	6
3041	O	Douglas-fir	*Pseudotsuga menziesii*	13	10	3			remove	6
3042	O	sweet cherry	*Prunus avium*	8	8	2		Yes	remove	0
3043	O	Douglas-fir	*Pseudotsuga menziesii*	24	12	3			remove	9
3044	O	sweet cherry	*Prunus avium*	8		2		Yes	remove	0
3046	W	sweet cherry	*Prunus avium*	8		2		Yes	remove	0
3047	W	sweet cherry	*Prunus avium*	8		2		Yes	remove	0
3048	W	sweet cherry	*Prunus avium*	10		2		Yes	remove	0
3049	W	sweet cherry	*Prunus avium*	9	8	2		Yes	remove	0
3050	W	sweet cherry	*Prunus avium*	9	8	2		Yes	remove	0
3051	W	sweet cherry	*Prunus avium*	14	10	2		Yes	remove	0
3052	O	bigleaf maple	*Acer macrophyllum*	6		2			remove	3
3063	W	bigleaf maple	*Acer macrophyllum*	25	12	3			remove	4
3070	O	Oregon ash	*Fraxinus latifolia*	12	10	3			remove	3
3071	O	bigleaf maple	*Acer macrophyllum*	6		2			remove	3
3072	O	Douglas-fir	*Pseudotsuga menziesii*	26		4			remove	12
3073	O	Douglas-fir	*Pseudotsuga menziesii*	18	18	4			remove	6
3074	O	Douglas-fir	*Pseudotsuga menziesii*	26	22	4			remove	12
3075	O	Douglas-fir	*Pseudotsuga menziesii*	26	22	4			remove	12
3076	O	English hawthorn	*Crataegus monogyna*	6		2		Yes	remove	0
3077	O	Douglas-fir	*Pseudotsuga menziesii*	26		3			remove	12
3078	O	Douglas-fir	*Pseudotsuga menziesii*	38		3	codominant stems		remove	15
3079	O	Douglas-fir	*Pseudotsuga menziesii*	15		2			remove	6
3080	O	Douglas-fir	*Pseudotsuga menziesii*	15		2			remove	6
3081	O	Douglas-fir	*Pseudotsuga menziesii*	12		2			remove	3
3082	O	Douglas-fir	*Pseudotsuga menziesii*	26		3			remove	12
3083	O	Douglas-fir	*Pseudotsuga menziesii*	10		1			remove	0
3084	O	Douglas-fir	*Pseudotsuga menziesii*	22	10	4			remove	9
3085	O	Douglas-fir	*Pseudotsuga menziesii*	24	20	3			remove	9
3086	O	Douglas-fir	*Pseudotsuga menziesii*	17	12	3			remove	6
3087	O	Douglas-fir	*Pseudotsuga menziesii*	6	10	2			remove	3
3088	O	Douglas-fir	*Pseudotsuga menziesii*	22	10	4			remove	9
3089	O	Douglas-fir	*Pseudotsuga menziesii*	16		3			remove	6
3090	O	Douglas-fir	*Pseudotsuga menziesii*	12	10	3			remove	3
3091	W	Douglas-fir	*Pseudotsuga menziesii*	10	6	2			remove	1
3092	W	Douglas-fir	*Pseudotsuga menziesii*	24		3			remove	3
3093	W	Douglas-fir	*Pseudotsuga menziesii*	8		1			remove	0
3095	W	Douglas-fir	*Pseudotsuga menziesii*	17		3			remove	2
3096	O	Douglas-fir	*Pseudotsuga menziesii*	6		2			remove	3
3097	O	sweet cherry	*Prunus avium*	8		2		Yes	remove	0
3098	W	sweet cherry	*Prunus avium*	6		2		Yes	remove	0
3099	W	Douglas-fir	*Pseudotsuga menziesii*	32		4			remove	5
3100	O	Oregon ash	*Fraxinus latifolia*	8		2			remove	3
3101	O	bigleaf maple	*Acer macrophyllum*	14	10	4			remove	6
3102	O	English hawthorn	*Crataegus monogyna*	10	10	2		Yes	remove	0
3103	O	English hawthorn	*Crataegus monogyna*	12	12	2		Yes	remove	0
3107	O	Douglas-fir	*Pseudotsuga menziesii*	22	12	3	ROW access		protect off-site tree	0
3108	O	adjacent tree		20	20	0			off-site	0
3109	O	bigleaf maple	*Acer macrophyllum*	17	15	2			remove	6
3110	W	adjacent tree		7	7	0			off-site	0
3111	O	adjacent tree		8	10	0			off-site	0
3112	O	adjacent tree		10	10	0			off-site	0
3113	O	adjacent tree		14	10	0			off-site	0
3114	O	adjacent tree		16	10	0			off-site	0

No.	Outside (O) or Within (W) Construction	Common Name	Species Name	DBH[1]	C-Rad[2]	Cond[3]	Comments	Invasive Species	Treatment	Mitigation
3115	O	adjacent tree		14	10	0			off-site	0
3116	O	Port-Orford-cedar	*Chamaecyparis lawsoniana*	14	15	4			retain	0
3117	O	Port-Orford-cedar	*Chamaecyparis lawsoniana*	12	12	4			retain	0
3118	O	Port-Orford-cedar	*Chamaecyparis lawsoniana*	15	15	4			retain	0
3119	O	Port-Orford-cedar	*Chamaecyparis lawsoniana*	22	12	4			retain	0
3120	O	Port-Orford-cedar	*Chamaecyparis lawsoniana*	8	8	4			retain	0
3137	O	adjacent tree		11	10	0			off-site	0
3208	O	Port-Orford-cedar	*Chamaecyparis lawsoniana*	12	10	4			retain	0
3216	O	Port-Orford-cedar	*Chamaecyparis lawsoniana*	14	10	4			retain	0
3217	O	Port-Orford-cedar	*Chamaecyparis lawsoniana*	12	10	4			retain	0
3273	W	sweet cherry	*Prunus avium*	10		2		Yes	remove	0
3583	W	Douglas-fir	*Pseudotsuga menziesii*	24	14	4	retain in group only		remove	3
3584	W	Douglas-fir	*Pseudotsuga menziesii*	12	12	3	retain in group only		remove	1
3585	W	Douglas-fir	*Pseudotsuga menziesii*	8	8	2			remove	1
3586	W	Douglas-fir	*Pseudotsuga menziesii*	24	15	4	retain in group only		remove	3
3587	W	Douglas-fir	*Pseudotsuga menziesii*	24	15	4	retain in group only		remove	3
3587b	O	Scouler's willow	*Salix scouleriana*	14		1			remove	0
3588	W	Douglas-fir	*Pseudotsuga menziesii*	24	20	4	retain in group only		remove	3
3589	W	Douglas-fir	*Pseudotsuga menziesii*	19	18	3	retain in group only		remove	3
3590	W	Douglas-fir	*Pseudotsuga menziesii*	24	20	4	retain in group only		remove	3
3591	W	Douglas-fir	*Pseudotsuga menziesii*	24	18	4	retain in group only		remove	3
3592	W	Douglas-fir	*Pseudotsuga menziesii*	10	10	2			remove	1
3593	W	Douglas-fir	*Pseudotsuga menziesii*	24	20	4	retain in group only		remove	3
3627	W	Douglas-fir	*Pseudotsuga menziesii*	22	12	4			remove	3
3628	W	bigleaf maple	*Acer macrophyllum*	36	15	1	*Ganoderma* conks		remove	0
3665	O	adjacent tree		38	23	0			off-site	0
3670	O	sweet cherry	*Prunus avium*	17	12	3		Yes	remove	0
3672	O	adjacent tree		30	25	0			off-site	0
3673	O	adjacent tree		30	25	0			off-site	0
3682	O	adjacent tree		23	20	0			off-site	0
3683	O	adjacent tree		26	12	0			off-site	0
3684	O	adjacent tree		18	12	0			off-site	0
3685	O	adjacent tree		26	15	0			off-site	0
3691	W	Douglas-fir	*Pseudotsuga menziesii*	12		3			remove	1
3692	W	Douglas-fir	*Pseudotsuga menziesii*	8		1	dying, suppressed		remove	0
3693	W	Douglas-fir	*Pseudotsuga menziesii*	24		4			remove	3
3696	W	Douglas-fir	*Pseudotsuga menziesii*	18		4			remove	2
3697	W	bigleaf maple	*Acer macrophyllum*	18		2			remove	2
3698	W	bigleaf maple	*Acer macrophyllum*	14		2			remove	2
3699	W	bigleaf maple	*Acer macrophyllum*	10	10	2			remove	1
3700	W	Douglas-fir	*Pseudotsuga menziesii*	12	8	3			remove	1
3701	W	Oregon white oak	*Quercus garryana*	28		2			remove	4
3702	W	Douglas-fir	*Pseudotsuga menziesii*	14		3			remove	2
3703	W	bigleaf maple	*Acer macrophyllum*	14		1	stem decay		remove	0
3704	W	Douglas-fir	*Pseudotsuga menziesii*	12	8	3			remove	1
3706	W	bigleaf maple	*Acer macrophyllum*	12		1	broken top, not viable		remove	0
3707	W	Douglas-fir	*Pseudotsuga menziesii*	12		3			remove	1
3708	W	Douglas-fir	*Pseudotsuga menziesii*	24		4			remove	3
3709	W	bigleaf maple	*Acer macrophyllum*	12		2			remove	1
3710	W	Douglas-fir	*Pseudotsuga menziesii*	24	10	4			remove	3
3711	W	Douglas-fir	*Pseudotsuga menziesii*	10	8	2			remove	1
3712	W	Douglas-fir	*Pseudotsuga menziesii*	24	12	4			remove	3
3713	W	Douglas-fir	*Pseudotsuga menziesii*	6		3			remove	1
3714	W	Douglas-fir	*Pseudotsuga menziesii*	26		3			remove	4
3715	W	bigleaf maple	*Acer macrophyllum*	12		2			remove	1
3716	W	Douglas-fir	*Pseudotsuga menziesii*	20	10	3			remove	3
3717	W	bigleaf maple	*Acer macrophyllum*	17	10	2			remove	2
3719	W	sweet cherry	*Prunus avium*	6		2		Yes	remove	0
3720	W	sweet cherry	*Prunus avium*	14		2		Yes	remove	0
3721	W	sweet cherry	*Prunus avium*	10	10	2		Yes	remove	0
3722	W	sweet cherry	*Prunus avium*	14		2		Yes	remove	0
3724	W	sweet cherry	*Prunus avium*	8		1	lean	Yes	remove	0
3725	W	sweet cherry	*Prunus avium*	16		2		Yes	remove	0
3726	W	sweet cherry	*Prunus avium*	10		1	dying, not viable	Yes	remove	0
3728	W	bigleaf maple	*Acer macrophyllum*	18		1	hollow with decay		remove	0
3734	W	bigleaf maple	*Acer macrophyllum*	16		1	decay, history of failure		remove	0

No.	Outside (O) or Within (W) Construction	Common Name	Species Name	DBH[1]	C-Rad[2]	Cond[3]	Comments	Invasive Species	Treatment	Mitigation
3737	W	bigleaf maple	*Acer macrophyllum*	18		1	stem decay		remove	0
3739	O	sweet cherry	*Prunus avium*	21	12	2		Yes	remove	0
3740	O	bigleaf maple	*Acer macrophyllum*	16	12	2			remove	6
3741	O	sweet cherry	*Prunus avium*	36		1	stem decay, branch failures	Yes	remove	0
3742	O	sweet cherry	*Prunus avium*	14	10	2		Yes	remove	0
3743	O	sweet cherry	*Prunus avium*	12		2		Yes	remove	0
3744	O	sweet cherry	*Prunus avium*	8		2		Yes	remove	0
3745	O	sweet cherry	*Prunus avium*	10		2		Yes	remove	0
3746	O	bigleaf maple	*Acer macrophyllum*	20		2			retain	0
3747	O	bigleaf maple	*Acer macrophyllum*	11	8	2			retain	0
3748	O	bigleaf maple	*Acer macrophyllum*	12	8	3			retain	0
3749	O	bigleaf maple	*Acer macrophyllum*	6		1			remove	0
3750	O	bigleaf maple	*Acer macrophyllum*	14		2			remove	6
3751	O	bigleaf maple	*Acer macrophyllum*	12		1			remove	0
3752	O	sweet cherry	*Prunus avium*	10	10	2		Yes	remove	0
3753	O	sweet cherry	*Prunus avium*	12		2		Yes	remove	0
3754	W	Douglas-fir	*Pseudotsuga menziesii*	20	10	3			remove	3
3755	W	bigleaf maple	*Acer macrophyllum*	9		2			remove	1
3756	W	Douglas-fir	*Pseudotsuga menziesii*	16		3			remove	2
3757	W	bigleaf maple	*Acer macrophyllum*	8		2			remove	1
3758	W	Douglas-fir	*Pseudotsuga menziesii*	12		3			remove	1
3759	W	bigleaf maple	*Acer macrophyllum*	8		2			remove	1
3760	O	Douglas-fir	*Pseudotsuga menziesii*	18	8	3			remove	6
3761	O	bigleaf maple	*Acer macrophyllum*	12		2			remove	3
3762	O	sweet cherry	*Prunus avium*	12		2		Yes	remove	0
3763	O	bigleaf maple	*Acer macrophyllum*	10	8	2			remove	3
3764	O	Douglas-fir	*Pseudotsuga menziesii*	18	10	4			remove	6
3765	O	Douglas-fir	*Pseudotsuga menziesii*	24	12	4			retain	0
3766	O	Douglas-fir	*Pseudotsuga menziesii*	17		2	old broken top		remove	6
3767	O	Douglas-fir	*Pseudotsuga menziesii*	20		2			remove	9
3768	O	Douglas-fir	*Pseudotsuga menziesii*	12		2			remove	3
3769	O	Douglas-fir	*Pseudotsuga menziesii*	24		4			remove	9
3770	O	bigleaf maple	*Acer macrophyllum*	10		2			retain	0
3771	O	Douglas-fir	*Pseudotsuga menziesii*	12	7	3			retain	0
3772	O	Douglas-fir	*Pseudotsuga menziesii*	15	8	3			retain	0
3773	W	bigleaf maple	*Acer macrophyllum*	16		2			remove	2
3775	O	bigleaf maple	*Acer macrophyllum*	12		2			remove	3
3777	O	bigleaf maple	*Acer macrophyllum*	14		2			remove	6
3778	O	bigleaf maple	*Acer macrophyllum*	28	25	2			remove	12
3779	O	bigleaf maple	*Acer macrophyllum*	12		2			remove	3
3780	O	bigleaf maple	*Acer macrophyllum*	10		2			remove	3
3781	O	Douglas-fir	*Pseudotsuga menziesii*	20	10	4			retain	0
3782	O	bigleaf maple	*Acer macrophyllum*	12		2			remove	3
3783	O	Douglas-fir	*Pseudotsuga menziesii*	10		3			retain	0
3784	O	bigleaf maple	*Acer macrophyllum*	10		2			retain	0
3785	O	bigleaf maple	*Acer macrophyllum*	24	12	2			retain	0
3786	O	bigleaf maple	*Acer macrophyllum*	12		2			retain	0
3787	O	bigleaf maple	*Acer macrophyllum*	12		2			retain	0
3834	O	bigleaf maple	*Acer macrophyllum*	16		3	ROW access		protect off-site tree	0
3838	O	Oregon white oak	*Quercus garryana*	26		3	ROW access		protect off-site tree	0
3839	O	Oregon white oak	*Quercus garryana*	20	20	3	ROW access		protect off-site tree	0
3864	W	Douglas-fir	*Pseudotsuga menziesii*	16		3	ROW access		remove off-site tree	2
3904	W	Douglas-fir	*Pseudotsuga menziesii*	22		3	ROW access		protect off-site tree	0
3905	W	Douglas-fir	*Pseudotsuga menziesii*	14		3	ROW access		protect off-site tree	0
4184	O	adjacent tree		14	10	0	ROW access		protect off-site tree	0
4185	O	adjacent tree		12	8	0	ROW access		protect off-site tree	0
4211	W	Douglas-fir	*Pseudotsuga menziesii*	15		4	ROW access		remove off-site tree	2
4212	W	Douglas-fir	*Pseudotsuga menziesii*	12	10	4	ROW access		remove off-site tree	1
4213	W	Douglas-fir	*Pseudotsuga menziesii*	8	8	3	ROW access		remove off-site tree	1
4214	W	Douglas-fir	*Pseudotsuga menziesii*	16	12	4	ROW access		remove off-site tree	2
4215	W	Douglas-fir	*Pseudotsuga menziesii*	16	12	4	ROW access		remove off-site tree	2
4216	W	bigleaf maple	*Acer macrophyllum*	32	15	3	ROW access		remove off-site tree	5
4725	O	adjacent tree		15	12	0			off-site	0
4726	O	adjacent tree		15	12	0			off-site	0
4748	O	adjacent tree		18	20	0			off-site	0
4757	O	adjacent tree		18	12	0			off-site	0

No.	Outside (O) or Within (W) Construction	Common Name	Species Name	DBH[1]	C-Rad[2]	Cond[3]	Comments	Invasive Species	Treatment	Mitigation
4758	O	adjacent tree		20	15	0			off-site	0
4775	O	adjacent tree		10	10	0			off-site	0
4786	O	adjacent tree		18	15	0			off-site	0
4787	O	adjacent tree		15	15	0			off-site	0
4998	O	adjacent tree		18	12	0			off-site	0
6005	O	Douglas-fir	*Pseudotsuga menziesii*	14	10	0			off-site	0
6224	O	bigleaf maple	*Acer macrophyllum*	17	10	2			remove	6
6225	O	bigleaf maple	*Acer macrophyllum*	17	10	2			remove	6
6226	O	sweet cherry	*Prunus avium*	8	8	2		Yes	remove	0
6227	O	sweet cherry	*Prunus avium*	10	10	2		Yes	remove	0
6228	W	bigleaf maple	*Acer macrophyllum*	6	8	2			remove	1
6229	W	bigleaf maple	*Acer macrophyllum*	18	15	2			remove	2
6230	O	Scouler's willow	*Salix scouleriana*	17	12	1			remove	0
6231	O	bigleaf maple	*Acer macrophyllum*	14	12	2			remove	6
6232	O	bigleaf maple	*Acer macrophyllum*	8	8	2			remove	3
6233	O	sweet cherry	*Prunus avium*	20	14	2		Yes	remove	0
6234	O	sweet cherry	*Prunus avium*	12	10	2		Yes	remove	0
6235	O	sweet cherry	*Prunus avium*	12	10	2		Yes	remove	0
6236	O	sweet cherry	*Prunus avium*	16	14	1		Yes	remove	0
6237	O	sweet cherry	*Prunus avium*	6	10	2		Yes	remove	0
6238	O	sweet cherry	*Prunus avium*	23	20	2		Yes	remove	0
6239	O	adjacent tree		17	15	0			off-site	0
6289	W	bigleaf maple	*Acer macrophyllum*	10	15	2			remove	1
6290	W	bigleaf maple	*Acer macrophyllum*	10	15	2			remove	1
6291	O	bigleaf maple	*Acer macrophyllum*	10	15	2			remove	3
6293	W	bigleaf maple	*Acer macrophyllum*	10	15	2			remove	1
6294	W	bigleaf maple	*Acer macrophyllum*	14	15	2			remove	2
6295	W	bigleaf maple	*Acer macrophyllum*	8	12	2			remove	1
7353	W	sweet cherry	*Prunus avium*	6	8	2		Yes	remove	0
7702	O	black cottonwood	*Populus trichocarpa*	6	8	2			remove	3
7703	O	black cottonwood	*Populus trichocarpa*	10	10	3			remove	3
7704	O	Oregon ash	*Fraxinus latifolia*	10	10	3			remove	3
7705	O	black cottonwood	*Populus trichocarpa*	12	15	3			remove	3
7706	W	black cottonwood	*Populus trichocarpa*	14	6	3			remove	2
7707	W	black cottonwood	*Populus trichocarpa*	6	10	3			remove	1
7708	W	black cottonwood	*Populus trichocarpa*	6	10	3			remove	1
7709	O	black cottonwood	*Populus trichocarpa*	10	15	3			remove	3
7710	O	black cottonwood	*Populus trichocarpa*	16	20	3			remove	6
8257	O	adjacent tree		6	6	0			off-site	0
8258	O	adjacent tree		6	6	0			off-site	0
8259	O	adjacent tree		6	6	0			off-site	0
8276	O	adjacent tree		10	15	0			off-site	0
8452	O	adjacent tree		6	5	0			off-site	0
8453	O	adjacent tree		6	5	0			off-site	0
8454	O	adjacent tree		6	5



0 25 50 100

SCALE: 1 inch = 50 ft.

LIGHTING LEGEND

SYMBOL	KEY	QTY.	DESCRIPTION
	A	3	DECORATIVE STREET LIGHT (KING ACORN STYLE) PER CITY STANDARD
	B	19	STREET LIGHT PER CITY STANDARD
	EXISTING STREET LIGHT		

STATISTICS

DESCRIPTION	AVG.	MAX.	MIN.	MAX./MIN.	AVG./MIN.
MOLALLA ROAD	1.59	5.9 FC	0.5 FC	14.7	3.98
MOLALLA ROAD INTERSECTION	2.95	3.5 FC	2.0 FC	1.75	1.48
MOLALLA ROAD SIDEWALK	1.65	5.3 FC	0.7 FC	7.57	2.36
PROPOSED PUBLIC ROAD	1.95	3.0 FC	0.6 FC	5.00	3.25
PROPOSED PUBLIC ROAD SIDEWALK	1.50	2.6 FC	0.5 FC	5.20	2.96

LEGEND

SYMBOL	DESCRIPTION
	PROPERTY LINE
	RIGHT OF WAY
	EASEMENT
	NROD SETBACK
	EXISTING ISOLINE 1.0 FOOT-CANDLE
	EXISTING ISOLINE 0.5 FOOT-CANDLE
	PROPOSED ISOLINE 1.0 FOOT-CANDLE
	PROPOSED ISOLINE 0.5 FOOT-CANDLE

NOTES:

1. ONLY LIGHTS WITHIN THE RIGHT OF WAY HAVE BEEN STUDIED/MODELED AND ASSESSED FOR COMPLIANCE. EXISTING LIGHTS AND ISOLINES SHOWN ARE FOR REFERENCE ONLY.
2. THERE ARE NO AS-BUILTS AVAILABLE AT THE TIME OF THIS PRELIMINARY DESIGN. EXISTING LIGHT INFORMATION IS NOT VERIFIED IN THE FIELD. EXISTING LIGHTS ARE TO REMAIN AND BE PROTECTED UNLESS SHOWN OTHERWISE.
3. CONTRACTOR TO VERIFY EXISTING CONDITIONS PRIOR TO REPLACING OR INSTALLING NEW LIGHT FIXTURES.
4. NEW LIGHT POLES SHALL NOT BE LOCATED IN THE PATH OF TRAVEL AND MAINTAIN A 3' CLEARANCE FROM THE FRONT OF CURB PER CITY STANDARDS.
5. PLAN IS DIAGRAMMATIC.
6. SCOPE OF WORK IS ONLY FOR THE RIGHT-OF-WAY. PRIVATE/ONSITE IS EXCLUDED.
7. ALL STREET LIGHTING RELATED WORK AND MATERIALS SHALL COMPLY WITH CITY, COUNTY, AND OTHER APPLICABLE GOVERNING AUTHORITY REQUIREMENTS.

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture, and Geology, D.P.C.
10135 SE Sunnyside Road Suite 200
Clackamas, OR 97015
T: 503.659.9500 www.langan.com

CLIENT/OWNER

CYPRESS EQUITIES

PROJECT NAME

OREGON CITY MIXED USE DETAILED DEVELOPMENT PLAN

LANGAN PROJECT NUMBER: 794-002-701

PROJECT ADDRESS

1367 MOLALLA AVENUE
OREGON CITY, OR 97045

STAMP

REVISIONS

REV	ISSUED FOR:	DATE
0	DDP SUBMITTAL	11/14/2025
1	DDP SUBMITTAL	12/09/2025
2	DDP SUBMITTAL	03/02/2026

811

SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

REVIEWED BY: A.ILAO
DESIGNED BY: D.LOPEZ

SHEET NAME

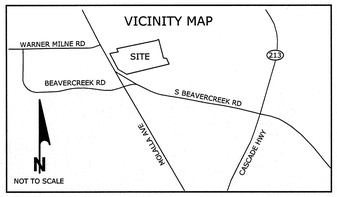
OVERALL LIGHTING PLAN

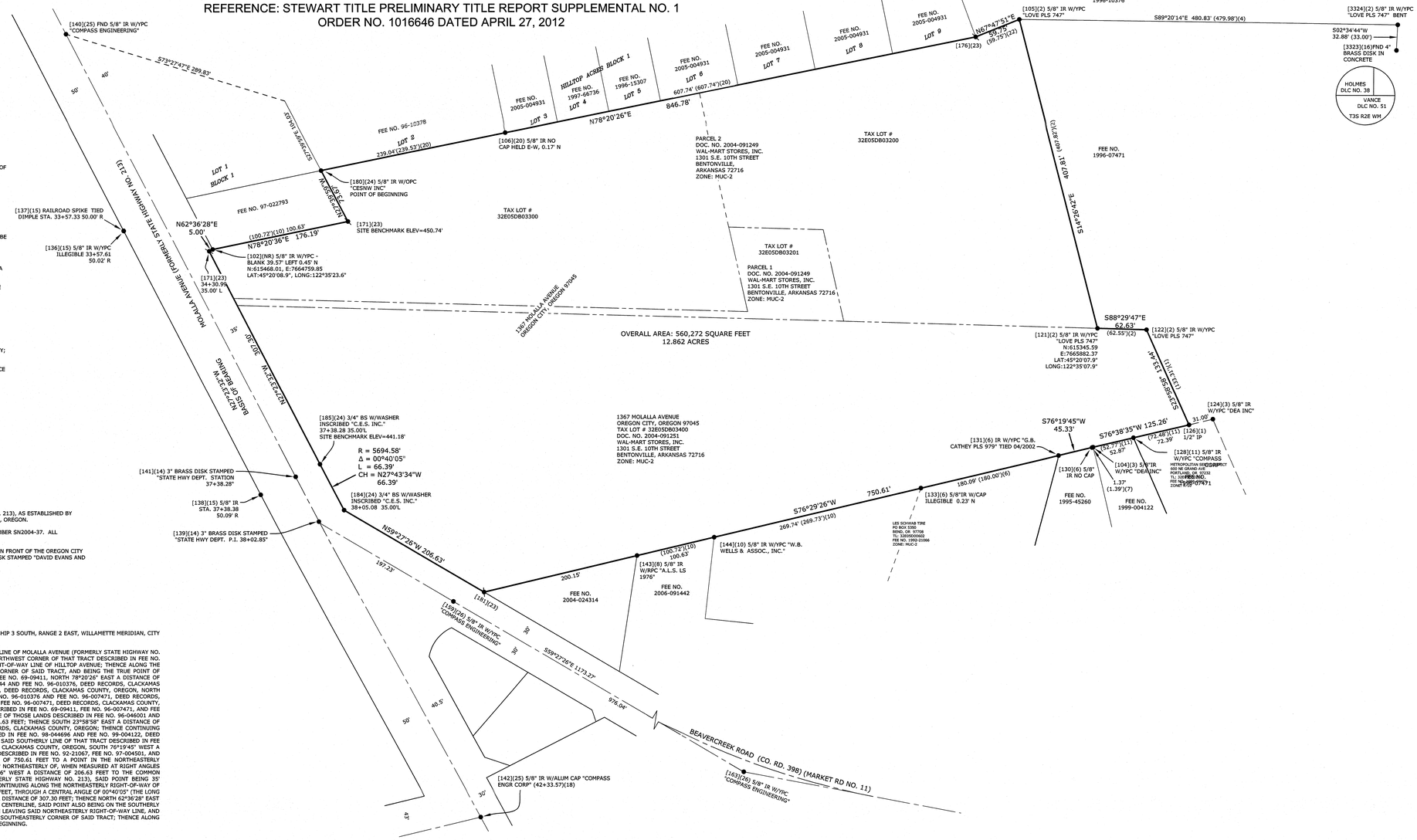
SHEET NUMBER

DDP-L2.0

ALTA/ACSM SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON
REFERENCE: STEWART TITLE PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 1
ORDER NO. 1016646 DATED APRIL 27, 2012




[140](25) FND 5/8" IR W/YPC "COMPASS ENGINEERING"
S73°27'47"E 289.83'
50'
40'
S73°59'58"E 104.04'
[137](15) RAILROAD SPIKE TIED DIMPLE STA. 33+57.33 50.00' R
[136](15) 5/8" IR W/YPC ILLEGIBLE 33+57.61 50.02' R
MOLALLA AVENUE (FORMERLY STATE HIGHWAY NO. 213)
LOT 1 BLOCK 1
FEE NO. 97-022793
N62°36'28"E 5.00'
N78°20'36"E 176.19'
(100.72')(10) 100.63'
[102](NR) 5/8" IR W/YPC - BLANK 39.57' LEFT 0.45' N N:615468.01, E:7664759.85 LAT:45°20'08.9", LONG:122°35'23.6"
[171](23) 34+30.99 35.00' L
[185](24) 3/4" BS W/WASHER INSCRIBED "C.E.S. INC." 37+38.28 35.00'L SITE BENCHMARK ELEV=441.18'
R = 5694.58'
Δ = 00°40'05"
L = 66.39'
CH = N27°43'34"W 66.39'
[184](24) 3/4" BS W/WASHER INSCRIBED "C.E.S. INC." 38+05.08 35.00'L
N27°23'32"W 307.30'
BASIS OF BEARINGS N27°23'32"W
[141](14) 3" BRASS DISK STAMPED "STATE HWY DEPT. STATION 37+38.28"
[138](15) 5/8" IR STA. 37+38.38 50.09' R
[139](14) 3" BRASS DISK STAMPED "STATE HWY DEPT. P.I. 38+02.85"
N59°27'26"W 206.63'
197.23'
[181](23)
[159](26) 5/8" IR W/YPC "COMPASS ENGINEERING"
S59°27'26"E 1173.37'
976.04'
40.5'
50'
30'
45'
[142](25) 5/8" IR W/ALUM CAP "COMPASS ENGR CORP" (42+33.57)(18)
[163](26) 5/8" IR W/YPC "COMPASS ENGINEERING"
BEAVERCREEK ROAD (CO. RD. 398) (MARKET RD NO. 11)
[106](20) 5/8" IR NO CAP HELD E-W, 0.17' N
[180](24) 5/8" IR W/OPC "CESNW INC" POINT OF BEGINNING
[171](23) SITE BENCHMARK ELEV=450.74'
FEE NO. 96-10378
LOT 2
239.04'(239.53')(20)
FEE NO. 2005-004931
LOT 3
HILLTOP ACRES BLOCK 1
FEE NO. 1997-66736
LOT 4
FEE NO. 1996-15307
LOT 5
FEE NO. 2005-004931
LOT 6
607.74' (607.74')(20)
FEE NO. 2005-004931
LOT 7
FEE NO. 2005-004931
LOT 8
FEE NO. 2005-004931
LOT 9
N78°20'26"E 846.78'
[176](23)
N67°47'51"E 59.75' (59.75')(22)
[105](2) 5/8" IR W/YPC "LOVE PLS 747"
FEE NO. 1996-10376
S89°20'14"E 480.83' (479.98')(4)
[3324](2) 5/8" IR W/YPC "LOVE PLS 747" BENT
S02°34'44"W 32.88' (33.00')
[3323](16)FND 4" BRASS DISK IN CONCRETE
HOLMES DLC NO. 38
VANCE DLC NO. 51
T3S R2E WM
PARCEL 2 DOC. NO. 2004-091249 WAL-MART STORES, INC. 1301 S.E. 10TH STREET BENTONVILLE, ARKANSAS 72716 ZONE: MUC-2
TAX LOT # 32E05DB03200
TAX LOT # 32E05DB03300
TAX LOT # 32E05DB03201
PARCEL 1 DOC. NO. 2004-091249 WAL-MART STORES, INC. 1301 S.E. 10TH STREET BENTONVILLE, ARKANSAS 72716 ZONE: MUC-2
1367 MOLALLA AVENUE OREGON CITY, OREGON 97045
1367 MOLALLA AVENUE OREGON CITY, OREGON 97045 TAX LOT # 32E05DB03400 DOC. NO. 2004-091251 WAL-MART STORES, INC. 1301 S.E. 10TH STREET BENTONVILLE, ARKANSAS 72716 ZONE: MUC-2
OVERALL AREA: 560,272 SQUARE FEET
12.862 ACRES
FEE NO. 1996-07471
40.18' (40.18')(21)
S15°58'48"E
[121](2) 5/8" IR W/YPC "LOVE PLS 747" N:615345.59 E:7665882.37 LAT:45°20'07.9" LONG:122°35'07.9"
S88°29'47"E 62.63' (62.55')(2)
[122](2) 5/8" IR W/YPC "LOVE PLS 747"
S15°58'48"E 135.44'
(135.44')(1)
[124](3) 5/8" IR W/YPC "DEA INC"
31.00'
S76°38'35"W 125.26'
(72.48')(11) 72.39'
[126](1) 1/2" IP
(52.77')(11) 52.67'
[128](11) 5/8" IR W/YPC "COMPASS ENGINEERING" FEE NO. 2006-091442
[104](3) 5/8" IR W/YPC "DEA INC"
1.37' (1.39')(7)
FEE NO. 1999-004122
S76°19'45"W 45.33'
[131](6) IR W/YPC "G.B. CATHEY PLS 979" TIED 04/2002
[130](6) 5/8" IR NO CAP
FEE NO. 1995-45260
S76°29'26"W 750.61'
269.74' (269.73')(10)
180.09' (180.00')(6)
[133](6) 5/8"IR W/CAP ILLEGIBLE 0.23' N
LES SCHWAB TIRE PO BOX 5305 BEND, OR 97708 TL: 32E05DD00602 FEE NO. 1992-21066 ZONE: MUC-2
[144](10) 5/8" IR W/YPC "W.B. WELLS & ASSOC., INC."
(100.72')(10) 100.63'
[143](8) 5/8" IR W/PC "A.L.S. LS 1976"
FEE NO. 2006-091442
200.15'
FEE NO. 2004-024314
FEE NO. 2005-004931
LOT 10
FEE NO. 2005-004931
LOT 11
FEE NO. 2005-004931
LOT 12
FEE NO. 2005-004931
LOT 13
FEE NO. 2005-004931
LOT 14
FEE NO. 2005-004931
LOT 15
FEE NO. 2005-004931
LOT 16
FEE NO. 2005-004931
LOT 17
FEE NO. 2005-004931
LOT

ALTA/ACSM SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2
EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON
REFERENCE: STEWART TITLE PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 1
ORDER NO. 1016646 DATED APRIL 27, 2012

SPECIAL EXCEPTIONS

6. CITY LIENS, IF ANY, OF THE CITY OF OREGON CITY.

7. PERSONAL PROPERTY TAXES, IF ANY

8. COVENANTS, CONDITIONS, RESTRICTIONS AND EASEMENTS IN DECLARATION OF RESTRICTIONS, AND ANY AMENDMENTS THERETO:
RECORDED: JUNE 3, 1981
RECORDING NO.: 81015230
(PLOTTED BUILDING RESTRICTION)

9. AN EASEMENT CREATED BY JUDGEMENT, AND THE TERMS AND CONDITIONS THEREOF:
ENTERED: DECEMBER 20, 1996
SUIT NO.: CV96-09-321
IN FAVOR OF: THE CITY OF OREGON CITY
FOR: RIGHT OF WAY
AFFECTS: THE WESTERLY PORTION OF SAID PREMISES
(PLOTTED RIGHT-OF-WAY EASEMENT)

10. EASEMENT AND THE TERMS AND CONDITIONS THEREOF:
GRANTEE: LES SCHWAB PROFIT SHARING TRUST
PURPOSE: INGRESS AND EGRESS
AFFECTS: REFERENCE SAID DOCUMENT FOR PARTICULARS
RECORDED: OCTOBER 1, 2004
RECORDING NO.: 2004091594
(NOT PLOTTED - EASEMENT AREA NOT CLEARLY DEFINED)

11. ANY UNRECORDED LEASEHOLDS, RIGHT OF VENDORS AND HOLDERS OF SECURITY INTEREST ON PERSONAL PROPERTY INSTALLED UPON SAID PROPERTY, AND RIGHT OF TENANTS TO REMOVE TRADE FIXTURES AT THE EXPIRATION OF THE TERM.

12. EVIDENCE OF THE INDEMNITY AND AUTHORITY OF THE OFFICES OF WAL-MART STORES, INC., A DELAWARE CORPORATION TO EXECUTE THE FORTHCOMING INSTRUMENT MUST BE SUBMITTED.

ZONING
MUC-2 - MIXED-USE CORRIDOR
OREGON CITY OREGON - MUNICIPAL CODE CHAPTER 17.29

SETBACKS 17.29.060 DIMENSIONAL STANDARDS

MAXIMUM ALLOWABLE SETBACKS:	
FRONT YARD	5'*
INTERIOR SIDE YARD	NONE
CORNER SIDE YARD ABUTTING STREET	25'**
REAR YARD	NONE
REAR YARD	NONE
MINIMUM REQUIRED INTERIOR AND REAR YARD SETBACKS IF ABUTTING A RESIDENTIAL ZONE	25'***
MAXIMUM BUILDING SQUARE FOOTAGE	NO MAXIMUM
MAXIMUM BUILDING HEIGHT	60'

*MAY BE EXPANDED WITH SITE PLAN AND DESIGN REVIEW REQUIREMENTS OF SECTION 17.62.055
**PROVIDED THE SITE PLAN AND DESIGN REVIEW REQUIREMENTS OF SECTION 17.62.055 ARE MET
***PLUS ONE FOOT ADDITIONAL YARD SETBACK FOR EVERY TWO FEET OF BUILDING HEIGHT OVER 35'

CITY OF OREGON CITY
PLANNING DEPARTMENT
221 MOLALLA AVENUE, SUITE 200
OREGON CITY, OR 97045
503-722-3789

NO REPRESENTATION IS MADE FOR THE ACCURACY OR COMPLETENESS OF SAID THIRD PARTY INFORMATION. THIS FIRM IS NOT AN EXPERT IN THE INTERPRETATION OF COMPLEX ZONING ORDINANCES. COMPLIANCE IS BEYOND THE SCOPE OF THIS SURVEY. ANY USER OF SAID INFORMATION IS URGED TO CONTACT THE LOCAL AGENCY DIRECTLY.



60 30 0 60
1" = 60'

REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
DECEMBER 13, 2007
RYAN H. GODSEY
65604
RENEWS: 6/30/13

OREGON CITY
PROJECT NO. 3051-00

PACLAND
6400 SE LAKE ROAD, SUITE 300
PORTLAND, OR 97222

CES NW
13190 SW 68TH PKWY, STE 150
TIGARD, OREGON 97223
(503)968-6655 www.cesnw.com

ALTA SURVEY

REVISIONS

2689-ALTA.DWG

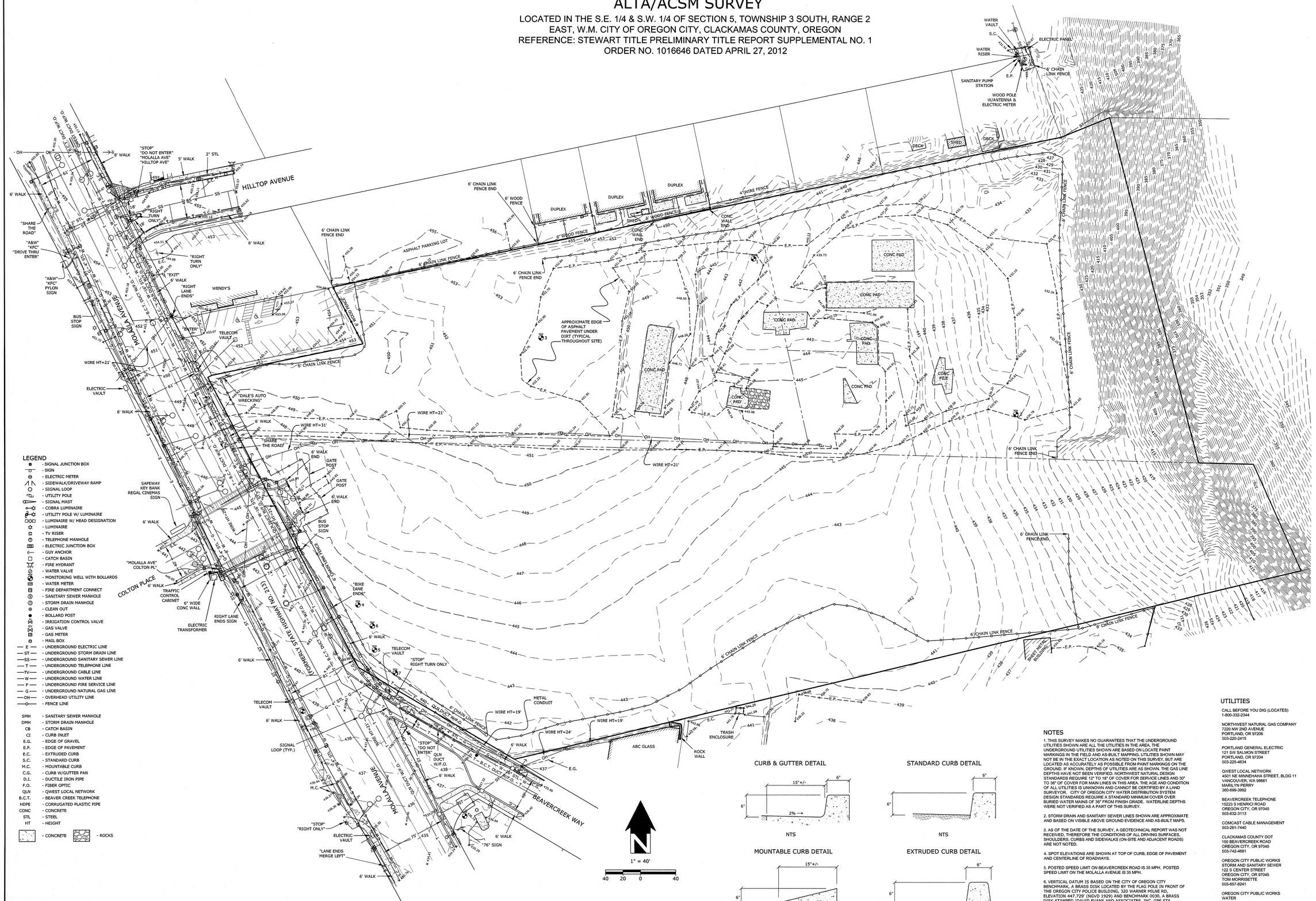
PROJECT NO. 3051-00: 2689
DRAWN BY: JBJ
DATE: 07-09-12
CHECKED BY: RHG

TITLE EXCEPTIONS

SHEET 2
OF 5

ALTA/ACSM SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON
REFERENCE: STEWART TITLE PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 1 ORDER NO. 1016646 DATED APRIL 27, 2012



LEGEND

- SIGNAL JUNCTION BOX
- SIGN
- ELECTRIC METER
- SIDEWALK/DRIVEWAY RAMP
- SIGNAL LOOP
- UTILITY POLE
- SIGNAL MAST
- COBRA LUMINAIRE
- UTILITY POLE W/ LUMINAIRE
- LUMINAIRE W/ HEAD DESIGNATION
- LUMINAIRE
- TV RISER
- TELEPHONE MANHOLE
- ELECTRIC JUNCTION BOX
- GUY ANCHOR
- CATCH BASIN
- FIRE HYDRANT
- WATER VALVE
- MONITORING WELL WITH BOLLARDS
- WATER METER
- FIRE DEPARTMENT CONNECT
- SANITARY SEWER MANHOLE
- STORM DRAIN MANHOLE
- CLEAN OUT
- BOLLARD POST
- IRRIGATION CONTROL VALVE
- GAS VALVE
- GAS METER
- MAIL BOX
- E — UNDERGROUND ELECTRIC LINE
- ST — UNDERGROUND STORM DRAIN LINE
- SS — UNDERGROUND SANITARY SEWER LINE
- T — UNDERGROUND TELEPHONE LINE
- TV — UNDERGROUND CABLE LINE
- W — UNDERGROUND WATER LINE
- F — UNDERGROUND FIRE SERVICE LINE
- G — UNDERGROUND NATURAL GAS LINE
- OH — OVERHEAD UTILITY LINE
- FENCE LINE

SMH	SANITARY SEWER MANHOLE
DMH	STORM DRAIN MANHOLE
CB	CATCH BASIN
CI	CURB INLET
E.G.	EDGE OF GRAVEL
E.P.	EDGE OF PAVEMENT
E.C.	EXTRUDED CURB
S.C.	STANDARD CURB
M.C.	MOUNTABLE CURB
C.G.	CURB W/GUTTER PAN
D.I.	DUCTILE IRON PIPE
F.O.	FIBER OPTIC
QLN	QWEST LOCAL NETWORK
B.C.T.	BEAVER CREEK TELEPHONE
HDPE	CORRUGATED PLASTIC PIPE
CONC	CONCRETE
STL	STEEL
HT	HEIGHT

- CONCRETE
- ROCKS

1" = 40'
40 20 0 40

CURB & GUTTER DETAIL

NTS

STANDARD CURB DETAIL

NTS

MOUNTABLE CURB DETAIL

NTS

EXTRUDED CURB DETAIL

NTS

NOTES

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2. STORM DRAIN AND SANITARY SEWER LINES SHOWN ARE APPROXIMATE AND BASED ON VISIBLE ABOVE GROUND EVIDENCE AND AS-BUILT MAPS.

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4. SPOT ELEVATIONS ARE SHOWN AT TOP OF CURB, EDGE OF PAVEMENT AND CENTERLINE OF ROADWAYS.

5. POSTED SPEED LIMIT ON BEAVERCREEK ROAD IS 35 MPH. POSTED SPEED LIMIT ON THE MOLALLA AVENUE IS 35 MPH.

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UTILITIES

CALL BEFORE YOU DIG (LOCATES)
1-800-332-2344

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COMCAST CABLE MANAGEMENT
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503-657-8241

OREGON CITY PUBLIC WORKS
WATER
122 S CENTER STREET
OREGON CITY, OR 97045
SCOTT KATRENA
503-657-8241

REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
DECEMBER 15, 2007
RYAN H. GODSEY
65604
RENEWS: 6/30/13

OREGON CITY
PROJECT NO. 3051-00

PACLAND
6400 SE LAKE ROAD, SUITE 300
PORTLAND, OR 97222

CES|NW
13190 SW 68TH PKWY, STE 150
TIGARD, OREGON 97223
(503)968-6655 www.cesnw.com

ALTA SURVEY

REVISIONS	DATE:	CHECKED BY:
7-13-12 UPDATED TO REFLECT COMMENTS	07-09-12	RHG

2689-ALTA.DWG

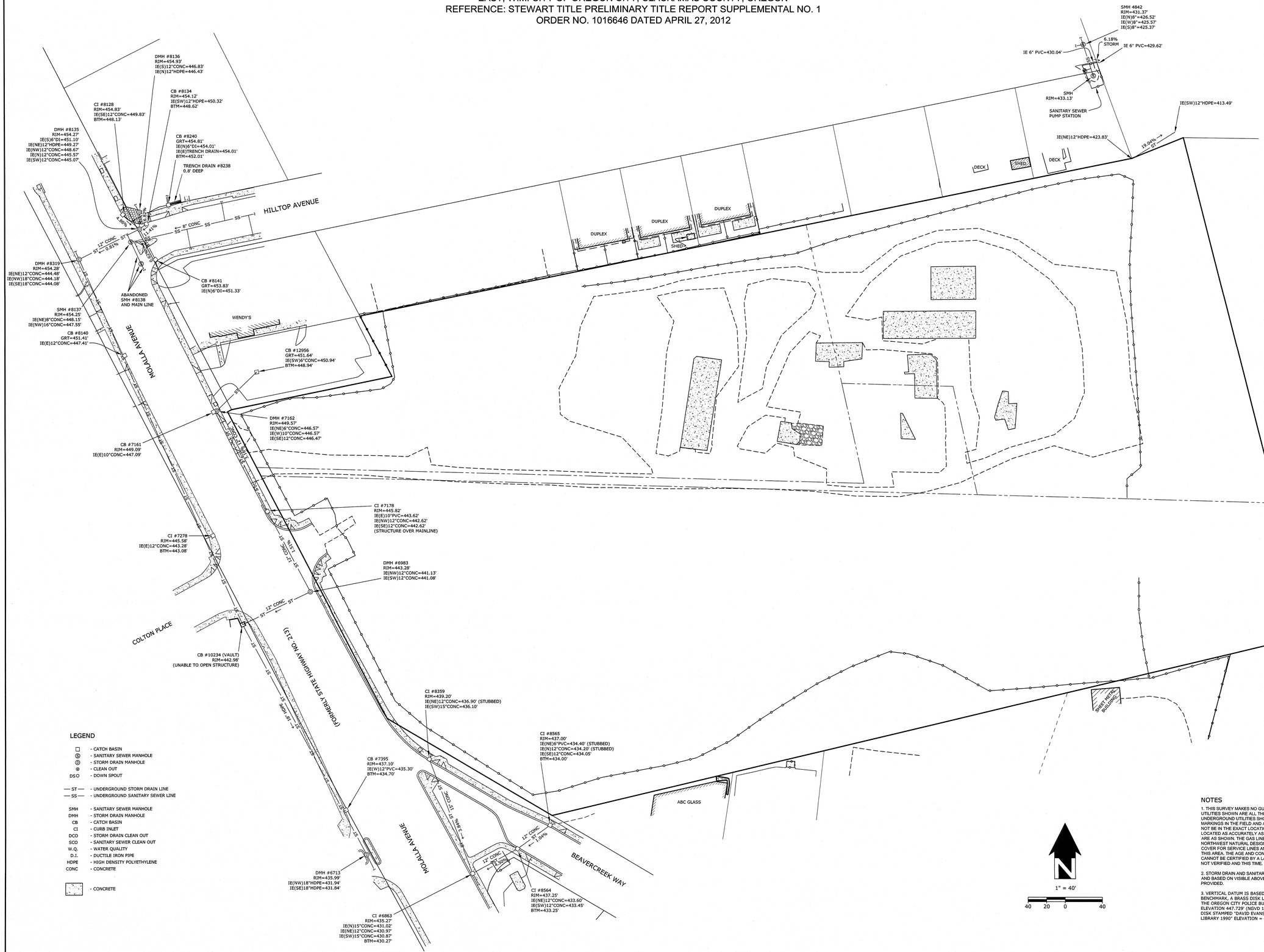
PROJECT NO. 3051-00:	2689
DRAWN BY:	JBJ

TOPOGRAPHIC SURVEY

SHEET 3
OF 5

ALTA/ACSM SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2
EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON
REFERENCE: STEWART TITLE PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 1
ORDER NO. 1016646 DATED APRIL 27, 2012


DMH #8136
RIM=454.93'
IE(S)12"CONC=446.83'
IE(N)12"HDPE=446.43'
CB #8134
RIM=454.12'
IE(SW)12"HDPE=450.32'
BTM=448.62'
CI #8128
RIM=454.83'
IE(SE)12"CONC=449.83'
BTM=448.13'
DMH #8135
RIM=454.27'
IE(S)6"DI=451.10'
IE(NE)12"HDPE=449.27'
IE(NW)12"CONC=448.67'
IE(N)12"CONC=445.57'
IE(SW)12"CONC=445.07'
CB #8240
GRT=454.81'
IE(N)6"DI=454.01'
IE(E)TRENCH DRAIN=454.01'
BTM=452.01'
TRENCH DRAIN #8238
0.8' DEEP
HILLTOP AVENUE
8" CONC
12" CONC
DMH #8319
RIM=454.28'
IE(NE)12"CONC=444.48'
IE(NW)18"CONC=444.18'
IE(SE)18"CONC=444.08'
CB #8141
GRT=453.83'
IE(N)6"DI=451.33'
ABANDONED
SMH #8138
AND MAIN LINE
WENDY'S
SMH #8137
RIM=454.25'
IE(NE)8"CONC=448.15'
IE(NW)16"CONC=447.55'
CB #8140
GRT=451.41'
IE(E)12"CONC=447.41'
MOLALLA AVENUE
CB #12956
GRT=451.64'
IE(SW)6"CONC=450.94'
BTM=448.94'
DMH #7162
RIM=449.57'
IE(NE)6"CONC=446.57'
IE(W)10"CONC=446.57'
IE(SE)12"CONC=446.47'
CB #7161
RIM=449.09'
IE(E)10"CONC=447.09'
CI #7178
RIM=445.82'
IE(E)10"PVC=443.62'
IE(NW)12"CONC=442.62'
IE(SE)12"CONC=442.62'
(STRUCTURE OVER MAINLINE)
CI #7278
RIM=445.58'
IE(E)12"CONC=443.28'
BTM=443.08'
DMH #6983
RIM=443.28'
IE(NW)12"CONC=441.13'
IE(SW)12"CONC=441.08'
COLTON PLACE
CB #10234 (VAULT)
RIM=442.98'
(UNABLE TO OPEN STRUCTURE)
(FORMERLY STATE HIGHWAY NO. 213)
CI #8359
RIM=439.20'
IE(NE)12"CONC=436.90' (STUBBED)
IE(SW)15"CONC=436.10'
CB #7395
RIM=437.10'
IE(W)12"PVC=435.30'
BTM=434.70'
CI #8565
RIM=437.00'
IE(NE)6"PVC=434.40' (STUBBED)
IE(N)12"CONC=434.20' (STUBBED)
IE(SE)12"CONC=434.05'
BTM=434.00'
BEAVERCREEK WAY
DMH #6713
RIM=435.99'
IE(NW)18"HDPE=431.94'
IE(SE)18"HDPE=431.84'
CI #6863
RIM=435.27'
IE(N)15"CONC=431.02'
IE(NE)12"CONC=430.97'
IE(SW)15"CONC=430.87'
BTM=430.27'
CI #8564
RIM=437.25'
IE(NE)12"CONC=433.60'
IE(SW)12"CONC=433.45'
BTM=433.25'
ABC GLASS
SMH 4842
RIM=431.37'
IE(N)8"=426.52'
IE(W)8"=425.57'
IE(S)8"=425.37'
IE 6" PVC=430.04'
6.18%
STORM
IE 6" PVC=429.62'
SMH
RIM=433.13'
SANITARY SEWER
PUMP STATION
IE(SW)12"HDPE=413.49'
IE(NE)12"HDPE=423.83'
19.04%
DECK
SHED
DUPLEX
SHED
SHED
SHED

ALTA/ACSM SURVEY

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HILLTOP AVENUE
MOLALLA AVENUE
FORMERLY STATE HIGHWAY NO. 213)
COLTON PLACE
BEAVERCREEK WAY
WENDY'S
ABC GLASS
DUPLEX
SHED
DECK
HEAVY TREE AREA
SHED (METAL BUILDING)

LEGEND

- DECIDUOUS TREE (DTR)
- EVERGREEN TREE (ETR)

EXAMPLE
12" DTR 5
DIAMETER
TYPE
NO. OF TREE FROM ONE BASE

1" = 40'
40 20 0 40

REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
DECEMBER 13, 2007
RYAN H. GODSEY
65604
RENEWS: 6/30/13

OREGON CITY
PROJECT NO. 3051-00

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TIGARD, OREGON 97223
(503)968-6655 www.cesnw.com

ALTA SURVEY

TREE SURVEY

REVISIONS

PROJECT NO. 3051-00: 2689
DRAWN BY: JBJ
DATE: 07-09-12
CHECKED BY: RHG

2689-ALTA.DWG

SHEET 5
OF 5

TOPOGRAPHIC SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2
EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON

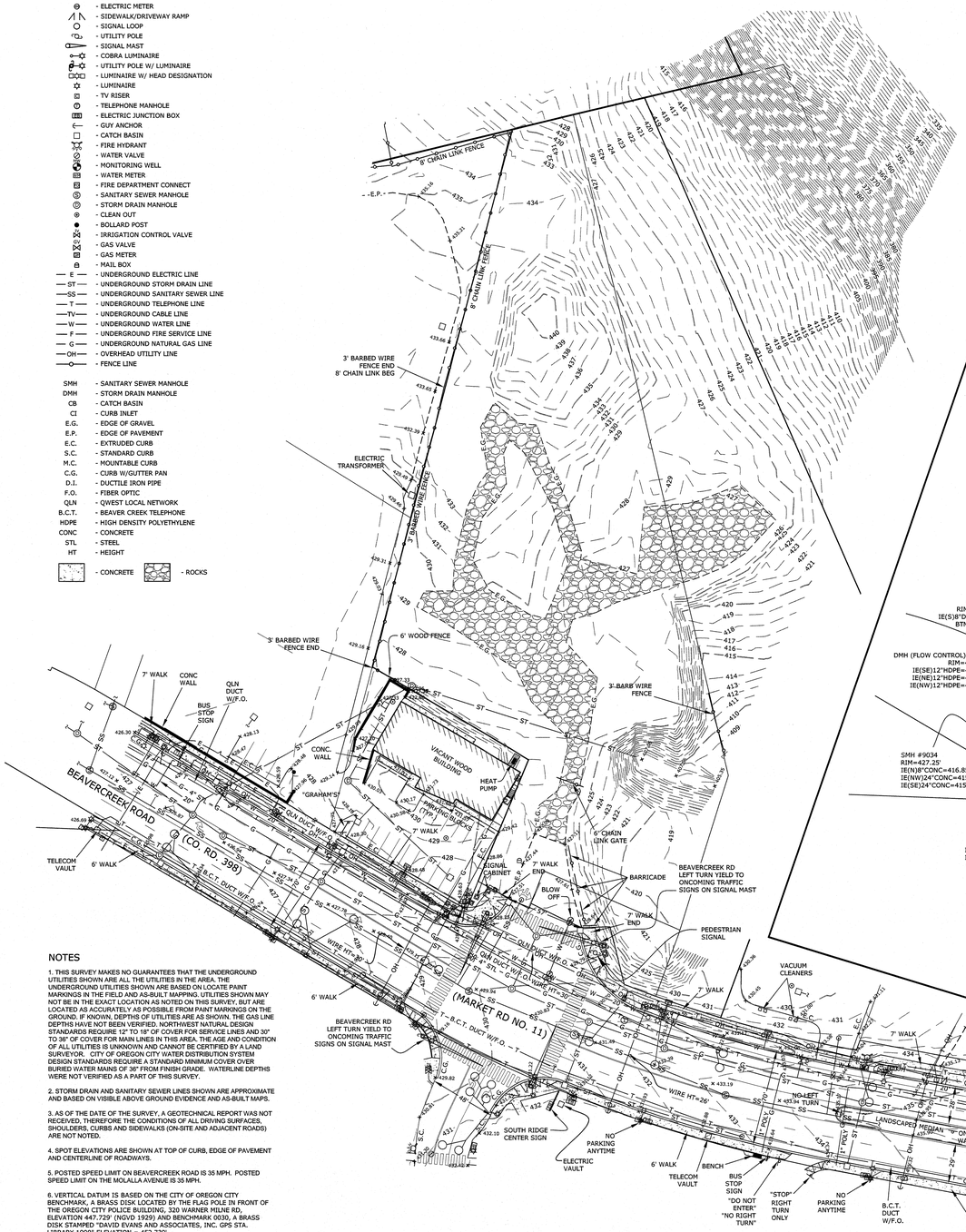
TOPOGRAPHIC SURVEY

LEGEND

- SIGN
- ELECTRIC METER
- SIDEWALK/DRIVEWAY RAMP
- SIGNAL LOOP
- UTILITY POLE
- SIGNAL MAST
- COBRA LUMINAIRE
- UTILITY POLE W/ LUMINAIRE
- LUMINAIRE W/ HEAD DESIGNATION
- LUMINAIRE
- TV RISER
- TELEPHONE MANHOLE
- ELECTRIC JUNCTION BOX
- GUY ANCHOR
- CATCH BASIN
- FIRE HYDRANT
- WATER VALVE
- MONITORING WELL
- WATER METER
- FIRE DEPARTMENT CONNECT
- SANITARY SEWER MANHOLE
- STORM DRAIN MANHOLE
- CLEAN OUT
- BOLLARD POST
- IRRIGATION CONTROL VALVE
- GAS VALVE
- GAS METER
- MAIL BOX
- E — UNDERGROUND ELECTRIC LINE
- ST — UNDERGROUND STORM DRAIN LINE
- SS — UNDERGROUND SANITARY SEWER LINE
- T — UNDERGROUND TELEPHONE LINE
- TV — UNDERGROUND CABLE LINE
- W — UNDERGROUND WATER LINE
- F — UNDERGROUND FIRE SERVICE LINE
- G — UNDERGROUND NATURAL GAS LINE
- OH — OVERHEAD UTILITY LINE
- FENCE LINE

SMH	- SANITARY SEWER MANHOLE
DMH	- STORM DRAIN MANHOLE
CB	- CATCH BASIN
CI	- CURB INLET
E.G.	- EDGE OF GRAVEL
E.P.	- EDGE OF PAVEMENT
E.C.	- EXTRUDED CURB
S.C.	- STANDARD CURB
M.C.	- MOUNTABLE CURB
C.G.	- CURB W/GUTTER PAN
D.I.	- DUCTILE IRON PIPE
F.O.	- FIBER OPTIC
QLN	- QWEST LOCAL NETWORK
B.C.T.	- BEAVER CREEK TELEPHONE
HDPE	- HIGH DENSITY POLYETHYLENE
CONC	- CONCRETE
STL	- STEEL
HT	- HEIGHT

- CONCRETE
- ROCKS



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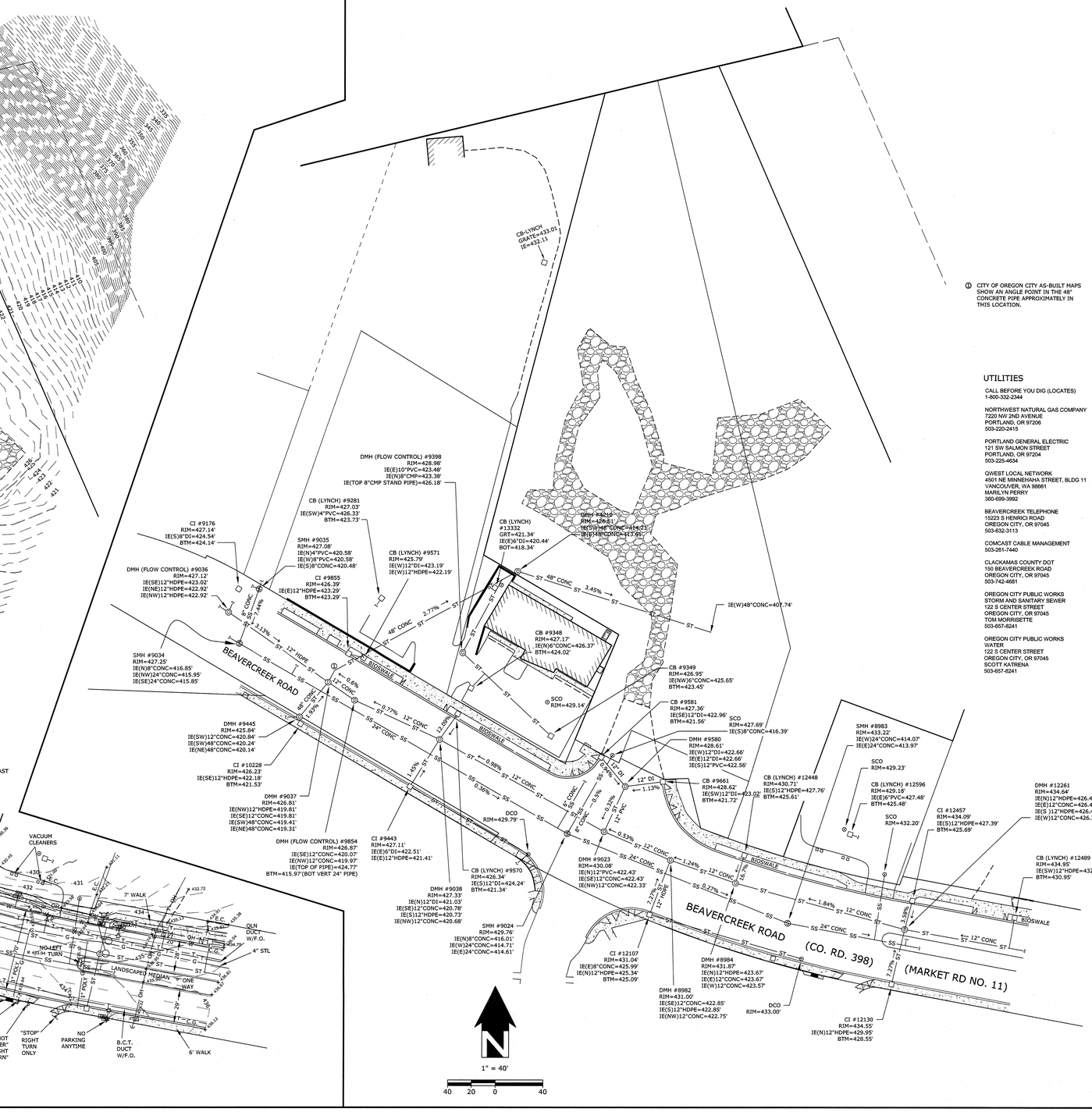
STORM AND SANITARY SEWER



① CITY OF OREGON CITY AS-BUILT MAPS SHOW AN ANGLE POINT IN THE 48" CONCRETE PIPE APPROXIMATELY IN THIS LOCATION.

UTILITIES

CALL BEFORE YOU DIG (LOCATES)
1-800-332-2344

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RYAN H. GODSEY
65604
RENEWS: 6/30/13

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TIGARD, OREGON 97223
(503)968-6655 www.cesnw.com

REVISIONS	DATE:	CHECKED BY:
7-13-12 REVISED ADA RAMP PER COMMENTS	07-09-12	KNG

2689-ALTA.DWG

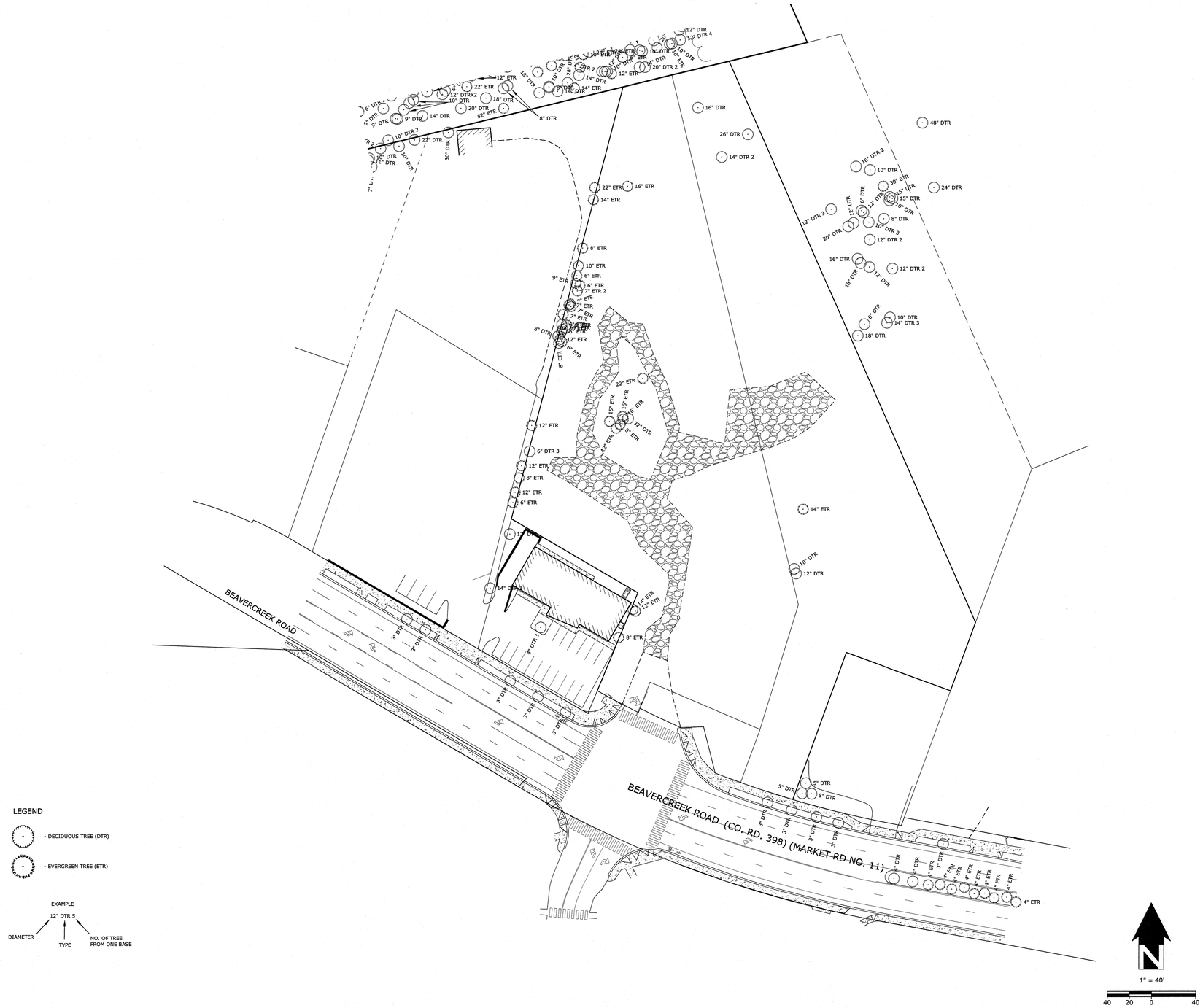
TOPOGRAPHIC SURVEY

PROJECT NO. 3051-00: 2689
DRAWN BY: JBO

SHEET 1
OF 3

TOPOGRAPHIC SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2
EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON



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DECEMBER 13, 2007
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TOPOGRAPHIC SURVEY

REVISIONS

2689-ALTA.DWG

PROJECT NO. 3051-00: 2689
DATE: 07-09-12
DRAWN BY: JBJ
CHECKED BY: RHG

TREE SURVEY

SHEET 2 OF 3

TOPOGRAPHIC SURVEY

LOCATED IN THE S.E. 1/4 & S.W. 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M. CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON

SPECIAL EXCEPTIONS AS SHOWN ON PRELIMINARY TITLE REPORT SUPPLEMENTAL NO. 2, ORDER NUMBER 01049-4020, DATED JUNE 13, 2012

6. CITY LIENS, IF ANY, OF THE CITY OF OREGON CITY.

7. ACCORDING TO THE RECORD, THE SUBJECT PROPERTY APPEARS TO LIE WITHIN THE BOUNDARIES OF THE OREGON CITY URBAN RENEWAL/NEIGHBORHOOD DEVELOPMENT DISTRICT OF THE CITY OF OREGON CITY.

8. EASEMENT AND THE TERMS AND CONDITIONS THEREOF:
   GRANTEE: METRO, A MUNICIPAL CORPORATION
   PURPOSE: ACCESS EASEMENT
   AFFECTS: TAX LOT 500 AND THE NORTHERLY PORTION OF TAX LOT 401
   RECORDED: MAY 21, 1998
   FEE NO.: 98044597
(15' WIDE ACCESS EASEMENT - LOCATION NOT CLEARLY DEFINED)

9. EASEMENT AND THE TERMS AND CONDITIONS THEREOF:
   GRANTEE: STEVEN N. MOLNER
   PURPOSE: PRIVATE UTILITY EASEMENT
   AFFECTS: PORTION OF TAX LOT 401
   RECORDED: SEPTEMBER 10, 1999
   FEE NO.: 99089214
(PLOTTED)

10. ORDINANCE NO. 00-1013 AND THE TERMS AND CONDITIONS THEREOF:
    RECORDED: MAY 18, 2000
    RECORDING NO.: 2000032147
(NOT SURVEY RELATED)

11. ANY UNRECORDED LEASEHOLDS, RIGHT OF VENDORS AND HOLDERS OF SECURITY INTEREST ON PERSONAL PROPERTY INSTALLED UPON SAID PROPERTY, AND RIGHT OF TENANTS TO REMOVE TRADE FIXTURES AT THE EXPIRATION OF THE TERM.

12. THE ATTACHED COMMERCIAL TITLE AFFIDAVIT MUST BE COMPLETED IN FULL, NOTARIZED, AND SUBMITTED TO THE COMPANY FOR REVIEW PRIOR TO CLOSING.

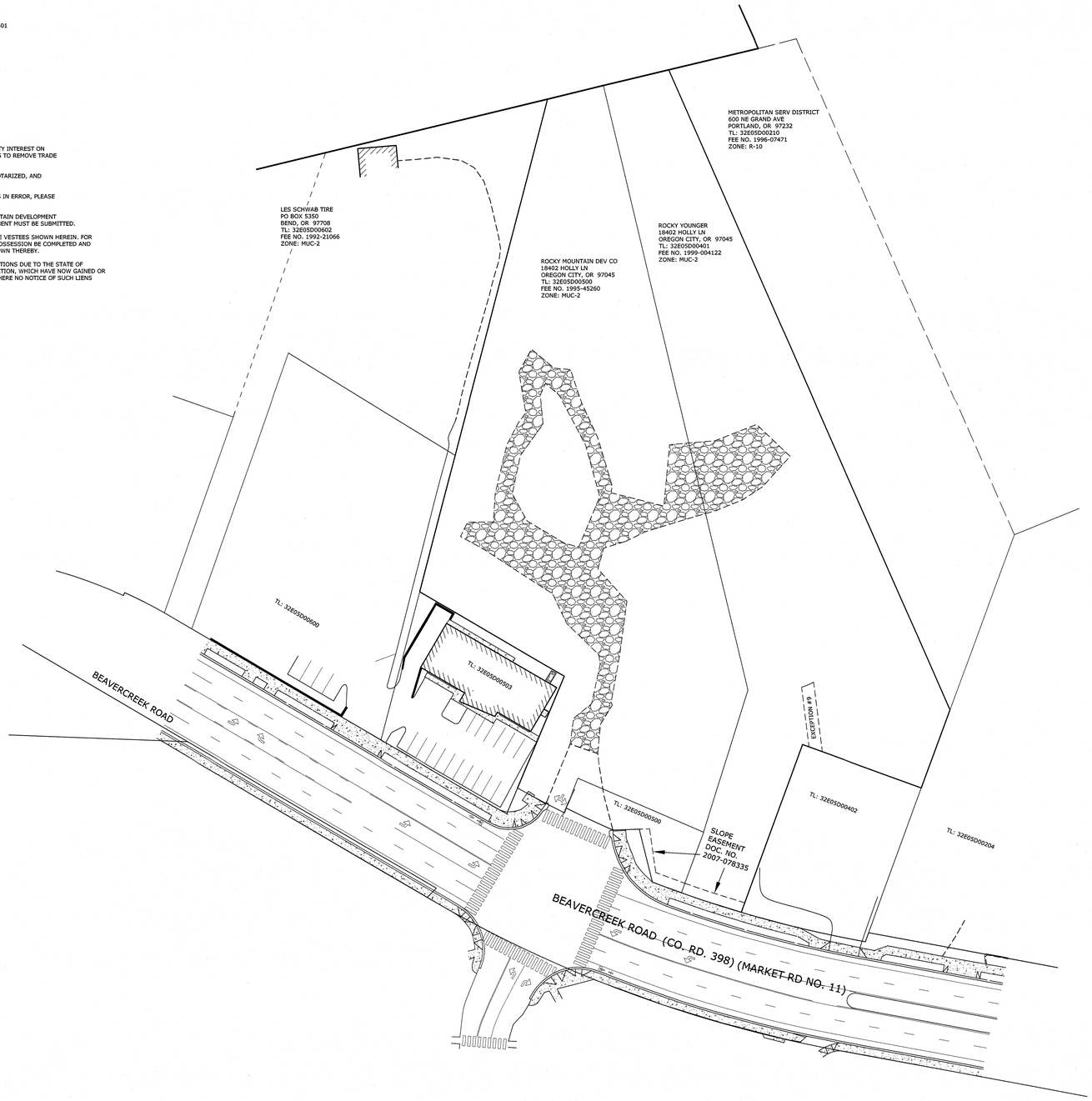
13. WE FIND NO TRUST DEEDS OF RECORD FOR THIS PROPERTY. IF THE COMPANY IS IN ERROR, PLEASE NOTIFY YOUR TITLE OFFICER IMMEDIATELY.

14. EVIDENCE OF THE IDENTITY AND AUTHORITY OF THE OFFICERS OF ROCKY MOUNTAIN DEVELOPMENT COMPANY, AS OREGON CORPORATION TO EXECUTE THE FORTHCOMING INSTRUMENT MUST BE SUBMITTED.

15. PARTIES IN POSSESSION, OR CLAIMING TO BE IN POSSESSION, OTHER THAN THE VESTEES SHOWN HEREIN. FOR PURPOSE OF ALTA EXTENDED COVERAGE, WE WILL REQUIRE AN AFFIDAVIT OF POSSESSION BE COMPLETED AND RETURNED TO US. EXCEPTION MAY BE TAKEN TO SUCH MATTERS AS MAY BE SHOWN THEREBY.

16. STATUTORY LIENS FOR LABOR OR MATERIALS, INCLUDING LIENS FOR CONTRIBUTIONS DUE TO THE STATE OF OREGON FOR UNEMPLOYMENT COMPENSATION AND FOR WORKMEN'S COMPENSATION, WHICH HAVE NOW GAINED OR HEREAFTER MAY GAIN PRIORITY OVER THE LIEN OF THE INSURED MORTGAGE WHERE NO NOTICE OF SUCH LIENS APPEAR OF RECORD.

TL = TAX LOT NUMBER, CLACKAMAS COUNTY



1" = 40'

40 20 0 40

REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
DECEMBER 13, 2007
RYAN H. GODSEY
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RENEWS: 6/30/13

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TOPOGRAPHIC SURVEY

REVISIONS

2689-ALTA.DWG

PROJECT NO. 3051-00: 2689
DRAWN BY: JBJ
DATE: 07-09-12
CHECKED BY: RHG

EASEMENTS

SHEET 3
OF 3

APPENDIX F
Storm Drainage Analysis

March 2, 2026

Oregon City Commercial Masterplan

1367 Molalla Avenue

Storm Drainage Analysis

Preliminary
Not For
Construction

Prepared By:

LANGAN

10135 SE Sunnyside Rd
Suite 200
Clackamas, OR 97015

t 503.659.9500
f 503.659.2227
navixeng.com

MARCH 2026

Tessa Mens, P.E.
Scott Franklin, P.E.

Table of Contents

Section **Page**

Stormwater Drainage Report

1. Executive Summary 3
    a. Project Description
    b. Design Criteria
    c. Proposed Drainage System
    d. Conclusion
2. Project Location 5
3. Site Drainage Analysis 6
    a. Existing Conditions
    b. Proposed Development
    c. Soils
    d. Drainage Basin Areas
    e. Modeling
4. Conclusion 11

Appendices

Appendix A **Geotechnical Report**

Appendix B **Drainage Basin Map**

Appendix C **HydroCAD Report**

Appendix D **WES BMP Sizing Tool Report**

Executive Summary

Project Description
The proposed project is located at 1367 Molalla Avenue, in the City of Oregon City, Clackamas County, Oregon. The site is located on Tax lots 32E05DB03300, 32E05DB03400, 32E05DB03200, 32E05DB03201, 32E05D00500, 32E05D00501, and 32E05D00602. The site is under the jurisdiction of Oregon City Public Works and the Clackamas County Water Environment Services (WES).

The existing property is approximately 12.86 acres (13.67 acres including the public access road) of scrub vegetation with isolated groups of trees and remnants of previously developed wrecking yard, gas station, and tavern.

The west portion of the existing site drains primarily on to the adjacent properties to the south. The east portion of the existing site drains primarily on to the adjacent properties to the east and northeast.

The proposed project includes a retail store (Parcel A), and a multi-family use (Parcel B), together with a public road through the site to provide access and utility service to each parcel (Parcel C), and a Quick Service Restaurant (QSR) (Parcel D). Parcels A, B, and D will receive interim rough grading, with finished conditions pending Detailed Development Plan approval for each of the parcels. The public access road includes a Right-of-Way (ROW) dedication at various widths and a 5-foot Public Utility Easement (PUE) along portions of the frontage of the parcels.

Design Criteria
The purpose of this report is to describe the project's stormwater management strategy and to show that the design meets the agency guidelines.

The standard stormwater requirements provided by Oregon City Public Works require detention, treatment, and infiltration. However, due to the presence of silty clay and a steep slope on the east side of the site, infiltration is not feasible on site.

This project utilizes the WES BMP Sizing Tool for designing the on-site stormwater facilities. The BMP Sizing Tool provides stormwater management design that will control flow durations ranging from 42% of the 2-year to the 10-year storm runoff as determined by the continuous model simulation integrated into the tool. Using this design methodology will provide the required treatment and flow control for the site, without the need for infiltration.

Proposed Drainage System
This project proposes to introduce a network of underground pipes, catch basins, curbs and gutters, to collect surface water runoff associated with the on-site and off-site public improvements. The proposed stormwater facilities will consist of lined rain gardens and lined detention ponds for water quality treatment and flow control. Stormwater detention will be required for both on-site private improvements and off-site public improvements. Space for detention of off-site public improvements is limited, and the detention facility cannot be installed within the right-of-way near the ultimate point of connection to the existing public storm system within the Natural Resource Overlay District (NROD) area in TL 500. Accordingly, the on-site stormwater facility will be sized to over-detain the on-site stormwater to compensate for public stormwater runoff as confirmed during the project's pre-application conference. The stormwater facilities will over detain and over treat these drainage basins to

account for the off-site public access road stormwater that will not be routed to the stormwater facilities.

Stormwater from Parcels A, B and C (Parcel C is the proposed public right-of-way within the main development area of TL3200, 3201, 3300, & 3400) will be routed to storm facilities in the southeast portion of the site, just north of the proposed public road, within the ROW. Stormwater for Parcel D will be routed to storm facilities within Parcel D. Parcel D stormwater will bypass the main storm facility after having received its own water quality and detention treatment. After being treated and detained, stormwater will be discharged to an existing storm pipe that discharges ultimately to Newell Creek. Outflows from the stormwater facilities will be regulated by flow control structures designed to release a peak flow rate not to exceed pre-developed runoff flow rates described above.

Conclusion

The proposed stormwater management systems for this project have been designed in accordance with regulatory criteria described above and consistent with sound engineering practice. This design has incorporated stormwater detention and stormwater quality BMP's. Therefore, no significant adverse impacts to the downstream stormwater system are expected because of the proposed development.

Project Location



Location:	***1367 Molalla Avenue***
Section/Township/Range:	***Sec 16 T3S, R2E, W.M.***
Parcel/Tax Lots:	***32E05DB03300, 32E05DB03400, 32E05DB03200, 32E05DB03201, 32E05D00500, 32E05D00501, and 32E05D00602***
Property Size:	***12.86 Acres (13.67 acres including the public access road)***
City, County, State:	***Oregon City, Clackamas County, Oregon***
Governing Agency:	***City of Oregon City***
Design Criteria:	***Oregon City Public Works Stormwater and Grading Design Standards***
Zone:	***MUC-2; Mixed-Use Corridor***

Site Drainage Analysis

Existing Conditions

The project site is located at 1367 Molalla Avenue, in the City of Oregon City, Clackamas County, Oregon. Tax lots 3300, 3201, & 3200 were previously developed as a wrecking yard between approximately 1953 and 2001/2002, with wrecking yard vehicle and structure removal occurring into 2005. Remnant surface features such as broken asphalt and foundations/concrete pads from prior wrecking yard operations are still visible in aerial photos of these parcels after 2005. A gasoline station and tavern formerly operated in the southwest portion of Tax Lot 3400. Each of these prior uses have been demolished and have been described in various Phase I & II Environmental Site Assessments. The southeast portion of TL 3400 and areas down-slope of the top of bluff on TL 3200 are covered in trees, while much of the remainder of the on-site properties exist in scrub vegetation or isolated groups of trees.

The public 18-inch storm line runs to the West of the subject property on the west side of Molalla Boulevard, and to the South of the subject property towards the North side of Beavercreek Road. There is an existing 48-inch stormwater outfall that discharges to Newell Creek. Our proposed stormwater runoff will utilize the existing outfall to Newell Creek.

Proposed Development

The proposed development includes one Quick Service Restaurant (QSR), a retail store, and a multi-family use, together with a public road through the site to provide access and utility service to each parcel. Stormwater from Parcels A, B and C will be routed to a lined rain garden which will then discharge to a lined detention pond for treatment of the 1-inch 24-hour water quality design storm and detention for the 10-year 24-hour storm event. The storm facilities for Parcels A, B and C will be a public storm facility within the public access road ROW. Stormwater from Parcel D will be routed to an on-site, private stormwater facility within Parcel D. The Parcel D storm facility will also consist of a lined rain garden discharging to a lined detention pond for treatment of the 1-inch 24-hour water quality design storm and detention for 42% of the 2-year to the 10-year 24-hour storm event. Following on-site treatment, runoff from Parcel D will bypass the public stormwater management system. The treated and detained stormwater from all the storm facilities will be routed through the off-site public access road to the existing discharge outfall to Newell Creek.

The public stormwater facility will over detain and over treat the on-site drainage basins to account for the off-site public access road stormwater that will not be routed to the stormwater facilities.

Soils

According to the NRCS Web Soil Survey, this site is composed mostly of Jory silty clay loam. Based on a geotechnical engineering report provided by Terracon Consultants, dated September 12th, 2022, the existing soil at the site consists of a surface layer of red clay surface soil. According to the Terracon report, groundwater was encountered from 4 to 20 feet below the surface. The Terracon report states that the groundwater observed in their borings appear to represent perched groundwater and does not

appear to be continuous in nature and groundwater fluctuations occur. See Appendix A of this report for additional information regarding soils and groundwater.

Drainage Basin Areas

The proposed Parcels A, B, and D, together with the public road are assumed in the full-build condition for the purposes of this analysis so that the various stormwater management facilities can be sized correctly. Parcels A, B, and D will undergo future Detailed Development Plan review in the future and will address any design changes from the assumptions in this report. While Parcel D will provide its own on-site storm facility with its DDP application, we've evaluated approximate sizing for this facility to determine impacts to the storm system downstream of Parcel D.

This project will consist of 5 separate drainage basins, as shown in the Drainage Basin Map in Appendix B. The project will create 377,077 sf of private impervious area and 89,144 sf of pervious area and will treat and detain 377,077 sf of impervious and 55,689 sf of pervious area. The project will create or improve 30,169 sf of public impervious and 7,003 sf of public pervious area.

On-site Private Basin 1:

This basin consists of Parcel A, the proposed retail stores. The basin is approximately 1.66 acres of impervious roof, pavement, and sidewalk (PRI-1) and 0.15 acres of pervious landscape area (PRP-1). The basin will be conveyed to the public rain garden and detention pond facilities for treatment and detention, where it will be mixed with stormwater from On-site Basin 2 and On-site Basin 3. The treated and detained stormwater will then be conveyed to the point of connection with the existing 48-inch public storm pipe prior to its existing discharge into a tributary of Newell Creek. The approximately 5,770 sf of existing pervious area on the west side of the parcel that currently drains off-site onto Molalla Ave will be reduced to 1,103 sf of pervious area draining off-site. This area will be graded and stabilized, but will not be treated or detained, as it is infeasible to collect, is not pollution generating, and will continue to naturally drain off site. Please see the Drainage Basin Map in Appendix B.

On-site Private Basin 2:

This basin consists of Parcel B, the proposed multi-family use. The basin is approximately 4.14 acres of impervious roof, pavement, and sidewalk (PRI-2) and 0.48 acres of pervious landscape area (PRP-2). The basin will be conveyed to the public rain garden and detention pond facilities for treatment and detention, where it will be mixed with stormwater from On-site Basin 1 and On-site Basin 3. The treated and detained stormwater will then be conveyed to the point of connection with the existing 48-inch public storm pipe prior to its existing discharge into a tributary of Newell Creek. The approximately 228,279 sf of existing pervious area on the east side of the parcel that currently drains east will be reduced to 16,275 sf of pervious area draining east. This area will be graded and stabilized, but will not be treated or detained, as it is infeasible to collect, is not pollution generating, and will continue to naturally drain off site. The east portion of Parcel B is a Geologic Hazard Area (steep slopes). The limits of disturbance do not get closer than 35 feet from the top of the steep slope near the edge of the Geologic Hazard Area. This portion of the site will remain as is, other than a natural surface pedestrian pathway, and existing drainage patterns here will continue.

On-site Private Basin 3:

This basin consists of Parcel D, the proposed QSR. The basin is approximately 1.21 acres of impervious roof, pavement, storm facilities, and sidewalk (PRI-3) and 0.32 acres of pervious landscape area (PRP-3).

The basin will be conveyed to a private rain garden and detention pond, located within Parcel D, for treatment and detention. The treated and detained stormwater will then bypass the public stormwater facility treating Basins 1, 2, & 3 and connect to the proposed storm system downstream from the public stormwater facility where it will then be conveyed to the point of connection with the existing 48-inch public storm pipe prior to its existing discharge into a tributary of Newell Creek. The approximately 182,811 sf of existing pervious area on the southwest side of the site that currently drains south will be reduced to 15,729 sf of pervious area draining off-site. This area will not be treated or detained, as it is infeasible to collect, is not pollution generating, and will continue to naturally drain off site.

The private stormwater management facility in Basin 4 will be designed concurrently with the detailed development of Parcel D. The analysis in this section is provided to show that the proposed Detailed Development Plan storm system can accommodate the future development of Parcel D. Were the Parcel D storm system to become overwhelmed by a large storm event, we recommend an overflow drainage structure be designed to capture the 100-year 24-hour storm event prior to it overtopping the planned facility and send that flow into the by-pass storm piping provided in the proposed public street. The storm pipes serving Parcel D will be sized to convey the 100-year 24-hour storm event for Basin 4/Parcel D as well.

Off-site Public Basin 1:
The proposed public access road runs through the site from Molalla Avenue to the southeast corner of the site. From the southeast corner of the site, the public access road snakes down to Beavercreek Road. This second portion of the public access road is off-site. The basin is approximately 0.71 acres of impervious pavement and sidewalk (PUI-1) and 0.4 acres of pervious landscape area (PUP-1). Space for detention of off-site public improvements is limited, and the detention facility cannot be installed within the right-of-way near the ultimate point of connection to the existing public storm system within the Natural Resource Overlay District (NROD) area in TL 500. Accordingly, the on-site public stormwater facilities will over detain and over treat the on-site basins to account for the off-site public access road stormwater that will not be routed to the stormwater facilities.

Stormwater in this basin will be captured in catch basins and conveyed to the existing outfall location adjacent to the off-site public access road, that discharges to Newell Creek.

Were this system to become overwhelmed by a large storm event that it was unable to convey or to become clogged, the catch basins would begin to overflow and flow down the off-site public access road to the south, avoiding the steep slope just east of the site and public access road, and overflow near the existing discharge point. To guard against such an overflow, inlets and inlet leads in this low point will be oversized to minimize the chances of overflow.

On-site Public Basin 2:
This basin consists of Parcel C, the on-site public access road. The basin is approximately 1.61 acres of impervious pavement, storm facilities, and sidewalk (PUI-2) and 0.28 acres of pervious landscape area (PUP-2). The basin will be conveyed to the public rain garden and detention pond facilities for treatment and detention, where it will be mixed with stormwater from On-site Basin 1 and On-site Basin 2. The treated and detained stormwater will then be conveyed to point of connection with the existing 48-inch public storm pipe prior to its existing discharge into a tributary of Newell Creek.

The public stormwater facility lies inside a small basin that, if it were to fill up, would overtop into the adjacent street at elevation 433 feet. A HydroCAD model was run (see Appendix C) to model this basin's capacity during a 100-year 24-hour storm event. During this storm event, the water surface elevation within this basin peaks at 428.93 feet. Therefore, the stormwater facility basin will contain the 100-year 24-hour storm event and any overflow into the street or steep slopes to the east is not expected to occur.

For analysis and sizing of BMPs, the project development area is broken into ten Drainage Management Areas (DMAs), as defined in the WES BMP Sizing Tool. The area and condition of the ten DMAs are shown in Table 1 below. See Appendix B for the Basin Map.

Table 1 –Drainage Management Areas

On-Site Basin Areas Draining to Public Storm Facilities			
Basin	**Area (sf)**	**Pre-developed Condition**	**Post-developed Condition**
PRI-1	72,516	Pervious - Forested	Impervious - Roof/Pavement
PRP-1	6,366	Pervious - Forested	Pervious - Landscape
PRI-2	180,369	Pervious - Forested	Impervious - Roof/Pavement
PRP-2	20,996	Pervious - Forested	Pervious - Landscape
PUI-2	70,148	Pervious - Forested	Impervious - Pavement
PUP-2	16,380*	Pervious - Forested	Pervious - Landscape
On-Site Basin Area Draining to Private Storm Facilities			
PRI-3	52,512	Pervious - Forested	Impervious – Roof/Pavement
PRP-3	13,774*	Pervious - Forested	Pervious - Landscape
Total On-site DMA*	***433,061***		
Off-Site Basin Area			
PUI-1	31,087	Pervious - Forested	Impervious - Pavement
PUP-1	6,085	Pervious - Forested	Pervious - Landscape
Total Off-site DMA	***37,172***		
Total DMA's*	***470,233***		

**DMA's do not include the stormwater facility area (BMP's)*

Modeling

The WES BMP Sizing Tool was utilized to assist with BMP sizing and calculations for the water quality, 2-year and 10-year storm events. Stormwater treatment facility's flow control structures were designed using the WES BMP Sizing Tool, for those events as well. Refer to BMP Sizing Report attached in Appendix D.

Flow control structure diagrams are shown in the figures below:

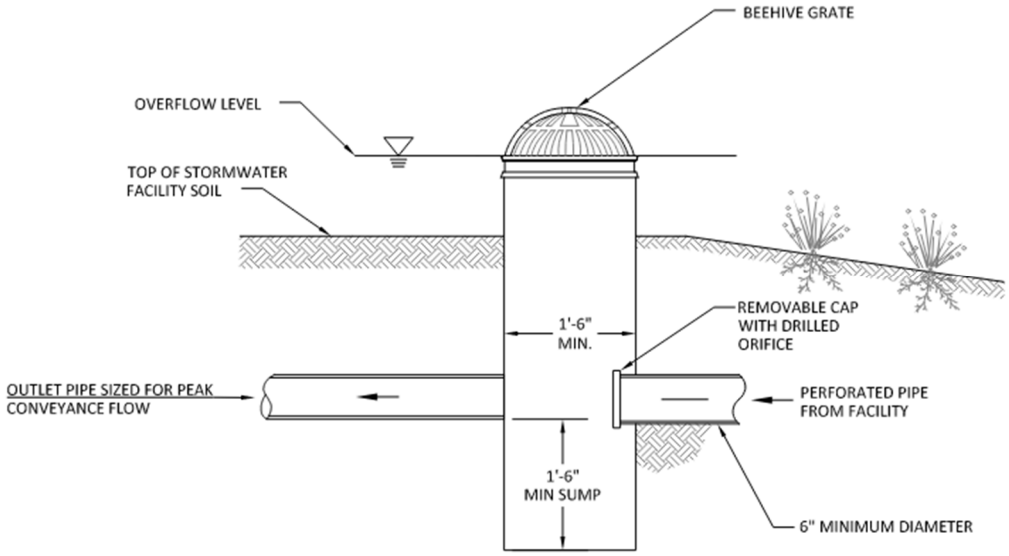
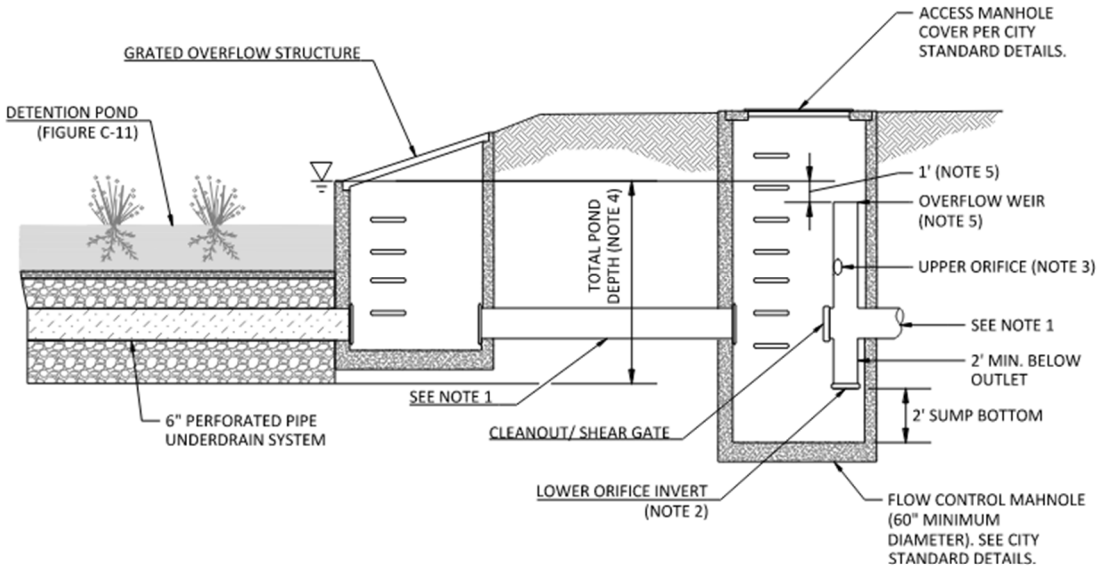


Figure 1 - Rain Garden Flow Control Structure



NOTES:

1. PIPE SIZED FOR PEAK DESIGN STORM AS DETERMINED BY ENGINEER .
2. LOWER ORIFICE: THE INVERT ELEVATION OF THE LOWER ORIFICE MUST BE AT, OR BELOW, THE POND BOTTOM (BOTTOM OF THE 3 FEET OF DRAIN ROCK & GROWING MEDIA).
3. UPPER ORIFICE: THE UPPER ORIFICE SHOULD BE AT AN ELEVATION 2/3 OF THE TOTAL POND DEPTH ABOVE THE POND BOTTOM.
4. TOTAL POND DEPTH, PER FACILITY SIZING MODEL, INCLUDES GROWING MEDIA, SEPARATION LAYER, AND DRAIN ROCK AS SHOWN ON FIGURE C-11.).
5. OVERFLOW WEIR: 1' BELOW MAXIMUM WATER ELEVATION OR TOP OF TOTAL POND DEPTH.

Figure 2 - Detention Pond Flow Control Structure

The required storm facility sizes and proposed facility sizes, according to the BMP Sizing Tool, are shown in Table 2.

Table 2 –Storm Facility Sizing

Rain Garden Storm Facilities		
Storm Facility	**Required Minimum Surface Area (sf)**	**Proposed Surface Area (sf)**
Public Rain Garden (lined)	5,685.5	6,000.0
Private Rain Garden (lined)	891.0	1,700.0
Detention Pond Storm Facilities		
Storm Facility	**Adequate Size?***	**Proposed Facility Volume (cf)**
Public Detention Pond (Lined)	Yes	2,911.8
Private Detention Pond (Lined)	Yes	1,027.7

**According to the BMP Sizing Tool (See Appendix D)*

Conclusion

The proposed stormwater management system for this project has been designed in accordance with regulatory criteria described above and is consistent with sound engineering practice. This design has incorporated stormwater quality treatment and detention BMPs to the maximum extent practicable. Therefore, no significant adverse impacts to surrounding surface water are expected as a result of the proposed improvements.

APPENDIX A

GEOTECHNICAL REPORT

Geotechnical Engineering Report

Oregon City Development
Oregon City, Clackamas County, Oregon
September 12, 2022
Terracon Project No. 82215043

Prepared for:
The Wolff Company LLC
Scottsdale, AZ

Prepared by:
Terracon Consultants, Inc.
Portland, Oregon

September 12, 2022

The Wolff Company LLC
6710 E. Camelback Road, Suite 100
Scottsdale, AZ 85251

Attn: Chris Rossman
P: (503) 544.9595
E: jsakamoto@awolff.com
mdarr@awolff.com

Re: Geotechnical Engineering Report
Oregon City Development
1367 Molalla Avenue
Oregon City, Clackamas County, Oregon
Terracon Project No. 82215043

Dear Mr. Rossman:

We have completed a Geotechnical Engineering evaluation for the above referenced project. Our services were performed in accordance with our Master Services Agreement dated November 20, 2017, and the Task Order dated June 22, 2021, and our Change Orders dated December 9, 2021, and June 10, 2022.

This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning slope stability, earthwork and the design and construction of foundations, floor slabs, and pavements for the proposed project.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.

Ryan T. Houser, RG, CEG
Project Geologist

Kristopher T. Hauck, P.E.
Senior Principal | Office Manager

REPORT TOPICS

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FIGURES 34

Note: This report was originally delivered in a web-based format. For more interactive features, please view your project online at client.terracon.com.

FIGURES

ATTACHMENTS

2012 ENGINEERING GEOLOGY REPORT
EXPLORATION AND TESTING PROCEDURES
PHOTOGRAPHY LOG
EXPLORATION RESULTS
SUPPORTING INFORMATION

Note: Refer to each individual Attachment for a listing of contents.

Geotechnical Engineering Report

Oregon City Development

1367 Molalla Avenue

Oregon City, Clackamas County, Oregon

Terracon Project No. 82215043

September 12, 2022

INTRODUCTION

This report presents the results of our subsurface exploration and geotechnical engineering services performed for the proposed apartment complex, retail pads, and related pavements and utilities to be located at 1367 Molalla Avenue in Oregon City, Clackamas County, Oregon. The purpose of these services is to provide information and geotechnical engineering recommendations relative to:

- Subsurface soil conditions
- Groundwater conditions
- Site preparation and earthwork
- Demolition considerations
- Excavation considerations
- Slope stability considerations
- Foundation design and construction
- Floor slab design and construction
- Seismic site class per IBC
- Lateral earth pressures
- Pavement design and construction
- Slope hazard mitigation

The geotechnical engineering Scope of Services for this project included the advancement of one drilled boring and installation of a piezometer to monitor groundwater levels. Previous investigations at the site included advancement of 29 drilled borings and excavation of 68 test pits to depths ranging from approximately 3 to 50 feet below existing site grades. Logs of current and previous explorations are included in the **Exploration Results** section.

Maps showing the site and exploration locations are shown on **Figure 1 - Site Location** and **Figures 2 through 4 - Exploration Plans** in the **Figures** section. The results of the laboratory testing performed on soil samples obtained from the site during the field exploration are included on the boring logs and/or as separate graphs in the **Exploration Results** section.

SITE CONDITIONS

The following description of site conditions is derived from our site visit in association with the field exploration and our review of publicly available topographic maps.

Item	Description
Parcel Information	The project is located at 1367 Molalla Avenue in Oregon City, Clackamas County, Oregon. The site consists of 4 tax lots totaling approximately 12.86 acres. The approximate center of the site is located at the following coordinates: ■ Latitude: 45.3356° N ■ Longitude: 122.5881° W
Existing Improvements	Former buildings were removed, although several retaining walls, foundations, and floor slabs remained as of our last site visit in 2022.
Current Ground Cover	The majority of the site was covered with grass, blackberry bushes, and scattered trees. The eastern edge of the site was densely vegetated with trees and blackberry bushes.
Existing Topography	The majority of the site consisted of three graded benches that stepped down to the east. Each bench was nearly level to gently sloping and were separated by graded slopes up to about 10 feet high with gradients up to about 3 horizontal to 1 vertical (3H:1V). The eastern edge of the site drops steeply down at inclinations in the range of 1½H:1V to ½H:1V to the east toward Newell Creek. The overall slope system height is on the order of 200 feet in vertical drop. We understand that this steep slope area contains active and ancient landslide complexes and has been studied extensively by Portland State University geologists and other researchers.

We also collected photographs at the time of our field exploration program. Representative photos are provided in our **Photography Log**.

PROJECT DESCRIPTION

Our initial understanding of the project was provided in our proposal and was discussed during project planning. Several iterations of collaboration has transpired since the project was initiated, and our final understanding of the project conditions is as follows:

Item	Description
Information Provided	The following documents were provided to us: ■ "Site Plan," Sheet 1.11, prepared by Studio 15 Architecture, Inc., dated June 4, 2021. ■ "Preliminary Existing Conditions Survey," prepared by S&F Land Services, dated June 2021. ■ Oregon City Multi-Family Concept Grading Pavement Plans, Sheets C1.0, C2.0, C2.1, C3.0, C3.1, C4.00," prepared by Kimley-Horn, dated May 27, 2022. We were also provided the geotechnical report for the original planned structure.
Project Description	The proposed development is shown on the attached **Exploration Plans** (**Figures 2 through 4**), and includes construction of: ■ 15 multi-story (2 to 3) apartment buildings with a total of 236 dwelling units. Some of the buildings will incorporate ground level parking structures with apartments above. ■ Covered parking areas (carports). ■ 2 "pad-ready" development pads along the Molalla Avenue frontage for single story retail development. ■ A clubhouse building ■ Swimming pool Associated paved parking and drive lane areas
Building Construction	The proposed apartment and clubhouse buildings will be wood-framed with a slab-on-grade ground floor.
Finished Floor Elevation	The proposed apartment complex will be developed close to existing site grades. Final finish floor elevations are undetermined at this time.
Maximum Loads (Assumed)	■ Columns: 40 kips ■ Walls: 4 kips per linear foot (klf) ■ Slabs: 150 pounds per square foot (psf)
Below-Grade Structures	Development will include construction of a subsurface utility vault that will incorporate restrained retaining walls.
Free-Standing Retaining Walls	Development may include construction of free-standing retaining walls to accommodate grade changes along the eastern edge of the site and for the southeast road extension. We understand retaining walls up to 11 feet in height may be constructed.

Item	Description
Pavements	Paved driveway and parking will be constructed on the perimeter of the site. The Site Plan indicates parking will include 423 parking spaces. Both rigid (concrete) and flexible (asphalt) pavement sections will be incorporated into the final design. Anticipated traffic is as follows: ■ Autos/light trucks: 1,393 vehicles per day ■ Light delivery and trash collection vehicles: 20 vehicles per week ■ Tractor-trailer trucks: <5 vehicles per week The pavement design period is 20 years.
Estimated Start of Construction	Summer 2023

EXISTING GEOTECHNICAL REPORTS

Our Scope of Services is based on our understanding of the project as described by The Wolff Company and the expected subsurface conditions as described below. Terracon previously completed the following reports for the project site:

- "Preliminary Results of Slope Stability Evaluation, Proposed Retail Project, Molalla Avenue and Beavercreek Road, Oregon City, Oregon," prepared by Zipper Zeman Associates (ZZA, now Terracon since 2005), dated July 3, 2002.
- "Subsurface Exploration and Geotechnical Engineering Evaluation, Proposed Retail Project, Molalla Avenue and Beavercreek Road, Oregon City, Oregon," prepared by ZZA, dated February 13, 2004.
- "Preliminary Engineering Geology and Soil Engineering Report, Proposed Retail Development, Molalla Avenue and Beavercreek Road Oregon City, Oregon," prepared by Terracon, dated October 8, 2012.

GEOTECHNICAL CHARACTERIZATION

Geology

The site is located in the northern Willamette Valley geologic province, which consists of a structural trough between the Coastal Range and the Cascade Range. This basin is underlain by thick deposits of sand and gravel washed into it during the Pliocene epoch when the climate in the area was very dry. These granular deposits are locally covered by the Boring lavas (Qtb) in northwest Clackamas County.

Based on the *Oregon Geologic Data Standard v. 2.1* and Oregon Department of Geology and Mineral Industries *Geologic Map of the Oregon City 7.5' Quadrangle, Clackamas County, Oregon, 2009* this site is located within a geologic unit mapped as Tbc-Basalt of Canemah defined as flow or flows of grey medium-grained, olivine basalt. The Oregon Department of Geology and Mineral Industries (DOGAMI), Bulletin 99, *Geologic Map of the Canby and Oregon City Quadrangles, Oregon 1979*, maps the site as consisting of Boring lavas (Qtb), which it describes as Pliocene-Pleistocene lavas, light-gray, open-textured olivine basalt; flow structures common; includes some pyroclastic material of local extent; widely spaced joint pattern. Lavas and breccias have weathered to a residual red clay surface soil. Vertical exposures are susceptible to mass movement and deep bedrock sliding because of failure of underlying material (see the description below with clay materials within the Troutdale unit).

The Boring Lava deposits overly the Troutdale (Tpt), which are described as Pliocene sandstone and conglomerate; indurated beds and lenses of well-sorted sand and cobbly gravel with up to 30 percent quartzite clasts. Some sand originally composed of volcanic glass have altered to an impermeable high shrink-swell clay. The clay can be unstable and cause overlying competent units to fail by landslide. The publications indicate that on slopes where this clay layer daylights, one generally encounters a spring. Also, if layers dip out of the slope, it can become a failure plane for a slump or slump-earthflow when the pore water pressure has built up to a critical value on top of the clay layer.

Based on the *Map of Landslide Geomorphology of Oregon City, Oregon, and Vicinity Interpreted from Lidar Imagery and Aerial Photographs, O-06-27, 2006* and the *Landslide Inventory Map of the Northwest Quarter of the Oregon City Quadrangle, Clackamas County, Oregon, IMS-26, 2009,* a mapped landslide was identified adjacent to the site to the east. The landslide is identified as a prehistoric or ancient landslide (movement greater than 150 years ago). This is defined by landslide features that are slightly eroded and there is no evidence of historic (recent in last 150 years) movement. In some cases, the observed landslide features have been greatly eroded and/or covered with deposits that result in smoothed and subdued morphology.

The borings completed for this report and the previously referenced 2004 ZZA report are generally consistent with the above geologic mapping for the Boring Lavas/Basalt of Canemah, although the basalt has become deeply weathered in certain areas. The Troutdale unit was not encountered to the maximum depth of the borings at approximately 90½ feet below the ground surface. Although direct evidence of landslide features were not readily observed during our exploration programs for the 2004 report, we did observe the general headscarp area of the ancient landslide area during our 2012 and 2021 slope reconnaissances with the aid of the recent Lidar-based landslide maps.

Seismic Hazards

Seismic hazards resulting from earthquake motions can include slope stability, liquefaction, and surface rupture due to faulting or lateral spreading. Liquefaction is the phenomenon wherein soil strength is dramatically reduced when subjected to vibration or shaking.

We reviewed the Statewide Geohazards Viewer (HazVu) published by the Oregon Department of Geology and Mineral Studies (DOGAMI) and available online[1]. The viewer categorizes the expected earthquake shaking from light, moderate, strong, very strong, severe and violent; and the landslide susceptibility from low, moderate, high, and very high.

- Earthquake Liquefaction Hazard: Non-Liquefiable
- Expected Earthquake Shaking: Very Strong
- Landslide Susceptibility (due to earthquake): Low (Landsliding Unlikely) on the majority of the site, with Moderate (Landsliding Possible) to Very High (Existing Slide) on the eastern margin of the site. See **Engineering Geology Update** section for additional discussion.

Faults

The United States Geological Survey (USGS) Quaternary Fault and Fold Database of the United States published a report containing descriptions of nearby faults. Faults in the project vicinity include the Bolton fault (No.874), the Oatfield fault (No.875), and the Portland Hills fault (No.877). Published information pertaining to each fault or fault zone is provided in the following tables:

Bolton fault (Class B) No. 874

Information	Description
Length	9 km
Strike (degrees)	N53°W
Sense of Movement	Reverse
Dip Direction	SW
Slip-rate Category	Less than 0.2 mm/yr
Most recent prehistoric deformation	Undifferentiated Quaternary (<1.6 Ma)
Distance from Fault	1 km NE

[1] Statewide Geohazards Viewer (HazVu) published by the Oregon Department of Geology and Mineral Industries (DOGAMI) https://gis.dogami.oregon.gov/hazvu/

Oatfield fault (Class A) No. 875

Information	Description
Length	29 km
Strike (degrees)	N41W
Sense of Movement	Reverse, Right lateral
Dip Direction	NE
Slip-rate Category	Less than 0.2 mm/yr
Most recent prehistoric deformation	Undifferentiated Quaternary (<1.6 Ma)
Distance from Fault	2 km NNE

Portland Hills fault (Class A) No. 877

Information	Description
Length	49 km
Strike (degrees)	N37°W
Sense of Movement	Reverse, Right lateral
Dip Direction	SW
Slip-rate Category	Less than 0.2 mm/yr
Most recent prehistoric deformation	Undifferentiated Quaternary (<1.6 Ma)
Distance from Fault	5 km NE

Based on our review of the available fault information, the depth to bedrock, and the site's proximity to the nearest known faults, it is our opinion that the risk of surface rupture due to ground faulting is low.

Groundwater Conditions

We observed our explorations while drilling and after completion for the presence and level of groundwater. The water levels observed in the explorations are provided on the boring logs in **Exploration Results**, and are summarized below.

Boring Number	Approximate Ground Surface Elevation (feet) [1]	Observation Date	Approximate Depth to Groundwater/ Seepage while Drilling/Excavating (feet) [1]
02-B-3	447	October 29, 2001	19
02-B-22	451	March 7, 2002	20
02-MW-1	445	October 31, 2001	14
02-MW-1	445	November 2, 2001	8
02-MW-3	456	October 31, 2001	16
02-MW-3	456	November 2, 2001	17.5
02-MW-4	447	October 31, 2001	15
02-MW-4	447	November 2, 2001	11.2
02-MW-5	445	October 31, 2001	15
02-MW-5	445	November 2, 2001	11.5
02-TP-8	445	November 1, 2001	11
02-TP-43	426	March 4, 2002	9
02-TP-1A	435	March 1, 2002	9
02-TP-8A	442	March 1, 2002	6½
02-TP-12A	452	March 2, 2002	4
02-TP-20A	452	March 2, 2002	9½
21-B-1[2]	429	December 2021 – July 1, 2022	(not encountered)

1. Based on elevations obtained from the site topographic plan. Elevations may differ from those presented on the attached logs, which were based on a previous topographic map of the site.
2. A vibrating wire piezometer was installed at a depth of 30¾ feet below the ground surface (bgs), at the top of the basaltic bedrock.

Groundwater observations presented above appear to represent perched groundwater and does not appear to be continuous in nature. Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff and other factors not evident at the time the borings were performed. Therefore, groundwater levels during construction or at other times in the life of the structure may be higher or lower than the levels indicated on the boring logs. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

A vibrating wire piezometer was installed in Boring 21-B-1 near the top of the descending slope at the east end of the site. The instrument was placed immediately above the basaltic andesite within the boring at a depth of approximately 30 feet bgs. As of the date of this report, groundwater

was not recorded by this instrument. Groundwater levels will continue to be measured within this boring throughout 2022.

GeoModel

We have developed a general characterization of the subsurface conditions based upon our review of the subsurface exploration, laboratory data, geologic setting and our understanding of the project. This characterization, termed GeoModel, forms the basis of our geotechnical calculations and evaluation of site preparation and foundation options. Conditions encountered at each exploration point are indicated on the individual logs. The individual logs can be found in the **Exploration Results** section and the GeoModel can be found on **Sections A-A', B-B', and C-C'** (Figures 10 through 12) in the **Figures** section of this report. As part of our analyses, we identified the following model layers within the subsurface profile.

Model Layer	Layer Name	General Description
1	**Existing Fill**	Topsoil, Asphalt, Silty Sand Fill, Clayey Silt Fill, Poorly Graded Gravel Fill, Gravelly Silt Fill placed during previous grading at the site
2	**Residual Soil (Native)**	Silt with trace Clay, Clayey Sand with Gravel, contains a variable amount of basaltic andesite boulders and cobbles
3	**Boring Lava**	Basaltic Andesite, fresh to slightly weathered, slightly fractured to very fractured

ENGINEERING GEOLOGY UPDATE

Terracon previously prepared an engineering geology report for the site, the results of which were presented in our referenced October 8, 2012, report. A copy of the 2012 report is attached at the end of this report. As part of our current scope of work, Terracon performed an engineering geology reconnaissance of the site slopes to document current site conditions. In addition, we reviewed aerial photographs, geologic maps, and geologic hazard maps produced since completion of our 2012 report, as detailed in the following sections.

RESEARCH

Geologic and Geologic Hazards Maps Review

Terracon reviewed the following geologic and geologic hazard maps that include the project site that have become available since our 2012 reports were issued:

- 2012 Oregon Department of Geology and Mineral Industries (DOGAMI) Open-File Report O-12-02, Lidar-based surficial geologic map and database of the greater Portland, Oregon, area, Clackamas, Columbia, Marion, Multnomah, Washington, and Yamhill Counties, Oregon,

and Clark County, Washington, by Lina Ma, Ian P. Madin, Serin Duplantis, and Kendra J. Williams

- 2013 DOGAMI Open-File Report O-13-08, Landslide hazard and risk study of northwestern Clackamas County, Oregon, by William J. Burns, Katherine A. Mickelson, Cullen B. Jones, Sean G. Pickner, Kaleena L. B. Hughes, and Rachel Sleeter.
- 2020 U.S. Geological Survey Scientific Investigations Map SIM-3443, Geologic map of the greater Portland metropolitan area and surrounding region, Oregon and Washington, by Wells, R.E., Haugerud, R.A., Niem, A.R., Niem, W.A., Ma, Lina, Evarts, R.C., O'Connor, J.E., Madin, I.P., Sherrod, D.R., Beeson, M.H., Tolan, T.L., Wheeler, K.L., Hanson, W.B., and Sawlan, M.G.

Based on our review, the geologic mapping presented on these maps is consistent with the mapped publications discussed in our referenced engineering geology report. The Landslide Hazard mapping (2013) indicates the eastern portion of the site, including the area of the headscarp and recommended setback, has a "high" potential for deep-seated landslides. The mapping indicates the eastern approximate quarter of the area of proposed development has a "moderate" potential for deep-seated landslides. The shallow landslide potential is "high" along the landslide scarp, and "moderate" directly above the landslide scarp. The slope between the site and the residential properties to the north also shows a "moderate" potential for shallow landslides. The landslide hazard susceptibility depicted on these maps is consistent with those discussed in the referenced reports prepared for the site. Portions of the landslide susceptibility maps showing the approximate site boundaries are attached as **Figure 6 - Deep Landslide Susceptibility Map** and **Figure 7 - Shallow Landslide Susceptibility Map** in the **Figures** section of this report.

Aerial Photograph Review

We reviewed aerial photographs taken from 2012 to 2020 showing the site to determine if significant changes to vegetation or slope configuration are apparent, which may indicate a slope failure. Our aerial photograph review did not identify any areas showing significant changes to vegetation or slope configuration on the scarp; however, two areas below the landslide headscarp showed vegetation patterns that appeared to be inconsistent with the surrounding areas. These areas were specifically visited during our site reconnaissance, which is described in the following section.

ENGINEERING GEOLOGIC RECONNAISSANCE

Terracon Consultants, Inc., Project Geologist Ryan T. Houser, CEG, performed a surface reconnaissance of the subject property and adjacent slopes on July 1, 2021.

The property was bordered to the west by Molalla Avenue, to the north by single-family and multi-family residences fronting on Hilltop Avenue, to the south by businesses fronting on Beavercreek

Road, and to the east by a forested natural area (Newell Creek Canyon Natural Area). The majority of the site consisted of three graded benches that stepped down to the east. Each bench was nearly level to gently sloping and were separated by graded slopes up to about 10 feet high with gradients up to about 3 horizontal to 1 vertical (3H:1V). Topography of the site is consistent with that shown on the existing conditions survey map provided by the client, as shown on **Figure 8 - Topographic Map** in the **Figures** section of this report. Photographs taken at the time of our reconnaissance are presented in the **Photography Log**.

The former building pad portions of the site above the headscarp were vacant and free of structures. This portion of the site appeared to be in a condition virtually identical to that described in the referenced reports. No signs of slope instability were noted on this portion of the site.

The headscarp appeared to be in a condition identical to that described in the referenced reports, with no indicators of additional failures noted during our reconnaissance. The slope was generally vegetated with fir and oak trees. The majority of the trees on the slope exhibited straight trunks. We noticed several recent treefalls on the slope, which appeared to be the result of wind and/or ice and not slope failures since the disturbed soils were limited to the root wads of the fallen trees.

The areas of variable vegetation noted during our review of aerial photographs were located near the toe of the headscarp within the natural area, as shown on **Figure 9 - Reconnaissance Plan** in the **Figures** section of this report. Both areas contained vegetation different than the surrounding trees. The soils in these areas had a higher moisture content than the slope or surrounding areas at the base of the headscarp. A spring was located at the base of the slope east of the northeastern property corner at the northern “wet soils” area shown on **Figure 9 - Reconnaissance Plan** in the **Figures** section of this report. Based on topography, these areas represent “sag ponds” that often form at the base of headscarps after a landslide. In this case, the sag ponds did not contain standing water but did maintain a higher soil moisture content than the surrounding soils that was not conducive to tree growth. The areas surrounding the sag ponds were vegetated with mature trees, with no indications of recent reactivations of the landslide.

SEISMIC CONSIDERATIONS

Seismic Design

The seismic design requirements for structures are based on the Seismic Design Category. Site Classification is required to determine the Seismic Design Category for a structure. The Site Classification is based on the upper 100 feet of the site profile defined by a weighted average value of either shear wave velocity, standard penetration resistance, or undrained shear strength in accordance with Section 20.4 of ASCE 7-16.

Description	Value
2019 Oregon Structural Specialty Code (OSSC) [1]	D[2]
Site Latitude	45.3360°N
Site Longitude	122.5880°W
S_S MCE_R Ground Motion for a Short Period [3]	0.812g
S_1 MCE_R Ground Motion for a 1-Second Period [3]	0.366g
PGA_M Site Modified Peak Ground Acceleration	0.451

1. Seismic site classification in general accordance with the *2019 Oregon Structural Specialty Code (OSSC)*, which refers to ASCE 7-16.
2. ASCE 7-16 requires a site soil profile extending to a depth of 100 feet be used for seismic site classification. Borings at this site were extended to a maximum depth of 90½ feet. The site properties below the boring depth to 100 feet were estimated based on our experience and knowledge of geologic conditions of the general area.
3. These values were obtained using online seismic design maps and tools available on the Applied Technology Council (ATC) website referenced in Section 1613.2.1 of the 2019 OSSC.

Liquefaction

Liquefaction is the phenomenon where saturated soils develop high pore-water pressures during seismic shaking and lose their strength characteristics. This phenomenon generally occurs in areas of high seismicity, where groundwater is shallow and loose granular soils or relatively low- to non-plastic fine-grained soils are present.

Based on their plasticity characteristics, the shallow high-plasticity soils are considered non-liquefiable. Based on their very stiff/dense nature, the underlying residual soil is considered non-liquefiable within the depths explored. In addition, relatively shallow, non-liquefiable basaltic andesite bedrock underlies the site. These findings are consistent with liquefaction hazard mapping for the site described above, which indicates soils at the site are non-liquefiable.

SLOPE STABILITY

Published geologic maps referenced in the attached October 8, 2012, engineering geology report and in the **Engineering Geology Update** section referenced above indicate that shallow surficial landsliding and debris flows are the primary types of slope failure in Newell Creek Canyon. In addition, recent hazard mapping indicates a moderate to high risk of deep-seated failures on the eastern portion of the site. It is our opinion that the previously discussed deep-seated failure of the mapped landslide was due to significant undercutting of lower-strength materials that underly the basalt by the ancestral Newell Creek. The resultant landslide debris covered the lower strength materials, forcing Newell Creek further to the east. In our opinion, the landslide debris and current location of Newell Creek provide a level of protection against erosion of the lower

strength materials, and a reduced risk of deep seated failures for the life of the current development.

Mechanics of Stability

Slope stability analyses take into consideration material strength, presence and orientation of weak layers, water (piezometric) pressures, surcharge loads, and the slope geometry. Mathematical computations are performed using computer-assisted simulations to calculate a Factor of Safety (FS). Minor changes to slope geometry, surface water flow and/or groundwater levels could result in slope instability. Reasonable FS values are dependent upon the confidence in the parameters utilized in the analyses performed, among other factors related to the project itself.

Geometric Analysis Results

Slope stability analyses were performed for the cross-section geometries based on the provided topographic map and publicly available topographic information. Parameters for the analyses were derived from our exploration program, experience, and laboratory tests. Stability analyses were conducted using the computer program Slope/W Version 7.16 developed by Geo-Slope International.

Unstable or Potentially Unstable Slopes

Based on the results of our field investigation, laboratory testing program, and geotechnical analysis, development of the site is considered feasible from a geotechnical viewpoint provided the conclusions and considerations provided herein are incorporated into the design and construction of the project. A horizontal acceleration of 0.225 (1/2 of the PGA_M) was entered for the seismic stability calculations.

The stability of the slopes at the cross-section locations shown on **Figure 3 –Exploration Plan East** were analyzed based on the provided topography, proposed grading, soil properties derived from our geotechnical exploration, laboratory test results and our experience with similar soil conditions. Soil and bedrock properties used in the analyses are shown below:

Material	Moist Unit Weight (pcf)	Drained Cohesion (psf)	Drained Friction Angle (degrees)
Existing Fill	120	0	27
Proposed Fill	125	0	32
Probable Slide Material	120	100	5
Residual Soil	125	250	30
Fresh Bedrock	150	500	45

Based on the analyses, the calculated FS for the critical surface identified in each section is shown below. It's important to note that these results incorporate the planned grading at this time. However, these analyses do not include any risk mitigation elements recommended later in this section.

Cross-Section	Minimum Calculated Factor-of-Safety for Slopes With Proposed Grading (no mitigation)	
	Static	Seismic
A-A'	1.65	1.06
B-B'	1.36	0.81
C-C'	1.91	1.17

The typically accepted minimum FS for static long-term slope stability supporting improvements is 1.5, and 1.15 for seismic slope stability. As shown in the table above, the proposed fill placement at the top of the slope will result in a factor of safety below the accepted minimums.

Slope Hazard Mitigation Recommendations

We evaluated multiple slope stability mitigation options including the use us deep foundations to support the proposed parking areas, the use of lightweight fill materials, and incorporating geogrid into the new structural fill areas. Based on our analyses, we recommend the proposed retaining wall incorporate a row of soldier piles to reinforce the top of the slope. The soldier piles should consist of a row of drilled shaft cast-in-place concrete piers. In addition, we recommend buildings setback a minimum of 35 feet from the top of the headscarp at the east end of the site. This line is shown on the attached **Figure 9 - Reconnaissance Map** and **Figure 3 - Exploration Plan East**. These piles should be embedded a minimum of 5 feet into the bedrock materials. Additional discussion of these recommendations is provided in **Geotechnical Overview** section. Details of the pile recommendations are provided in the **Soldier Pile Walls** section.

Incorporating these recommendations into the slope stability analyses results in the following calculated FS for the critical surfaces:

Cross-Section	Minimum Calculated Factor-of-Safety for Slopes Mitigated with Soldier Piles	
	Static	Seismic
A-A'	2.48	1.61
B-B'	2.87	1.56
C-C'	2.80	1.75

While these factors of safety appear significantly higher than the goal of design of 1.5 for static and 1.15 for seismic, these are the minimums provided the piles are embedded into the bedrock. Our analyses for piles not embedded into the bedrock did not achieve adequate factors of safety. As indicated in the preceding table, installation of soldier piles will provide sufficient increase in

the factors of safety. The slope stability results for each cross section representing the proposed grading incorporating soldier piles are included as **Figures 13 through 18** in the **Figures** section of this report.

GEOTECHNICAL OVERVIEW

Based on the results of our slope stability and engineering analyses, it is our opinion that the proposed development is feasible from the geotechnical engineering standpoint. The primary geotechnical considerations for development of the site are:

- **Existing Landslide Hazard:** As indicated above, we recommend the retaining wall at the east end of the site incorporate a row of soldier piles to aid in slope stability. The soldier piles should consist of drilled shaft cast-in-place concrete piers that are designed to provide lateral support for new fill and existing native soils (above the bedrock) west of the proposed retaining wall. Soldier pile recommendations are provided in the **Soldier Pile Walls** section. In addition, we recommend a 35-foot building setback from the top of the descending slope at the east end of the site (See **Figure 3 - Exploration Plan East**). The recommended setback is for habitable structures, so minor encroachments of parking and grading can be considered an acceptable use provided the following considerations are incorporated into final grading plans in order to minimize impact to slope stability:
  - Drainage should be controlled so that no water is discharged onto or over the descending slope.
  - Additional area loading of the top of the slope should be avoided (i.e. no additional fill that would increase weight at the top of the slope beyond that included in our slope stability model as shown on the proposed grading plan and cross sections).

- **Existing Fill Pad:** Up to about 7 feet of undocumented fill soils underlie the proposed parking and drive lane area at the east end of the site. “Undocumented” fill is fill that lacks documentation regarding its subgrade conditions or evaluation of compaction while it was placed. Due to the potential of long-term settlement of such fill, we recommend the fill be removed and replaced with properly placed and compacted structural fill as described in the **Earthwork** section. The approximate area of the fill (based on topography) is shown on **Figure 8 - Topographic Map**.

- **Previous Tank Excavations:** Several underground storage tanks related to a former gas station were removed from within the southwest corner of the site in the parking area southwest of southern building pad fronting on Molalla Avenue. The approximate location of the former gas station is shown on the **Figure 8 - Topographic Map**. We are not aware of density test or observation reports regarding the placement of backfill within the excavations remaining after removal of the tanks. Therefore, we recommend the fill be treated as “undocumented,” and that it be removed and replaced with properly placed and compacted

structural fill. The suitability of existing fill for reuse as structural fill can be evaluated during construction. As an alternative, additional test pits could be advanced into the existing fill to determine if it can be reused as structural fill.

- **Moisture Sensitivity:** The near surface, silt soils could become unstable with typical earthwork and construction traffic, especially after precipitation events. The effective drainage should be completed early in the construction sequence and maintained after construction to avoid potential issues. If possible, the grading should be performed during the warmer and drier times of the year. If grading is performed during the winter months, an increased risk for possible undercutting and replacement of unstable subgrade will persist. Additional site preparation recommendations, including subgrade improvement and fill placement, are provided in the **Earthwork** section.

The **General Comments** section provides an understanding of the report limitations.

EARTHWORK

Earthwork is anticipated to include demolition, clearing and grubbing, excavations, and fill placement. The following sections provide recommendations for use in the preparation of specifications for the work. Recommendations include critical quality criteria, as necessary, to render the site in the state considered in our geotechnical engineering evaluation for foundations, floor slabs, and pavements.

Site Preparation

Prior to placing new fill, existing vegetation and root mat should be removed. Complete stripping of the topsoil should be performed in the proposed building and parking/driveway areas. Existing pavements, foundations, subsurface structures, and utilities remaining from previous development should be removed in their entirety. Existing fill soils should be removed and replaced with controlled structural fill.

The subgrade should be proof rolled with an adequately loaded vehicle such as a fully-loaded tandem-axle dump truck. The proof rolling should be performed under the direction of the Geotechnical Engineer. Areas excessively deflecting under the proof roll should be delineated and subsequently addressed by the Geotechnical Engineer. Such areas should either be removed or modified by stabilizing with cement. Excessively wet or dry material should either be removed or moisture conditioned and recompacted.

Terracon completed an Environmental Site Assessment (ESA) report for the project under separate cover. The ESA indicates contaminated soils within portions of the former wrecking yard at the east end of the site near the top of the descending slope. Any contaminated soils removed

near the top of the descending slope during remediation practices should be replaced with properly controlled, low-permeability structural fill soils. A former fueling station was also identified on the western portion of the site. We understand that the fuel tank was previously removed and the resulting excavation was loosely backfilled with excavated soils. The contractor should be aware that earthwork activities associated with the proposed development may encounter contaminated native and/or undocumented fill soils within these areas. The ESA reports completed for the site should be thoroughly reviewed prior to the start of earthwork activities.

Existing Fill

As noted in **Geotechnical Characterization**, many of the explorations encountered existing fill to depths of up to about 7 feet. The consistency/density of the fill is highly variable. Therefore, we recommend the fill be completely removed and replaced with properly placed and compacted structural fill in proposed building and pavement areas. Removal of undocumented fill soils should extend a minimum of 10 feet beyond building and pavement areas. Once materials have been removed, the entire area should be proof rolled with heavy, rubber tire construction equipment, to aid in delineating areas of soft or otherwise unsuitable soil. Areas of soft or otherwise unsuitable material should be undercut and replaced with either new structural fill or suitable, existing on site materials. Once unsuitable materials have been remediated, and the subgrade has passed the proof roll test, the existing and undocumented fill that was removed can be evaluated for reuse as structural fill.

Subgrade Stabilization

For this site, improvement of working surfaces subgrade with Portland cement could be considered. Cement amendment of soils should be performed by a pre-qualified contractor having experience with successfully stabilizing subgrades in the project area on similar sized projects with similar soil conditions.

For planning purposes, we estimate that pavement subgrades would need to be amended with an approximate 7 to 8 percent cement by dry weight in order to provide a stabilized subgrade for both wet weather and pavement support. We recommend a cement-amendment design be prepared during the full design phase to refine this estimate for construction specifications.

Fill Material Types

Fill required to achieve design grades should be classified as select fill, structural fill and general fill. Select fill is material used below turbine foundations, whereas structural fill is material used above or within 10 feet of foundation structures and within roadways or constructed slopes. General fill is material used to achieve grade outside of these structural areas. Fill materials used should meet the following material property requirements:

Soil Type[1]	Specification	Acceptable Parameters (for Structural Fill)
Common Fill	2021 ODOT Standard Specifications for Construction (ODOT SSC) Section 00330.13 Selected General Backfill[2]	All locations across the site, except beneath footing pads Dry weather only
Granular Common Fill	ODOT SSC Section 0030.13 Selected General Backfill[3]	All locations across the site. Dry weather only
Select Fill	ODOT SSC Section 00330.14 Selected Granular Backfill[4]	All locations across the site. Wet and Dry weather acceptable.
Crushed Aggregate Base (CAB)	ODOT SSC Section 02630.10 Dense Graded Aggregate (2”-0 to 1”-0) with the modification that less than 8% pass the No. 200 sieve as determined by ASTM D 422.	Finished base course materials for roadways and footing subgrades.
Lean Concrete (Mud-Mat)	ODOT SSC 00442 with the exception that minimum 28-day strength shall be 500 psi. Higher strength minimums may be specified by the Structural Engineer as needed.	All locations underneath mat foundations and spread foundations.

1. Controlled, compacted fill should consist of approved materials that are free (free = less than 3% by weight) of organic matter and debris (i.e. wood sticks greater than ½ inch in diameter). Frozen material should not be used, and fill should not be placed on a frozen subgrade. A sample of each material type should be submitted to the geotechnical engineer for evaluation.
2. Material should have a liquid limit less than 40 and plasticity index of less than 10.
3. Material should have less than 50% passing the No. 200 sieve and be non-plastic in nature.
4. Material should have a maximum aggregate size of 2 inches and no more than 8% passing the No. 200 sieve by weight determined by ASTM D 422.
5. Decomposed bedrock and basalt bedrock can be used as fill/backfill provided it is properly processed to a “soil-like consistency” to meet the USCS Classifications presented above with no pieces larger than 2 inches.
6. The contractor shall select the appropriate material for use based on the current and forecasted weather conditions at the time of construction.

Fill Compaction Requirements

Recommended compaction and moisture content criteria for structural fill materials are as follows:

Material Type and Location	Minimum Compaction Requirement (%)	Range of Moisture Contents for Compaction	
		Minimum	Maximum
Common Fill	**Per the Modified Proctor Test (ASTM D 1557)**		
All locations where used	95	-2%	+2%
Select Fill & CAB	**Per the Modified Proctor Test (ASTM D 1557)**		

Material Type and Location	Minimum Compaction Requirement (%)	Range of Moisture Contents for Compaction	
		Minimum	Maximum
All locations where used (e.g. beneath foundations, slabs, pavements)	95	-4%	+2%

Utility Trench Backfill

For low permeability subgrades, utility trenches are a common source of water infiltration and migration. Utility trenches penetrating beneath the buildings should be effectively sealed to restrict water intrusion and flow through the trenches, which could migrate below the buildings. The trench should provide an effective trench plug that extends at least 5 feet from the face of building exteriors. The plug material should consist of cementitious flowable fill or low permeability clay. The trench plug material should be placed to surround the utility line. If used, the clay trench plug material should be placed and compacted to comply with the water content and compaction recommendations for structural fill stated previously in this report.

Grading and Drainage

All grades must provide effective drainage away from the buildings during and after construction and should be maintained throughout the life of the structure. Water retained next to the buildings can result in soil movements greater than those discussed in this report. Greater movements can result in unacceptable differential floor slab and/or foundation movements, cracked slabs and walls, and roof leaks. The roofs should have gutters/drains with downspouts that discharge onto splash blocks at a distance of at least 10 feet from the buildings.

Exposed ground should be sloped and maintained at a minimum 5% away from the buildings for at least 10 feet beyond the perimeter of the buildings. Locally, flatter grades may be necessary to transition ADA access requirements for flatwork. After building construction and landscaping have been completed, final grades should be verified to document effective drainage has been achieved. Grades around the structure should also be periodically inspected and adjusted, as necessary, as part of the structure's maintenance program. Where paving or flatwork abuts the structure, a maintenance program should be established to effectively seal and maintain joints and prevent surface water infiltration.

Earthwork Construction Considerations

Shallow excavations for the proposed structures are anticipated to be accomplished with conventional construction equipment. Upon completion of filling and grading, care should be taken to maintain the subgrade water content prior to construction of floor slabs. Construction traffic over the completed subgrades should be avoided. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. Water collecting over or

adjacent to construction areas should be removed. If the subgrade freezes, desiccates, saturates, or is disturbed, the affected material should be removed, or the materials should be scarified, moisture conditioned, and recompacted prior to floor slab construction.

As a minimum, excavations should be performed in accordance with OSHA 29 CFR, Part 1926, Subpart P, “Excavations” and its appendices, and in accordance with any applicable local, and/or state regulations.

Construction site safety is the sole responsibility of the contractor who controls the means, methods, and sequencing of construction operations. Under no circumstances shall the information provided herein be interpreted to mean Terracon is assuming responsibility for construction site safety, or the contractor's activities; such responsibility shall neither be implied nor inferred.

Construction Observation and Testing

The earthwork efforts should be monitored under the direction of the Geotechnical Engineer. Monitoring should include documentation of adequate removal of vegetation and topsoil, proof rolling, and mitigation of areas delineated by the proof roll to require mitigation.

Each lift of compacted fill should be tested, evaluated, and reworked, as necessary, until approved by the Geotechnical Engineer prior to placement of additional lifts. Each lift of fill should be tested for density and water content at a frequency of at least one test for every 2,500 square feet of compacted fill in the building areas and 5,000 square feet in pavement areas. One density and water content test should be performed for every 50 linear feet of compacted utility trench backfill. In areas of foundation excavations, the bearing subgrade should be evaluated under the direction of the Geotechnical Engineer. If unanticipated conditions are encountered, the Geotechnical Engineer should prescribe mitigation options.

In addition to the documentation of the essential parameters necessary for construction, the continuation of the Geotechnical Engineer into the construction phase of the project provides the continuity to maintain the Geotechnical Engineer’s evaluation of subsurface conditions, including assessing variations and associated design changes.

SHALLOW FOUNDATIONS

If the site has been prepared in accordance with the requirements noted in the **Earthwork** section, the following design parameters are applicable for shallow foundations.

Design Parameters – Compressive Loads

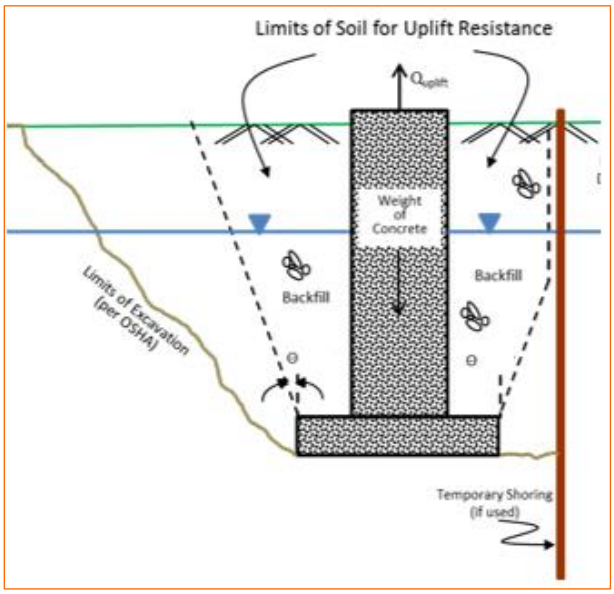
Item	Description
Maximum Net Allowable Bearing Pressure[1,2]	2,000 psf
Required Bearing Stratum[3]	Structural fill or undisturbed native residual soil
Minimum Foundation Dimensions	Columns: 24 inches Continuous: 18 inches
Ultimate Passive Resistance[4] **(equivalent fluid pressures)**	150 pcf (cohesive backfill) 360 pcf (granular backfill)
Ultimate Coefficient of Sliding Friction[5]	0.30 (native silt soils) 0.50 (granular structural fill material)
Minimum Embedment below Finished Grade[6]	Exterior footings in unheated areas: 12 inches Exterior footings in heated areas: 12 inches Interior footings in heated areas: 12 inches
Estimated Total Settlement from Structural Loads[2]	Less than about 1 inch
Estimated Differential Settlement[2,7]	About ⅔ of total settlement

1. The maximum net allowable bearing pressure is the pressure in excess of the minimum surrounding overburden pressure at the footing base elevation. An appropriate factor of safety has been applied. Values assume that exterior grades are no steeper than 20% within 10 feet of structure.
2. Values provided are for maximum loads noted in **Project Description**.
3. Unsuitable or soft soils should be overexcavated and replaced per the recommendations presented in the **Earthwork**.
4. Use of passive earth pressures require the sides of the excavation for the spread footing foundation to be nearly vertical and the concrete placed neat against these vertical faces or that the footing forms be removed and compacted structural fill be placed against the vertical footing face.
5. Can be used to compute sliding resistance where foundations are placed on suitable soil/materials. Should be neglected for foundations subject to net uplift conditions.
6. Embedment necessary to minimize the effects of frost and/or seasonal water content variations. For sloping ground, maintain depth below the lowest adjacent exterior grade within 5 horizontal feet of the structure.
7. Differential settlements are as measured over a span of 50 feet.

Design Parameters - Uplift Loads

Uplift resistance of spread footings can be developed from the effective weight of the footing and the overlying soils. As illustrated on the subsequent figure, the effective weight of the soil prism defined by diagonal planes extending up from the top of the perimeter of the foundation to the ground surface at an angle, θ, of 20 degrees from the vertical can be included in uplift resistance. The maximum allowable uplift capacity should be taken as a sum of the effective weight of soil plus the dead weight of the foundation, divided by an appropriate factor of safety. A maximum

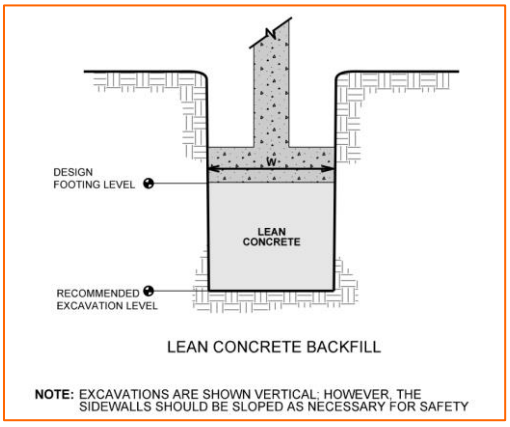
total unit weight of 100 pcf should be used for the backfill. This unit weight should be reduced to 40 pcf for portions of the backfill or natural soils below the groundwater elevation.



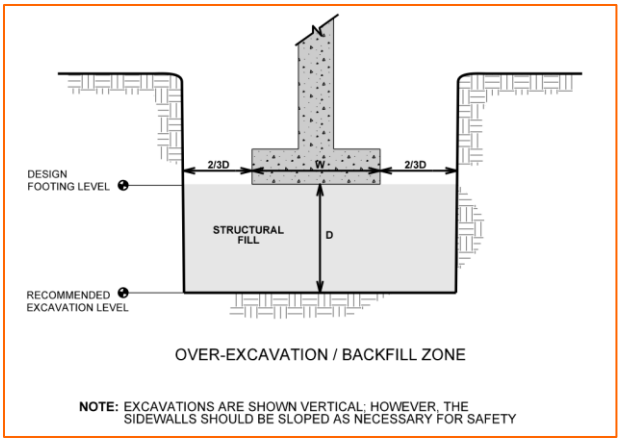
Foundation Construction Considerations

As noted in **Earthwork**, the footing excavations should be evaluated under the direction of the Geotechnical Engineer. The base of all foundation excavations should be free of water and loose soil, prior to placing concrete. Concrete should be placed soon after excavating to reduce bearing soil disturbance. Care should be taken to prevent wetting or drying of the bearing materials during construction. Excessively wet or dry material or any loose/disturbed material in the bottom of the footing excavations should be removed/reconditioned before foundation concrete is placed.

If unsuitable bearing soils are encountered at the base of the planned footing excavation, the excavation should be extended deeper to suitable soils, and the footings could bear directly on these soils at the lower level or on lean concrete backfill placed in the excavations. This is illustrated on the sketch below.



Overexcavation for structural fill placement below footings should be conducted as shown below. The overexcavation should be backfilled up to the footing base elevation, with structural fill placed, as recommended in the **Earthwork** section.



FLOOR SLABS

Depending upon the finished floor elevation, unsuitable, undocumented fills may be encountered at the floor slab subgrade levels. These soils should be replaced with structural fill so the floor slab is supported on suitable natural soils or newly placed structural fill.

Design parameters for floor slabs assume the requirements for **Earthwork** have been followed. Specific attention should be given to positive drainage away from the structure and positive drainage of the aggregate base beneath the floor slab.

Floor Slab Design Parameters

Item	Description
Floor Slab Support [1]	Minimum 6 inches of free-draining (less than 6% passing the U.S. No. 200 sieve) crushed aggregate compacted to at least 95% of ASTM D 698 [2, 3]
Estimated Modulus of Subgrade Reaction [2]	100 pounds per square inch per inch (psi/in) for point loads

1. Floor slabs should be structurally independent of building footings or walls to reduce the possibility of floor slab cracking caused by differential movements between the slab and foundation.
2. Modulus of subgrade reaction is an estimated value based upon our experience with the subgrade condition, the requirements noted in **Earthwork**, and the floor slab support as noted in this table. It is provided for point loads. For large area loads the modulus of subgrade reaction would be lower.
3. Free-draining granular material should have less than 5% fines (material passing the No. 200 sieve). Other design considerations such as cold temperatures and condensation development could warrant more extensive design provisions.

The use of a vapor retarder should be considered beneath concrete slabs on grade covered with wood, tile, carpet, or other moisture sensitive or impervious coverings, or when the slab will support equipment sensitive to moisture. When conditions warrant the use of a vapor retarder, the slab designer should refer to ACI 302 and/or ACI 360 for procedures and cautions regarding the use and placement of a vapor retarder.

Saw-cut control joints should be placed in the slab to help control the location and extent of cracking. For additional recommendations refer to the ACI Design Manual. Joints or cracks should be sealed with a water-proof, non-extruding compressible compound specifically recommended for heavy duty concrete pavement and wet environments.

Where floor slabs are tied to perimeter walls or turn-down slabs to meet structural or other construction objectives, our experience indicates differential movement between the walls and slabs will likely be observed in adjacent slab expansion joints or floor slab cracks beyond the length of the structural dowels. The Structural Engineer should account for potential differential settlement through use of sufficient control joints, appropriate reinforcing or other means.

Mitigation measures, as noted in **Existing Fill** within the **Earthwork** section, are critical to the performance of floor slabs. In addition to the mitigation measures, the floor slab can be stiffened by adding steel reinforcement, grade beams and/or post-tensioned elements.

Floor Slab Construction Considerations

Finished subgrade, within and for at least 10 feet beyond the floor slab, should be protected from traffic, rutting, or other disturbance and maintained in a relatively moist condition until floor slabs are constructed. If the subgrade should become damaged or desiccated prior to construction of floor

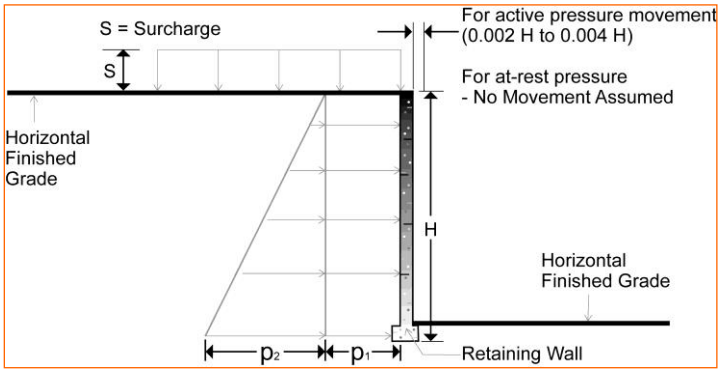
slabs, the affected material should be removed and structural fill should be added to replace the resulting excavation. Final conditioning of the finished subgrade should be performed immediately prior to placement of the floor slab support course.

The Geotechnical Engineer should approve the condition of the floor slab subgrades immediately prior to placement of the floor slab support course, reinforcing steel, and concrete. Attention should be paid to high traffic areas that were rutted and disturbed earlier, and to areas where backfilled trenches are located.

LATERAL EARTH PRESSURES

Design Parameters

Structures with unbalanced backfill levels on opposite sides should be designed for earth pressures at least equal to values indicated in the following table. Earth pressures will be influenced by structural design of the walls, conditions of wall restraint, methods of construction and/or compaction and the strength of the materials being restrained. Two wall restraint conditions are shown in the diagram below. Active earth pressure is commonly used for design of free-standing cantilever retaining walls and assumes wall movement. The “at-rest” condition assumes no wall movement and is commonly used for basement walls, loading dock walls, or other walls restrained at the top. The recommended design lateral earth pressures do not include a factor of safety and do not provide for possible hydrostatic pressure on the walls (unless stated).



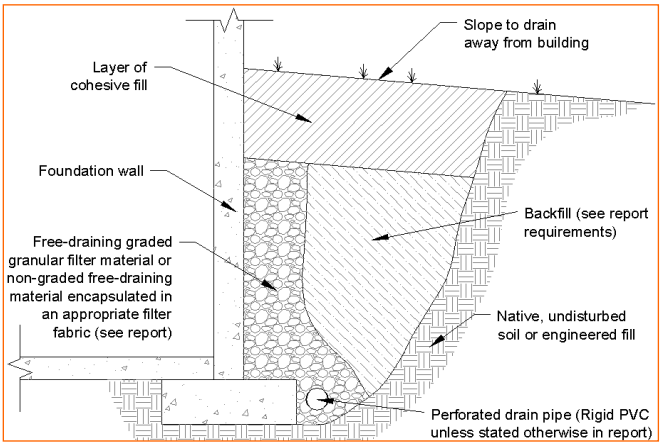
Lateral Earth Pressure Design Parameters				
Earth Pressure Condition [1]	Coefficient for Select Fill Backfill [2]	Surcharge Pressure [3, 4, 5] p_1 (psf)	Effective Fluid Pressures (psf) [2, 4, 5]	
			Unsaturated [6]	Submerged [6]
Active (Ka)	0.31	(0.27)S	(35)H	0.27
At-Rest (Ko)	0.47	(0.43)S	(55)H	0.43
Passive (Kp)	3.25	---	(480)H	3.69

1. For active earth pressure, wall must rotate about base, with top lateral movements 0.002 H to 0.004 H, where H is wall height. For passive earth pressure, wall must move horizontally to mobilize resistance.
2. Uniform, horizontal backfill, compacted to at least 95% of the ASTM D 1557 maximum dry density, rendering a maximum unit weight of 120 pcf.
3. Uniform surcharge, where S is surcharge pressure.
4. Loading from heavy compaction equipment is not included.
5. No safety factor is included in these values.
6. To achieve “Unsaturated” conditions, follow guidelines in Subsurface Drainage for Below-Grade Walls section below. “Submerged” conditions are recommended when drainage behind walls is not incorporated into the design.

Backfill placed against structures should consist of granular soils or low plasticity cohesive soils. For the granular values to be valid, the granular backfill must extend out and up from the base of the wall at an angle of at least 45 and 60 degrees from vertical for the active and passive cases, respectively.

Subsurface Drainage for Below-Grade Walls

A perforated rigid plastic drain line installed behind the base of walls and extends below adjacent grade is recommended to prevent hydrostatic loading on the walls. The invert of a drain line around a below-grade building area or exterior retaining wall should be placed near foundation bearing level. The drain line should be sloped to provide positive gravity drainage to daylight or to a sump pit and pump. The drain line should be surrounded by clean, free-draining granular material having less than 5% passing the No. 200 sieve, such as No. 57 aggregate. The free-draining aggregate should be encapsulated in a filter fabric. The granular fill should extend to within 2 feet of final grade, where it should be capped with compacted cohesive fill to reduce infiltration of surface water into the drain system.



As an alternative to free-draining granular fill, a pre-fabricated drainage structure may be used. A pre-fabricated drainage structure is a plastic drainage core or mesh which is covered with filter fabric to prevent soil intrusion, and is fastened to the wall prior to placing backfill.

SOLDIER PILE WALLS

Based on the slope stability analyses and the proposed development plan, we recommend that the retaining wall along the east end of the proposed fill pad be supported on deep foundations consisting of a row of cast in place concrete piles. Based on our analyses, the piles should be spaced no more than 8 feet apart. The piles should be embedded a minimum of 5 feet into the basalt bedrock encountered at the site, and should be designed to retain the proposed structural fill (under the parking and drive lanes), and underlying native residual soils to the surface of the bedrock. Based on our explorations, the surface of the bedrock ranges from about 20 to 33 feet below site grades along the wall alignment. This depth will likely have more variation during construction to the variable thickness of the fill present at the site.

Lateral Earth Pressures

Based on slope stability analyses attached to this report, we recommend the piles be designed to retain the soils from the proposed finished grade to the surface of the basalt bedrock. The parameters defined in the table below should be utilized in the design of the drilled shafts to determine required embedment depth and spacing, taking into consideration a minimum spacing between piles of 8 feet along the top of the slope and a minimum embedment of 5 feet into the bedrock. Additional embedment into the bedrock may be necessary to provide adequate resistance to overturning.

The design of lateral earth stabilization piers is conventionally accomplished using empirical relationships and apparent earth pressure distributions. These earth pressure distributions or envelopes do not represent the precise distribution of earth pressures but rather constitute

hypothetical pressures from loads can be calculated which would not likely be exceeded in the event of a landslide.

Design of these systems could be based on either “active” or “at-rest” lateral earth pressures, depending on the degree of deformation that can be tolerated. Piers which are free to deform on the order of 0.001 to 0.002 times the height of the exposed potential height is considered to be capable of mobilizing active earth pressures. This lateral deformation is likely to be accomplished by vertical settlement of up to roughly 0.002 times the height of the piers, which may extend back from the side of the slide face a distance equal to roughly the height of the exposed height. A greater amount of lateral deformation could allow greater vertical settlements. Since there are structural elements within the zone considered to be at risk during a potential slide, we believe it is appropriate to design utilizing at-rest earth pressures.

An assumed “at-rest” earth pressure condition theoretically assumes no movement of the soil behind the stabilization piers; however, some settlement should realistically be anticipated due to construction practices and/or the fact that it is not possible to construct a perfectly stiff system and the space between the piers are reliant on soil arching for support should be piers be exposed.

Material	Equivalent Fluid Weight		Strength Parameters (Drained)	
	At Rest (pcf)	Allowable Passive (pcf)	Drained Cohesion (psf)	Drained Friction Angle (degrees)
Existing Fill	120	320	0	27
Proposed Fill	125	407	0	32
Residual Soil	125	375	250	30
Fresh Bedrock	150	874	500	45

In the table above, the at-rest pressures act on the pile spacing above the bedrock and on the pier diameter below that depth. The passive pressures act on twice the pier diameter. We recommend a minimum pier embedment of at least 5 feet into competent basalt bedrock.

Construction Considerations

If soldier piles are installed prior to removal of the existing debris-laden undocumented fill, caving conditions should be expected in the fill materials. Therefore, drilled shaft excavations may require the use of temporary casing and drilling fluid to maintain integrity of the excavation walls and bottom. Groundwater was not encountered within the anticipated depth of drilling, but isolated perched zones may be encountered within the residual soil or at the top of the underlying bedrock, particularly following periods of heavy rainfall. Thick drilling fluid and/or casing may be required to offset the groundwater and caving conditions. Following completion of the excavation and prior

to installing reinforcement or concrete the bottom of the shaft must be cleaned of any soft or loose material.

Caving of the sidewalls and/or heaving of the shaft bottoms may occur during wet weather conditions. We recommend that the contractor be prepared to use casing and/or slurry installation methods in the event that wall sloughing, caving, or heave occurs. The contractor should also be equipped to clean out the bottom of the shafts if loose soil is observed or suspected.

If less than 3 inches of water is present in the bottom of the excavation, groundwater seepage into the excavation is at a rate of no more than 12 inches per hour and the shaft diameter is greater than or equal to 3 feet; concrete may be placed by free-fall. Under free-fall placement, deposit concrete through the center of the reinforcement cage by a method which prevents segregation of aggregates and splashing of concrete on the reinforcement cage. Place concrete so that the free-fall is vertical down the center of the shaft without hitting the sides, the steel reinforcing bars or steel cage bracing.

If the drilled shaft does not meet the above requirements, we recommend placing concrete from the bottom of the holes with a tremie pipe to form a continuous column and prevent aggregate separation. Concrete should be placed with a higher than average slump into the excavation through a tremie pipe extending to the bottom of the excavation. An uninterrupted supply and placement of concrete should be performed to produce a monolithic pier. Use clean, watertight tremie pipes large enough in diameter to allow the free flow of concrete. The tremie pipes should be placed within one to two feet above the bottom of the excavation prior to the commencement of concrete placement. Maintain a minimum 5 feet embedment of the tremie pipe in the concrete during concrete placement.

The bottom of the shaft must be observed or tested to verify that all loose material has been removed and dense granular soil is exposed. The contractor should review the conditions encountered and reported on the boring logs and in this report and provide appropriate equipment to excavate the shafts to the design depths at this site.

Reinforcing steel and concrete should be placed inside the temporary casing. The casing should be pulled as the concrete is placed to provide final contact between the soil and the concrete. A minimum head of 5 feet of concrete should be maintained above the lower edge of the casing as it is pulled to prevent intrusion of soil during extraction.

PAVEMENTS

General Pavement Comments

Pavement designs are provided for the traffic conditions and pavement life conditions as noted in **Project Description** and in the following sections of this report. A critical aspect of pavement performance is site preparation. Pavement designs noted in this section must be applied to the site which has been prepared as recommended in the **Earthwork** section.

Pavement Design Parameters

Design of Asphaltic Concrete (AC) pavements are based on the procedures outlined in the American Association of State Highway and Transportation Officials (AASHTO), 1993. Design of Portland Cement Concrete (PCC) pavements are based upon American Concrete Institute (ACI) 330; Guide for Design and Construction of Concrete Parking Lots.

A subgrade CBR of 9 (from attached laboratory testing) was used for the AC pavement designs, and a modulus of subgrade reaction (k) of 100 pci was used for the PCC pavement designs where subgrade stabilization consisting of CAB or cement treated soil is employed. The values were empirically derived based upon our experience with the fine-grained subgrade soils and our understanding of the quality of the subgrade as prescribed by the **Site Preparation** conditions as outlined in **Earthwork**. A modulus of rupture of 580 psi was used for pavement concrete.

Pavement Section Thicknesses with Subgrade Stabilization

As a minimum, we suggest the following pavement section be considered:

Asphaltic Concrete Design		
Layer	Thickness (inches)	
	Light Duty [1]	Heavy Duty [1]
AC [2]	3	4
Aggregate Base [3]	7	8

1. See **Project Description** for more specifics regarding Light Duty and Medium Duty traffic.
2. All materials should meet the Oregon Department of Transportation (ODOT) Standard Specifications for Construction (2018).
   - Asphaltic Surface - ODOT Type A Asphaltic Cement Concrete: Section 00744
   - Asphaltic Base - ODOT Type B Asphaltic Cement Concrete, Class I: Section 00745
3. A minimum 1.5-inch surface course should be used on ACC pavements.

Portland Cement Concrete Design		
Layer	Thickness (inches)	
	Light Duty [1]	Heavy Duty [3]
PCC [2]	5	6
Aggregate Base [3]	7	8

1. See **Project Description** for more specifics regarding traffic classifications.
2. All materials should meet the current State Department of Transportation ODOT) Standard Specifications for Highway and Construction (2018).
   - Concrete Pavement - ODOT Portland Cement Concrete Type C: Section 00756
3. In areas of anticipated heavy traffic, fire trucks, delivery trucks, or concentrated loads (e.g. dumpster pads), and areas with repeated turning or maneuvering of heavy vehicles.

We understand that typical fire departments require that the proposed pavement sections at the site will support a fire emergency truck once the apartment complex is constructed. Typically, we estimate total fire-truck load of 80,000 pounds for a three axle (single tire) truck. Based on these assumptions and the proposed loading conditions, we computed the ultimate bearing capacity of the pavement sections relative to a 20 percent increase of the factored load of the fire truck. From a bearing failure standpoint, the Truck Loading Section pavements are estimated to be adequate for support of the fire truck vehicle (with a factor of safety of 2.5). Pavement areas may experience some localized cracking from these large fire truck vehicle loads but are not expected to experience bearing failure of the pavement section. Based on this analysis, it is our opinion that pavement will provide adequate support for the temporary use of an emergency fire truck at the site.

Pavement Drainage

Pavements should be sloped to provide rapid drainage of surface water. Water allowed to pond on or adjacent to the pavements could saturate the subgrade and contribute to premature pavement deterioration. In addition, the pavement subgrade should be graded to provide positive drainage within the granular base section. The subgrade and the pavement surface should have a minimum ¼ inch per foot slope to promote drainage. Appropriate sub-drainage or connection to a suitable daylight outlet should be provided to remove water from the base layer.

Pavement Maintenance

The pavement sections represent minimum recommended thicknesses and, as such, periodic maintenance should be anticipated. Therefore, preventive maintenance should be planned and provided for through an on-going pavement management program. Maintenance activities are intended to slow the rate of pavement deterioration and to preserve the pavement investment. Maintenance consists of both localized maintenance (e.g., crack and joint sealing and patching) and global maintenance (e.g., surface sealing). Preventive maintenance is usually the priority when implementing a pavement maintenance program. Additional engineering observation is

recommended to determine the type and extent of a cost-effective program. Even with periodic maintenance, some movements and related cracking may still occur and repairs may be required. Pavement performance is affected by its surroundings. In addition to providing preventive maintenance, the civil engineer should consider the following recommendations in the design and layout of pavements:

- Final grade adjacent to paved areas should slope down from the edges at a minimum 2%.
- Subgrade and pavement surfaces should have a minimum 2% slope to promote proper surface drainage.
- Install below pavement drainage systems surrounding areas anticipated for frequent wetting.
- Install joint sealant and seal cracks immediately.
- Seal all landscaped areas in or adjacent to pavements to reduce moisture migration to subgrade soils.
- Place compacted, low permeability backfill against the exterior side of curb and gutter.
- Place curb, gutter and/or sidewalk directly on clay subgrade soils rather than on unbound granular base course materials.

GENERAL COMMENTS

Our analysis and opinions are based upon our understanding of the project, the geotechnical conditions in the area, and the data obtained from our site exploration. Natural variations will occur between exploration point locations or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. Terracon should be retained as the Geotechnical Engineer, where noted in this report, to provide observation and testing services during pertinent construction phases. If variations appear, we can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

Our Scope of Services does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

Our services and any correspondence or collaboration through this system are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices with no third-party beneficiaries intended. Any third-party access to services or correspondence is solely for information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client, and is not intended for

third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly impact excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing. Site safety, and cost estimating including, excavation support, and dewatering requirements/design are the responsibility of others. If changes in the nature, design, or location of the project are planned, our conclusions and recommendations shall not be considered valid unless we review the changes and either verify or modify our conclusions in writing.

FIGURES

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FIGURE 1 - SITE LOCATION

Oregon City Development ■ Oregon City, OR
September 12, 2022 ■ Terracon Project No. 82215043

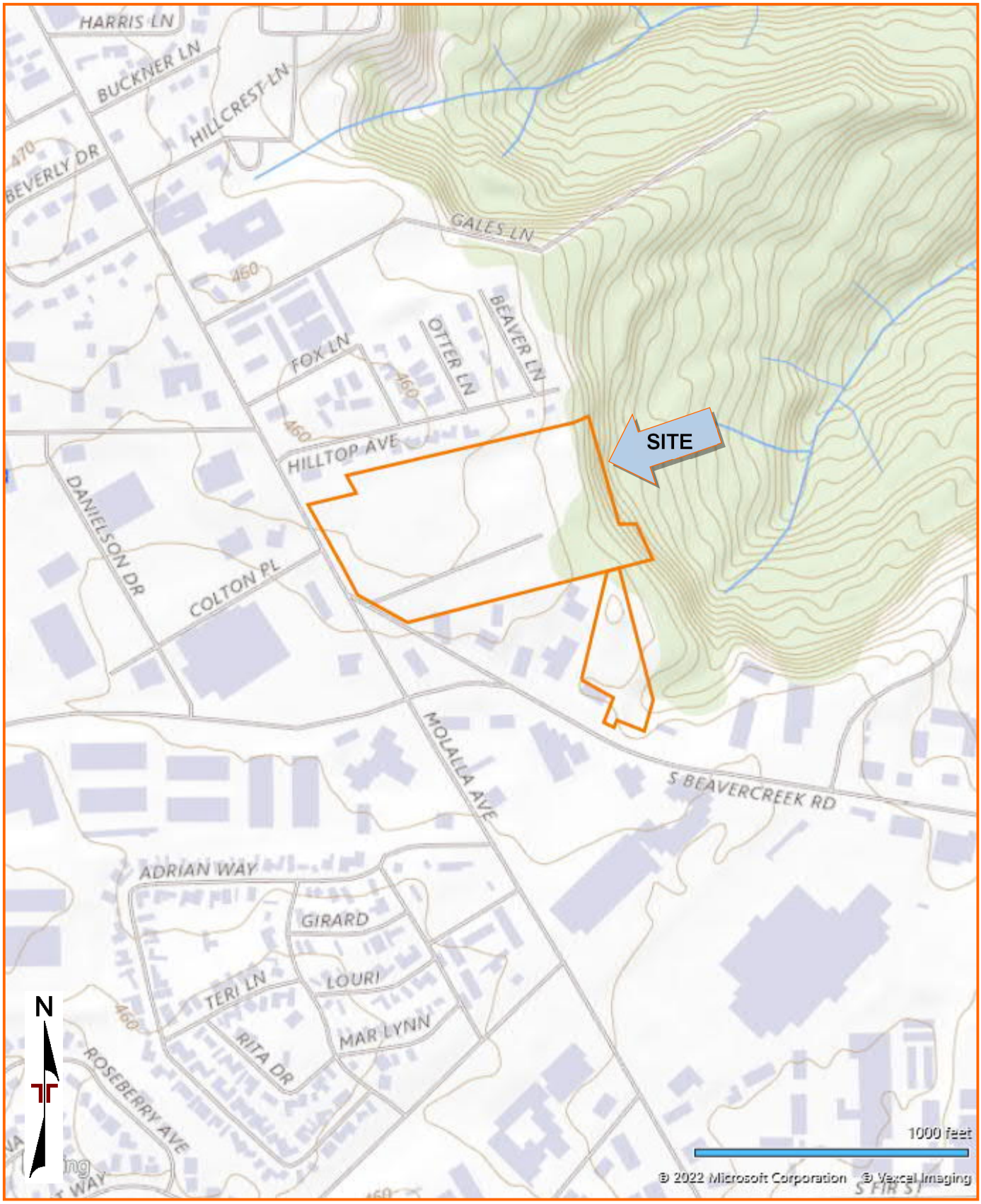
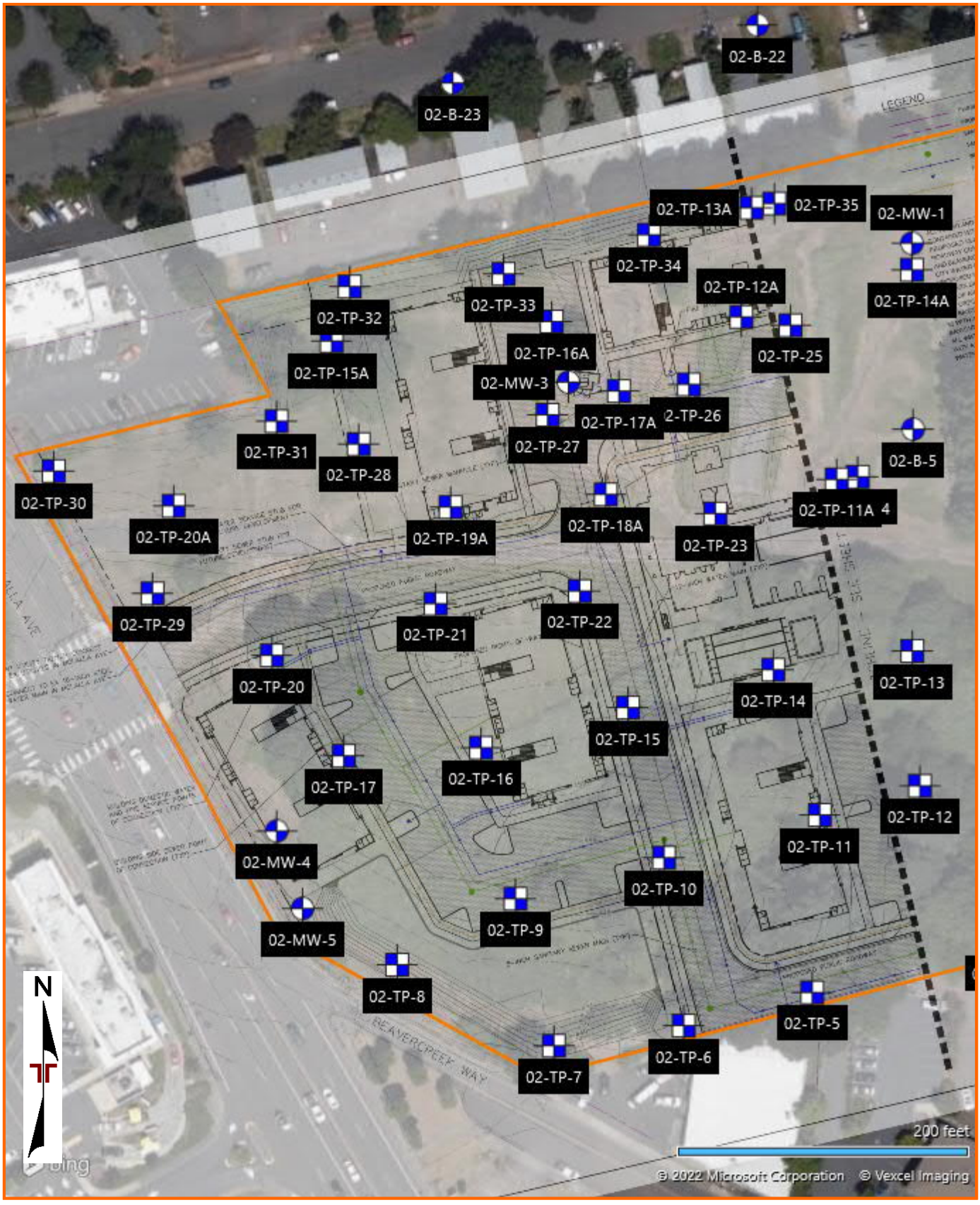


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

TOPOGRAPHIC MAP IMAGE COURTESY OF THE U.S. GEOLOGICAL SURVEY QUADRANGLES INCLUDE: OREGON CITY, OR (1/1/1985).

FIGURE 2 - EXPLORATION PLAN WEST

Oregon City Development ■ Oregon City, OR
September 12, 2022 ■ Terracon Project No. 82215043



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AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

FIGURE 3 - EXPLORATION PLAN EAST
Oregon City Development ■ Oregon City, OR
September 12, 2022 ■ Terracon Project No. 82215043

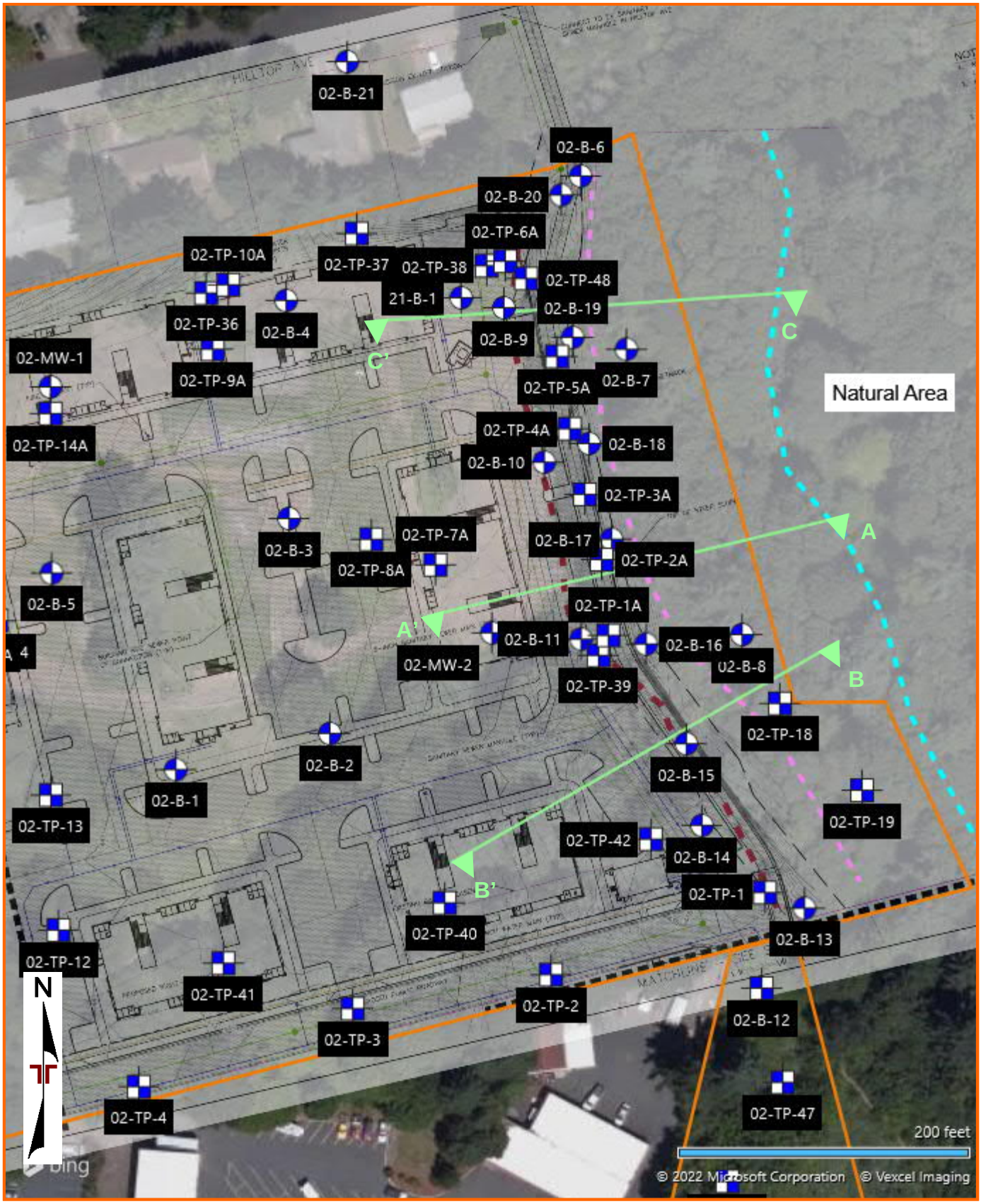

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FIGURE 4 – EXPLORATION PLAN SOUTH

Oregon City Development ■ Oregon City, OR
September 12, 2022 ■ Terracon Project No. 82215043

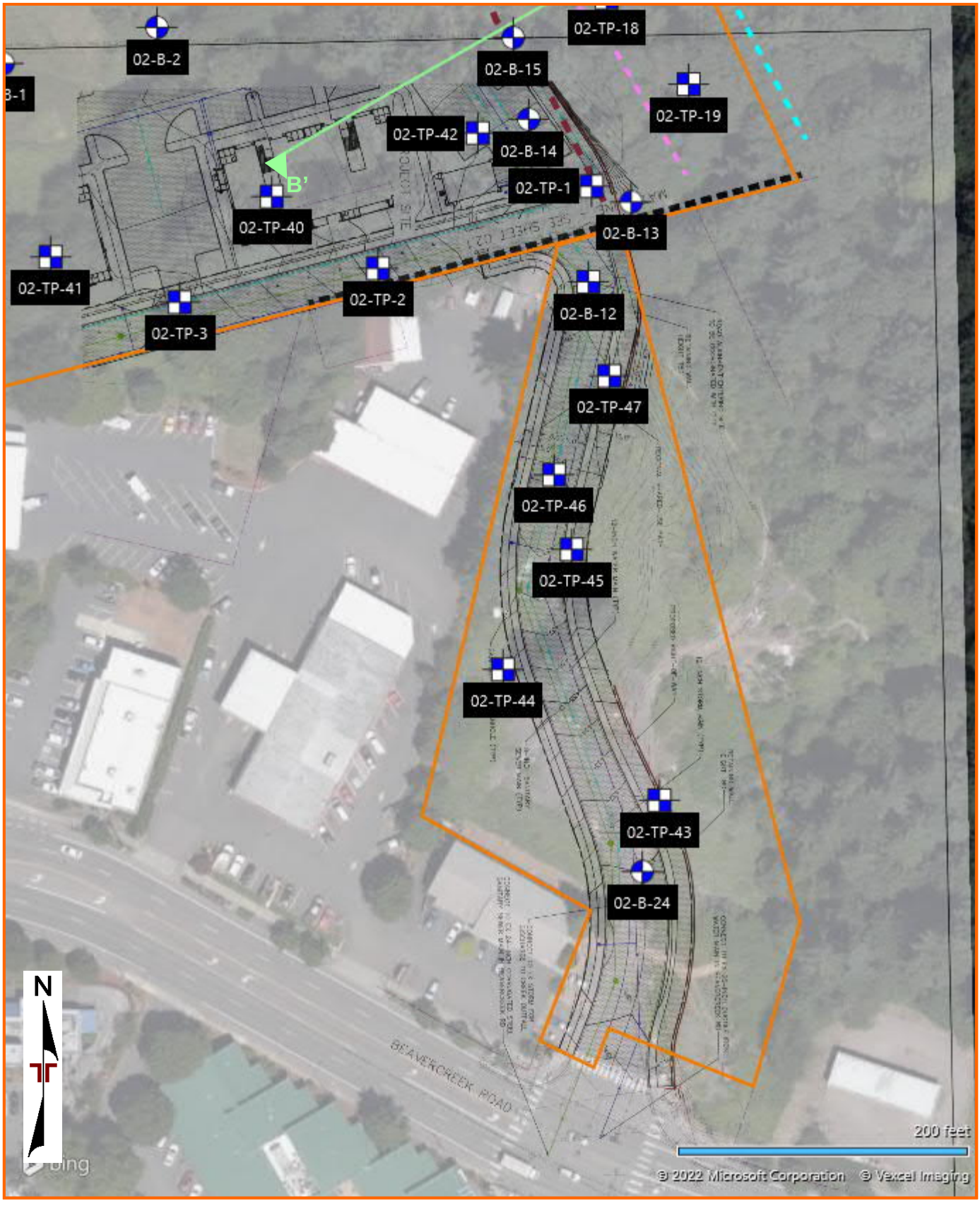

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FIGURE 5 - EXPLORATION PLAN LEGEND
Oregon City Development ■ Oregon City, OR
September 12, 2022 ■ Terracon Project No. 82215043

LEGEND

APPROXIMATE SITE BOUNDARY


APPROXIMATE BORING LOCATION, YEAR, AND NUMBER


APPROXIMATE TEST PIT LOCATION, YEAR, AND NUMBER

APPROXIMATE TOE OF SLOPE

APPROXIMATE TOP OF SLOPE

RECOMMENDED 35 FOOT SETBACK

CROSS SECTION LOCATION AND LETTER

AERIAL PHOTOGRAPHY PROVIDED
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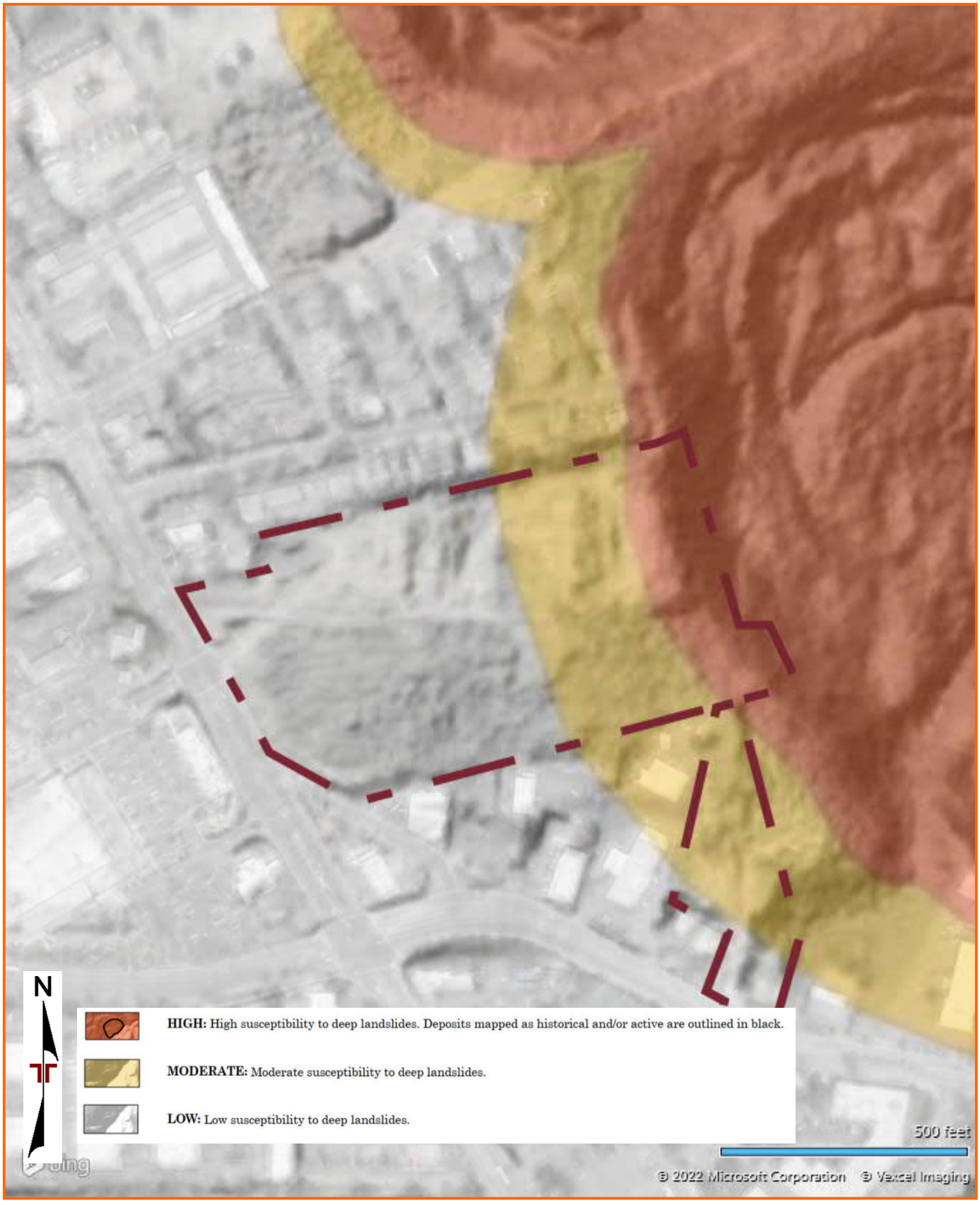


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Excerpted from 2013 DOGAMI Open-File Report O-13-08, Landslide hazard and risk study of northwestern Clackamas County, Oregon



Figur
DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Excerpted from 2013 DOGAMI Open-File Report O-13-08, Landslide hazard and risk study of northwestern Clackamas County, Oregon

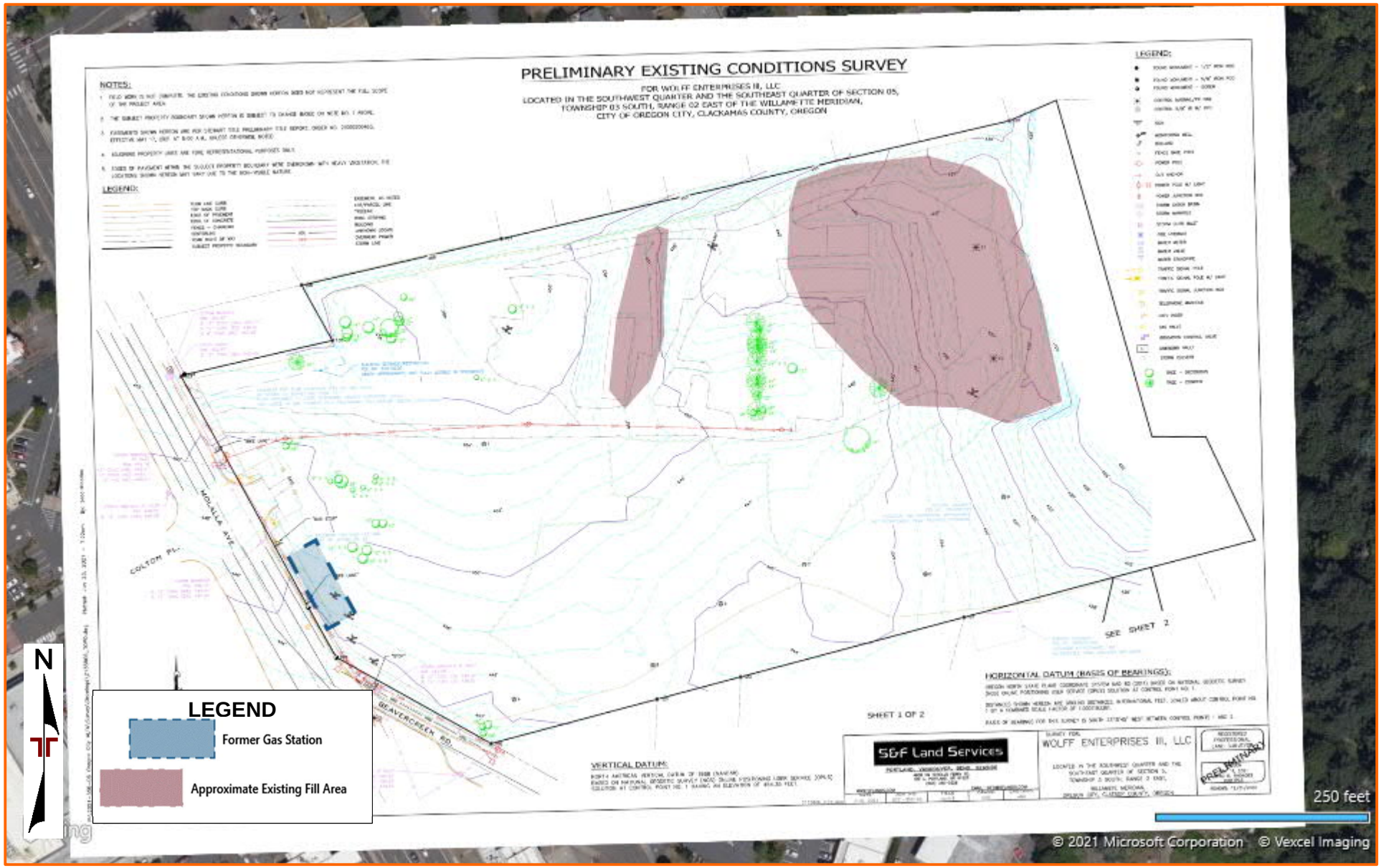
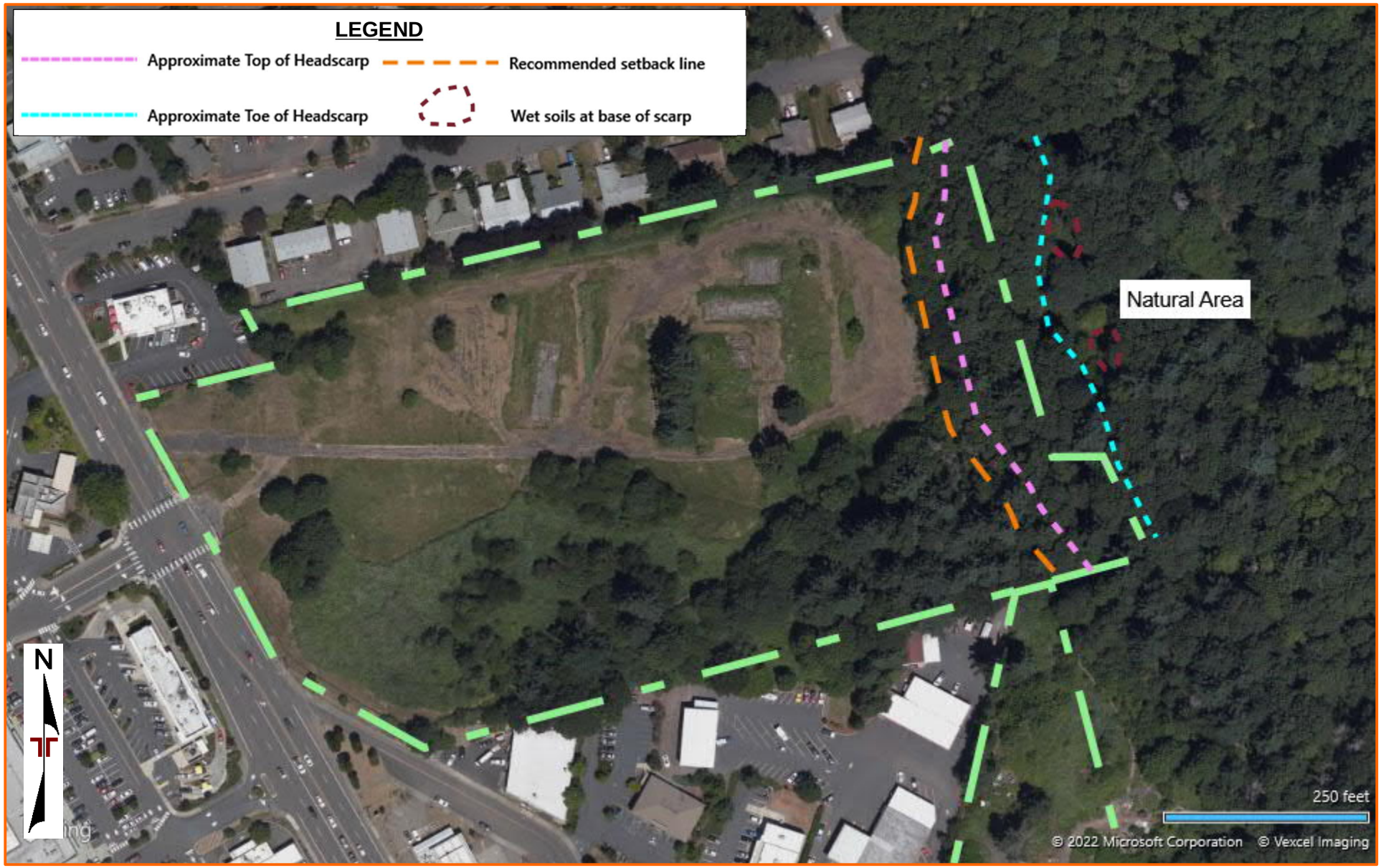


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP BASED ON PRELIMINARY EXISTING CONDITIONS SURVEY BY S&F LAND SERVICES, DATED JUNE 2021, AND MODIFIED BY TERRACON



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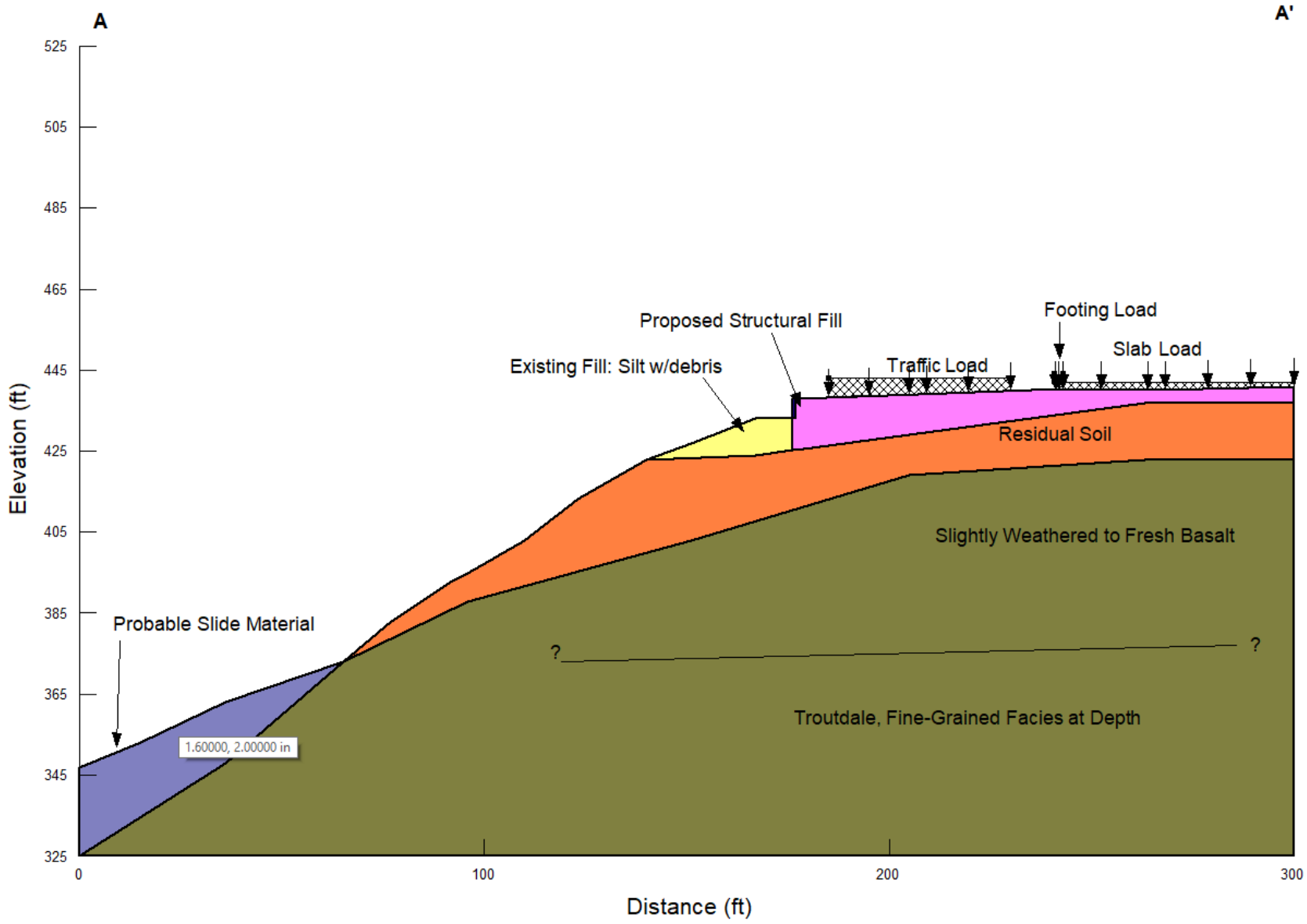
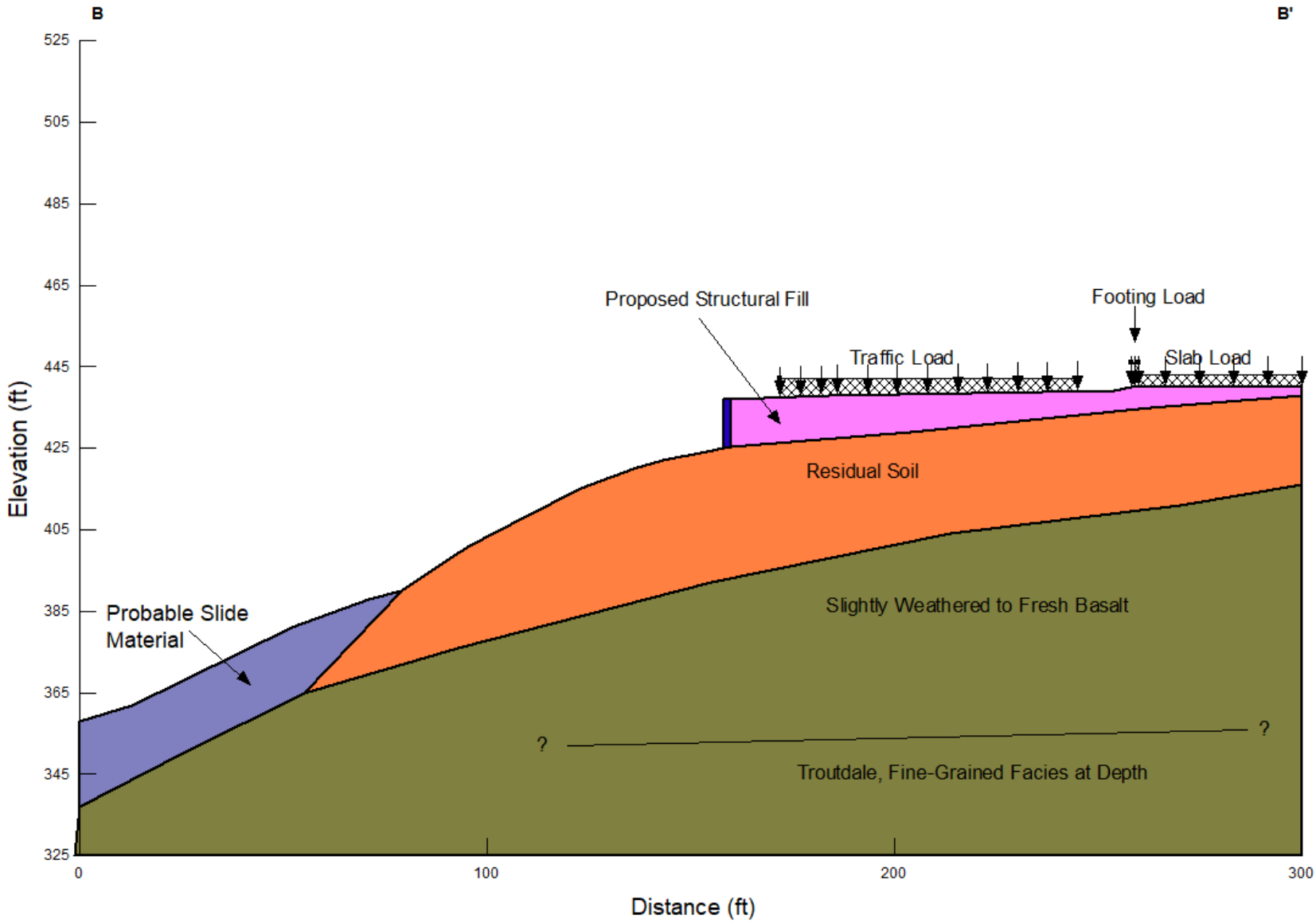
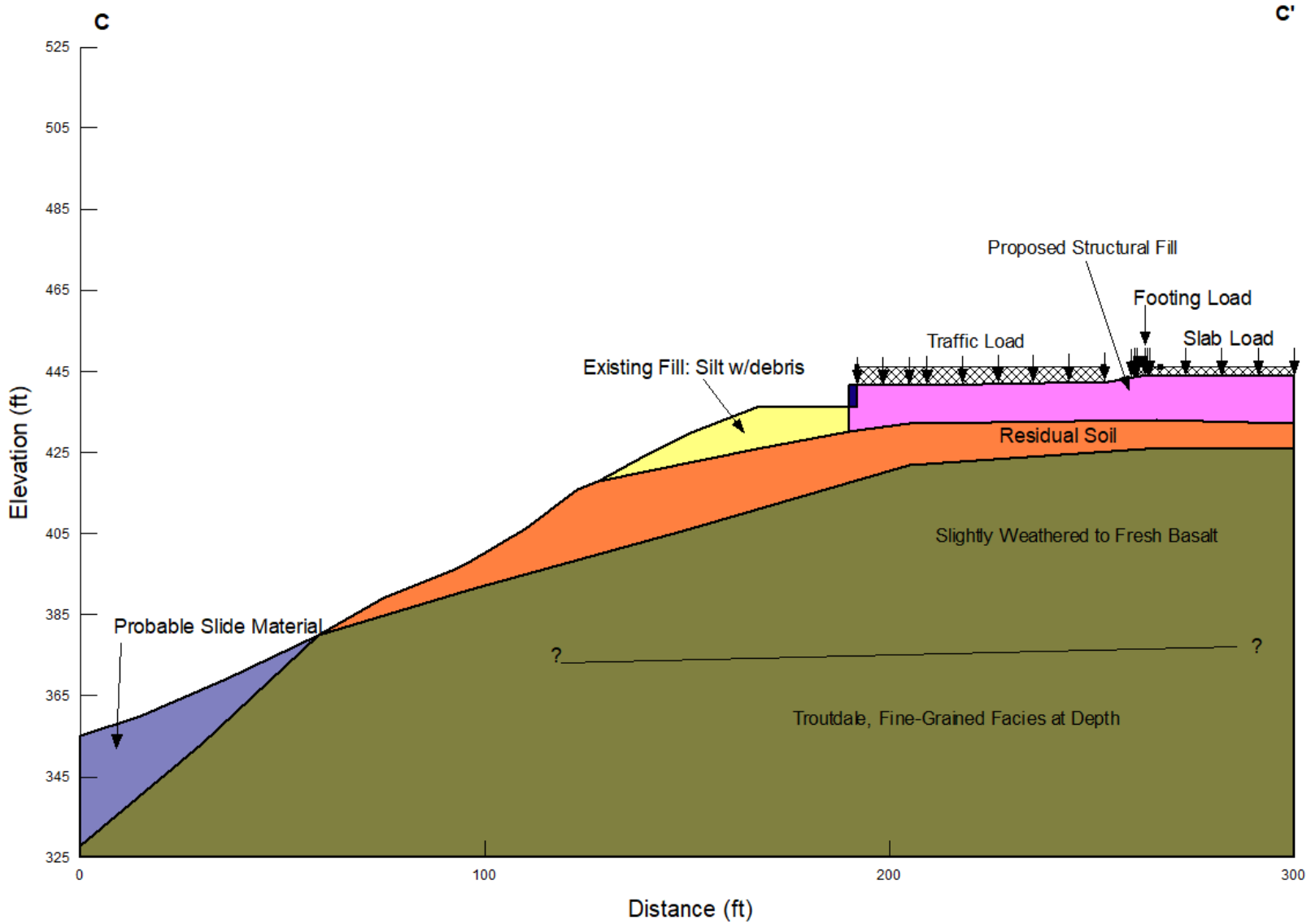
AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS



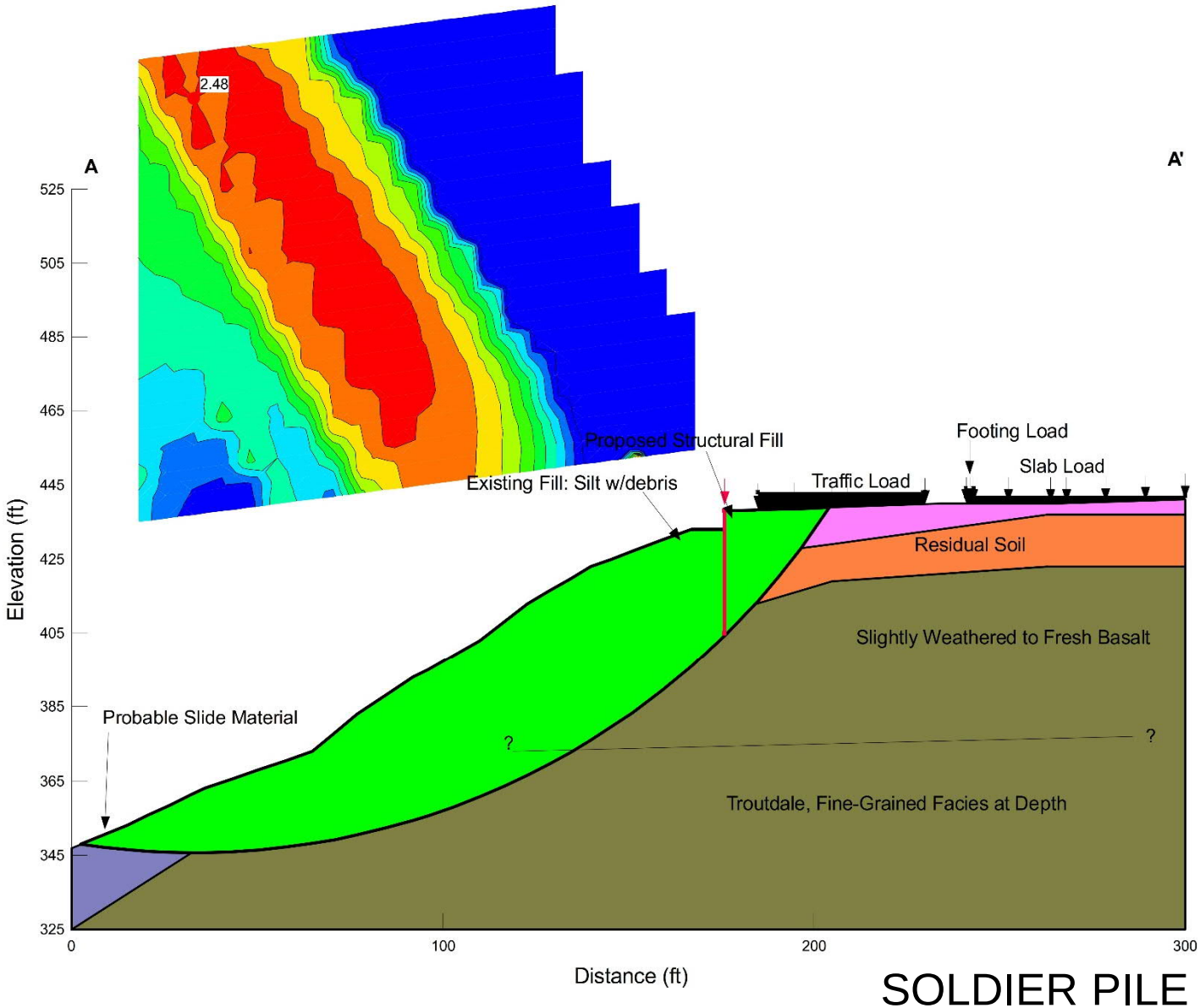
Project Manager: RTH	Project No. 82215043	Terracon Consulting Engineers & Scientists	GEOLOGIC CROSS SECTION A-A'
Drawn by: RTH	Scale: N.T.S.	700 NE 55th Avenue Portland, OR 97203	OREGON CITY DEVELOPMENT Molalla Avenue and Beavercreek Road Oregon City, Oregon
Checked by: KTH	File Name: CrossSectA	PH. (503) 659-3281 FAX. (503) 659-1287	Figure 10
Approved by: KTH	Date: September 2022		



Project Manager: RTH	Project No. 82215043	Terracon Consulting Engineers & Scientists	GEOLOGIC CROSS SECTION B-B'
Drawn by: RTH	Scale: N.T.S.	700 NE 55th Avenue Portland, OR 97203	OREGON CITY DEVELOPMENT Molalla Avenue and Beavercreek Road Oregon City, Oregon
Checked by: KTH	File Name: CrossSectB	PH. (503) 659-3281 FAX. (503) 659-1287	Figure 11
Approved by: KTH	Date: September 2022		

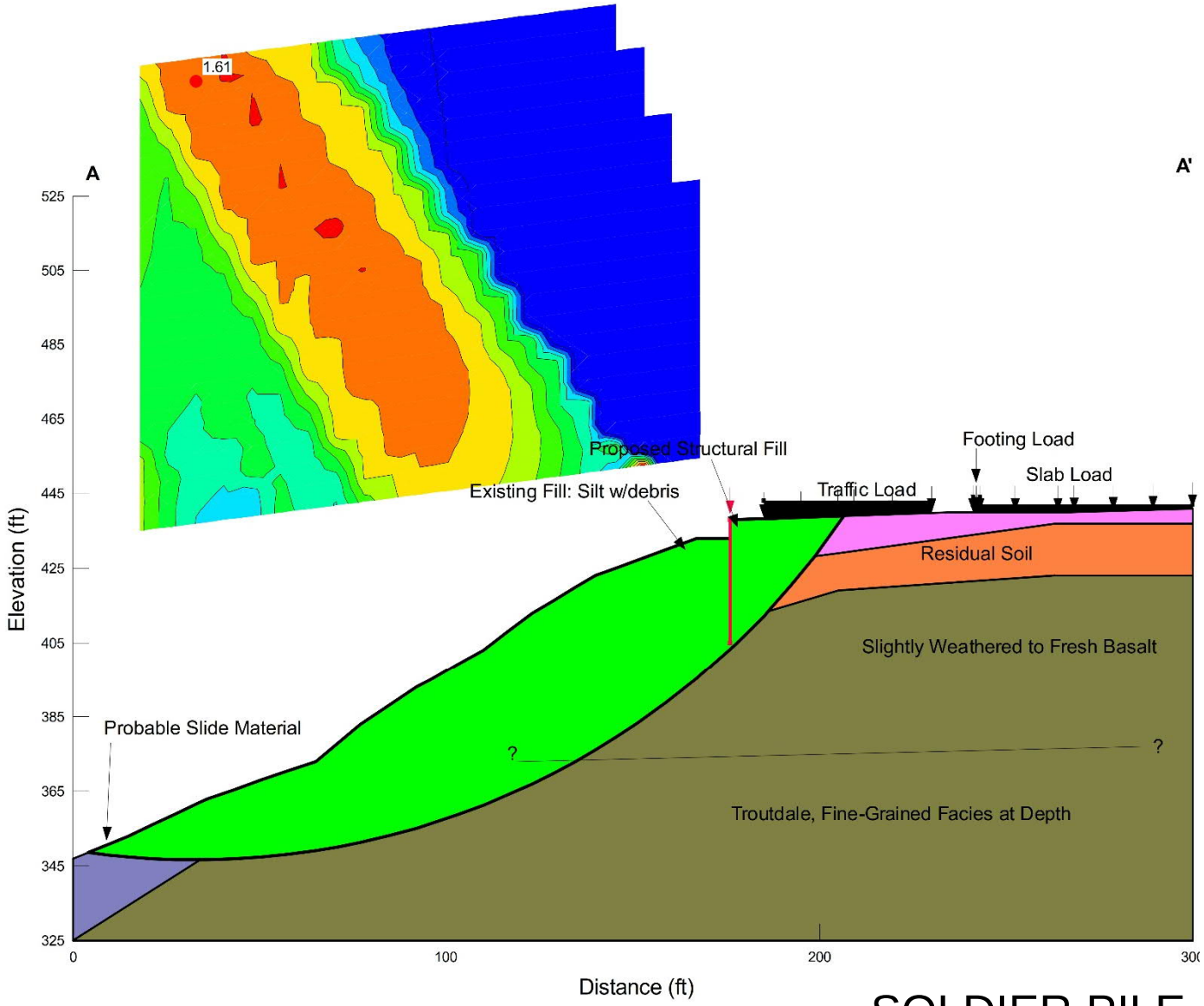


Project Manager: RTH	Project No. 82215043	Terracon Consulting Engineers & Scientists	GEOLOGIC CROSS SECTION C-C'
Drawn by: RTH	Scale: N.T.S.	700 NE 55th Avenue Portland, OR 97203	OREGON CITY DEVELOPMENT Molalla Avenue and Beavercreek Road Oregon City, Oregon
Checked by: KTH	File Name: CrossSectC	PH. (503) 659-3281 FAX. (503) 659-1287	Figure 12
Approved by: KTH	Date: September 2022		



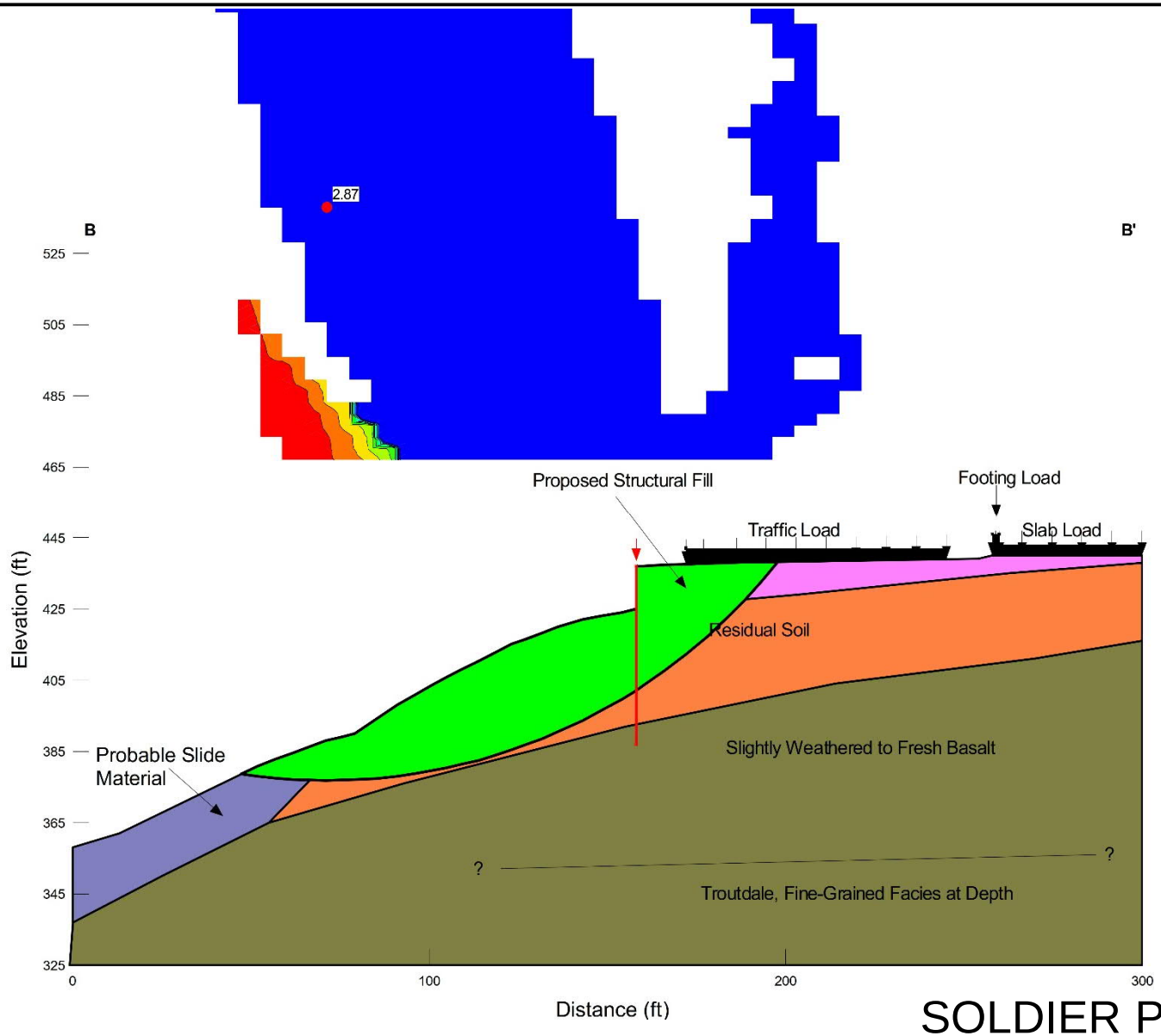
SOLDIER PILE

Project Manager: RTH	Project No. 82215043	Terracon Consulting Engineers & Scientists	STATIC SLOPE STABILITY CROSS SECTION A-A'
Drawn by: RTH	Scale: N.T.S.	700 NE 55th Avenue Portland, OR 97203	OREGON CITY DEVELOPMENT Molalla Avenue and Beavercreek Road Oregon City, Oregon
Checked by: KTH	File Name: CrossSectA	PH. (503) 659-3281 FAX. (503) 659-1287	Figure 13
Approved by: KTH	Date: September 2022		



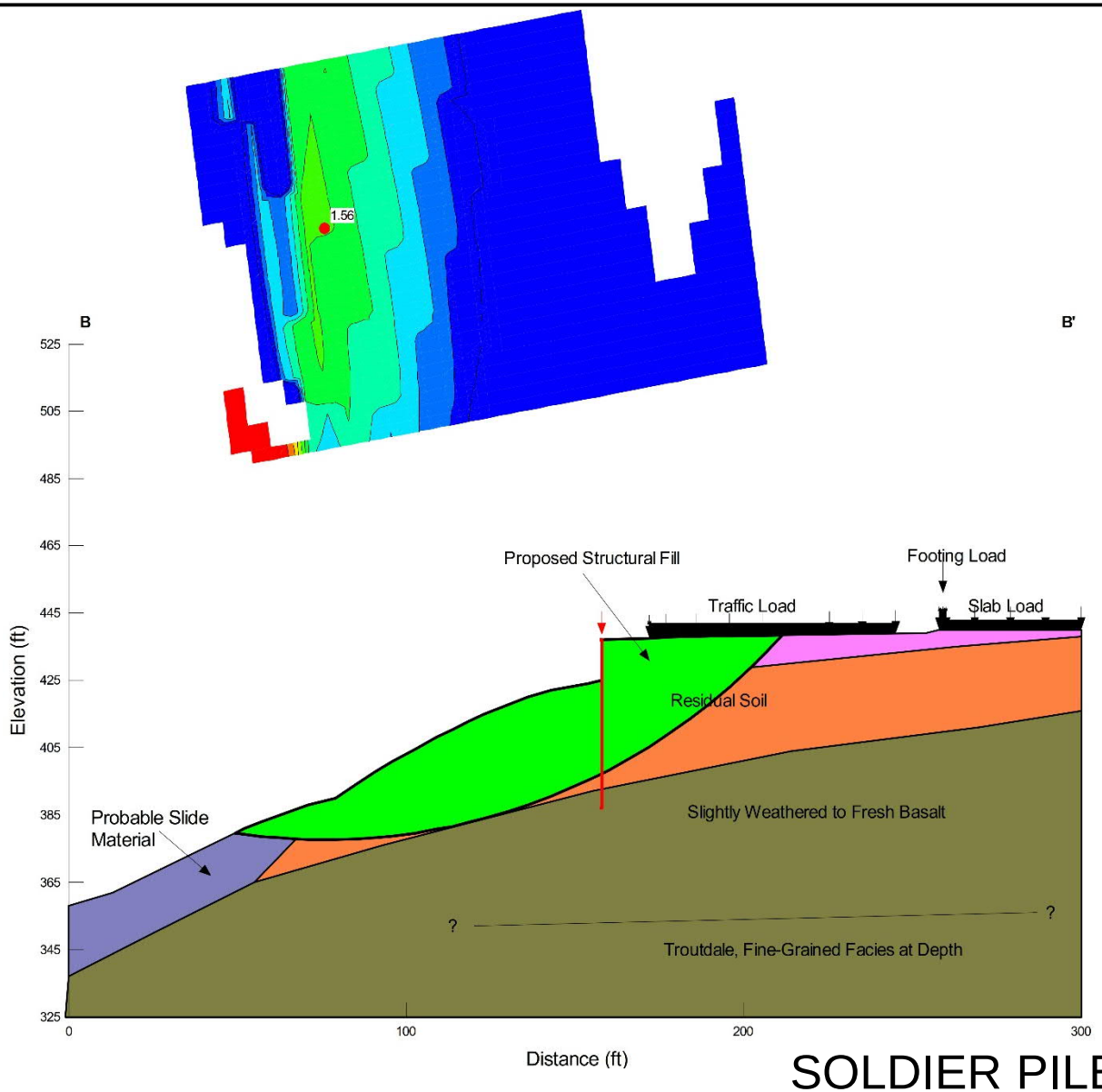
SOLDIER PILE

Project Manager: RTH	Project No. 82215043	Terracon Consulting Engineers & Scientists	SEISMIC SLOPE STABILITY CROSS SECTION A-A'
Drawn by: RTH	Scale: N.T.S.	700 NE 55th Avenue Portland, OR 97203	OREGON CITY DEVELOPMENT Molalla Avenue and Beavercreek Road Oregon City, Oregon
Checked by: KTH	File Name: CrossSectA	PH. (503) 659-3281 FAX. (503) 659-1287	Figure 14
Approved by: KTH	Date: September 2022		



SOLDIER PILE

Project Manager: RTH	Project No. 82215043	Terracon Consulting Engineers & Scientists	STATIC SLOPE STABILITY CROSS SECTION B-B'
Drawn by: RTH	Scale: N.T.S.	700 NE 55th Avenue Portland, OR 97203	OREGON CITY DEVELOPMENT Molalla Avenue and Beavercreek Road Oregon City, Oregon
Checked by: KTH	File Name: CrossSectB	PH. (503) 659-3281 FAX. (503) 659-1287	Figure 15
Approved by: KTH	Date: September 2022		



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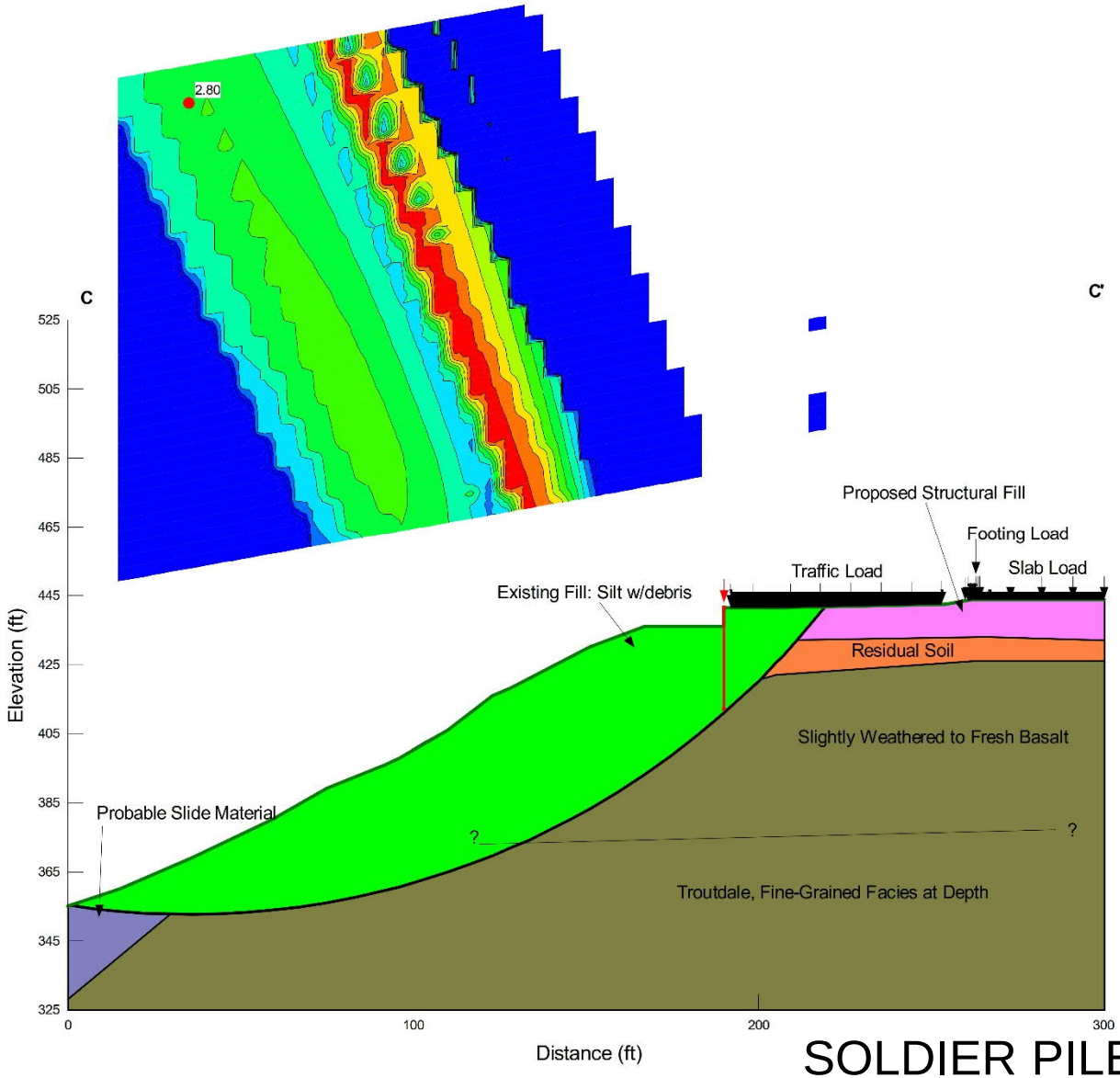
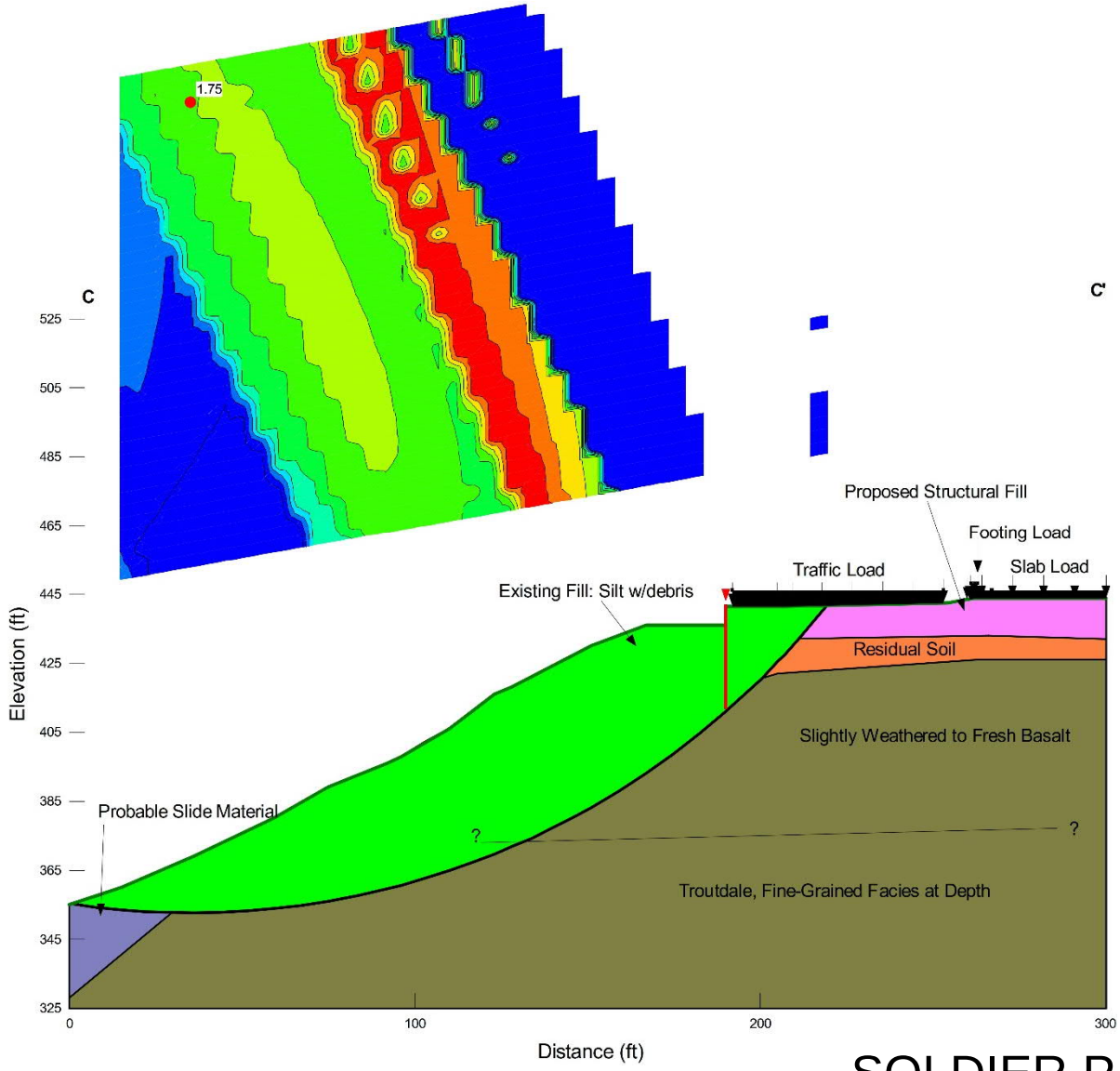
Project Manager: RTH Drawn by: RTH Checked by: KTH Approved by: KTH	Project No. 82215043 Scale: N.T.S. File Name: CrossSectB Date: September 2022	Terracon Consulting Engineers & Scientists 700 NE 55th Avenue Portland, OR 97203 PH. (503) 659-3281 FAX. (503) 659-1287	SEISMIC SLOPE STABILITY CROSS SECTION B-B' OREGON CITY DEVELOPMENT Molalla Avenue and Beavercreek Road Oregon City, Oregon	Figure 16



SOLDIER PILE

Project Manager: RTH	Project No. 82215043	Terracon Consulting Engineers & Scientists	STATIC SLOPE STABILITY CROSS SECTION C-C'
Drawn by: RTH	Scale: N.T.S.	700 NE 55th Avenue Portland, OR 97203	OREGON CITY DEVELOPMENT Molalla Avenue and Beavercreek Road Oregon City, Oregon
Checked by: KTH	File Name: CrossSectC	PH. (503) 659-3281 FAX. (503) 659-1287	Figure 17
Approved by: KTH	Date: September 2022		



SOLDIER PILE

Project Manager: RTH	Project No. 82215043	Terracon Consulting Engineers & Scientists	SEISMIC SLOPE STABILITY CROSS SECTION C-C'
Drawn by: RTH	Scale: N.T.S.	700 NE 55th Avenue Portland, OR 97203	OREGON CITY DEVELOPMENT Molalla Avenue and Beavercreek Road Oregon City, Oregon
Checked by: KTH	File Name: CrossSectC	PH. (503) 659-3281 FAX. (503) 659-1287	Figure 18
Approved by: KTH	Date: September 2022		

ATTACHMENTS

ENGINEERING GEOLOGY REPORT

Contents:

October 8, 2012, Preliminary Engineering Geology and Soil Engineering Report

Preliminary Engineering Geology and Soil Engineering Report

Proposed Retail Development
Molalla Avenue and Beavercreek Road
Oregon City, Oregon

October 8, 2012
Project No. 82125030

Prepared for:
PACLAND

Prepared by:
Terracon Consultants, Inc.
Portland, Oregon

Offices Nationwide Established in 1965
Employee-Owned terracon.com

Terracon

Geotechnical ■ Environmental ■ Construction Materials ■ Facilities

October 8, 2012

PACLAND
6400 SE Lake Road, Suite 300
Portland, Oregon 97222

Attn: Mr. Jeff Vanderdasson, P.E.

Re: Preliminary Engineering Geology and Soil Engineering Report
Proposed Retail Development
Molalla Avenue and Beavercreek Road
Oregon City, Oregon
Terracon Project No. 82125030

Dear Mr. Vanderdasson:

Terracon Consultants, Inc. (Terracon) is pleased to present our *Preliminary Engineering Geology and Soil Engineering Report* for the Proposed Retail Development project in Oregon City, Oregon. Our services were completed in general accordance with our *Proposal for Geotechnical Engineering Services – Revised* (P82110035R1), dated July 20, 2012. Email authorization to proceed with our services was provided by PACLAND on July 20, 2012. This report presents our preliminary conclusions regarding the stability of the slopes and soils from the proposed development.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report, or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.

GEOTECHNICAL REGISTERED PROFESSIONAL ENGINEER 82194 OREGON Nov. 10, 2009 ERIC J. LIM
RENEWS: 12/31/2012

Eric J. Lim, P.E., G.E.
Geotechnical Department Manager

David A. Baska, Ph.D., C.E.G.
Senior Consultant

Kristopher T. Hauck, P.E.
Office Manager

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APPENDIX A – EXHIBITS

Exhibit A-1	Site Plan
Exhibit A-2	Landslide Map Excerpt
Exhibit A-3	Preliminary Geologic Cross Section
Exhibit A-4	Preliminary Static Slope Stability
Exhibit A-5	Preliminary Seismic Slope Stability

EXECUTIVE SUMMARY

The site's geology and associated geologic hazards were researched with regard to the proposed site development. The preliminary engineering geology and geotechnical considerations associated with the proposed project are summarized below.

- **Existing, Adjacent Landslide Hazards:** The steep slope area to the east is a well-documented landslide hazard area. However, the area immediately adjacent to the site is mapped as an ancient landslide. Recent surface reconnaissance of the steep slope area does not indicate recent movement of the weathered landslide features.

- **Proposed Development Feasibility:** The proposed development is feasible from a geotechnical standpoint provided structures, significant fills, and other loads are located outside a suitable setback. Previous engineering studies established a setback of 35 feet from the top of slope and may be used for planning purposes of the new development.

- **Retaining Walls:** A retaining wall is proposed along the east side of the truck route at the currently proposed 35-foot top of slope setback. Additional engineering design will be necessary for the retaining wall, although our preliminary slope stability models indicate the walls are setback sufficiently from the top of the slope and should not adversely impact the stability of the slope.

- **Site Drainage and Erosion Control:** Surface water should be collected and routed away from the steep slope area. Infiltration facilities should not be implemented due to the potential for the infiltrated water to daylight on the adjacent steep slope areas and decrease slope stability. The area within the setback at the top of the slope may be cleared of invasive vegetation, such as blackberries, and suitably vegetated to reduce erosion towards the steep slope area.

This summary should be used in conjunction with the entire report for design purposes. It should be recognized that details were not included or fully developed in this section, and the report must be read in its entirety for a comprehensive understanding of the items contained herein. The **GENERAL COMMENTS** section should be read for an understanding of the report limitation.

PRELIMINARY ENGINEERING GEOLOGY AND SOIL ENGINEERING REPORT PROPOSED RETAIL DEVELOPMENT MOLALLA AVENUE AND BEAVERCREEK ROAD OREGON CITY, OREGON

Project No. 82125030
October 8, 2012

1.0 INTRODUCTION

In accordance with your request and written authorization, Terracon has completed a Preliminary Engineering Geology and Soil Engineering Evaluation for the proposed retail development in Oregon City, Oregon. Terracon, formerly Zipper Zeman Associates (ZZA), previously completed the following reports:

- Preliminary Results of Slope Stability Evaluation, Proposed Retail Project, Molalla Avenue and Beavercreek Road, Oregon City, Oregon, by ZZA, dated July 3, 2002.
- Subsurface Exploration and Geotechnical Engineering Evaluation, Proposed Retail Project, Molalla Avenue and Beavercreek Road, Oregon City, Oregon, by ZZA, dated February 13, 2004.

2.0 PURPOSE AND SCOPE

The purpose of this report is to satisfy the requirement for both a Preliminary Engineering Geology Report and a Preliminary Soil Engineering Report as required by the Oregon City Geologic Hazards Checklist. An updated geotechnical engineering report will be provided at a later date with engineering recommendations to be used for final design of the development.

Our scope of services included a slope reconnaissance, review of previous subsurface boring and test pit explorations, review of published geologic literature, preliminary geotechnical engineering analysis, and preparation of this report.

3.0 PROJECT INFORMATION

3.1 Site Location

ITEM	DESCRIPTION
Location	The site is located at the northeast corner of Molalla Avenue and Beavercreek Road in Oregon City, Oregon as shown in Exhibit A-1 – Site Plan.
Existing improvements	The site is currently vacant and fenced off. All former buildings have been razed, although several slab and foundations remain. Several retaining walls and/or slopes on the order of 4 feet or less in height are on the site.
Surroundings	The site is bounded by single and multi-family residences to the north, Molalla Avenue and commercial properties to the west, commercial properties to the south, and an undeveloped steep slope area dropping off to the east.
Current ground cover	The site is covered with grass, shrubs (blackberries, etc.), and scattered to dense stands of trees. The southeast portion of the site is wooded, and the entire south edge of the property is overgrown with dense blackberry shrubs.
Existing topography	The majority of the site is relatively flat with several low retaining walls creating broad terraces stepping down to the east. The eastern edge of the site drops steeply down at inclinations in the range of 1½H:1V to ½H:1V to the east toward Newell Creek. The overall slope system height is on the order of 200 feet in vertical drop. We understand that this steep slope area contains active and ancient landslide complexes and has been studied extensively by Portland State University geologists and other researchers.

3.2 Project Description

ITEM	DESCRIPTION
Structures	Main Retail Building The project will include a new one-story retail building and loading dock with a proposed total footprint of approximately 60,000 square feet (SF). The building footprint is planned in the northeast portion of the site as shown on the attached Site Plan. Outlots 1- 4 Four outlots are currently planned for the western third of the site for three retail buildings ranging from approximately 3,600 SF to 7,200 SF and a one- to two-story commercial/office building of approximately 23,000 SF. Outlot 2 will potentially include a remote drive-thru banking structure.
Building construction	Main Retail Building We have assumed that the store will be constructed with masonry block load-bearing and non-load-bearing walls; steel columns, girders, and joists for support of the roof structure; and on-grade cast-in-place floor slabs. Outlots 1-4 No information is available on the outlot buildings, but we assume they will be either wood-framed or masonry block construction with slab-on-grade floors.
Finished floor elevations	Main Retail Building: Currently planned at elevation 445 feet. Outlot 1: Currently planned at elevation 448 feet. Outlot 2: Currently planned at elevation 444 feet. Outlot 3: Currently planned at elevation 442 feet. Outlot 4: Currently planned at elevation 448 feet.
Maximum loads	Main Retail Building Columns: 85 kips gravity and 150 kips maximum live loading. Walls: 1.5 to 2 klf non-load bearing and 4 to 6 klf for load bearing. Slabs: 125 psf uniform loading and 5-kip concentrated loading max. Outlot Buildings The loads for these buildings are not known at this time, but are assumed to not exceed those listed above for the main retail building.

ITEM	DESCRIPTION
Maximum allowable settlement	Main Retail Building Total Static Settlement: 1 inch Masonry Walls: L/900 or ½ inch over 40 feet Outlots Total Static Settlement: 1 inch (assumed) Differential: L/900 or ½ inch over 40 feet (assumed)
Grading	Significant fills on the order of 10 to 12 feet in maximum thickness are expected on the east half of the site and in the building pad. Excavation cuts (or removal of stockpile areas) up to approximately 10 feet may be needed in the proposed truck route off the southeast corner of the site in the existing stockpile areas.
Cut and fill slopes	3H:1V slopes approximately 4 feet or less in height are expected.
Free-standing retaining walls	An approximately 626-foot long by 5- to 12-foot high retaining wall is planned along the east edge of the truck route outside the steep slope setback. Guards rails and/or fall protection fencing are anticipated atop the retaining walls. Determination of the wall type, e.g., segmental block, soldier pile, etc., has not yet been determined along the east side of the truck route but will be determined as part of the final design to include slope stability concerns.
Below Grade Areas	A loading dock area is planned on the northeast corner of the building with a finish grade of 4 feet below the finish floor elevation.
Stormwater Management	A buried detention structure is planned in the southeast corner of the site under the parking area. We understand that the depth of the structure is currently planned at approximately 7 feet below finish grade.
Off-site Improvements	A public road and truck route is proposed from the southeast corner of the site south to Beavercreek Road.
Buried Utilities	We understand that stormwater and water pipes will run along the truck route on the east side of the site. Depths are anticipated to be 10 feet or less. A sanitary sewer line is proposed to run east-west from Molalla between Outlot 2 and Outlot 3 to the main retail building. The sanitary sewer will also run north-south up the Outlot 2 parking lot north to Outlots 1 and 4. Depths have not been determined yet, but may exceed 10 feet in depth.

4.0 LITERATURE REVIEW

Per Oregon City Municipal Code 17.44.050, we reviewed the following documents for this report:

- The State of Oregon Department of Geology and Mineral Industries (DOGAMI) in Bulletin 99, Geology and Geological Hazards of North Clackamas County, Oregon (1979), or in any subsequent DOGAMI mapping for the Oregon City area;
- Portland State University study entitled “Environmental Assessment of Newell Creek Canyon, Oregon City, Oregon (1992);
- Portland State University study, "Landslides in the Portland, Oregon, Metropolitan Area Resulting from the Storm of February 1996: Inventory Map, Database and Evaluation" (Burns and others, 1998);
- DOGAMI Open File Report O-06-27, "Map of Landslide Geomorphology of Oregon City, Oregon, and Vicinity Interpreted from LIDAR Imagery and Aerial Photographs" (Madin and Burns, 2006);
- "Preliminary Geologic Map of the Oregon City Quadrangle, Clackamas County, Oregon" (Madin, in press).

We also reviewed the following, more recently published documents:

- Map showing faults, bedrock geology, and sediment thickness of west half of Oregon City 1:100,000 quad, Washington, Multnomah, Clackamas and Marion Counties, Oregon, 1998, IMS-4, Burns et al., (DOGAMI)
- *Oregon Geologic Data Standard v. 2.1,* 2009 (DOGAMI)
- *Geologic Map of the Oregon City 7.5’ Quadrangle, Clackamas County, Oregon*, 2009, GMS-119 (DOGAMI)
- *Map of Landslide Geomorphology of Oregon City, Oregon, and Vicinity Interpreted from Lidar Imagery and Aerial Photographs*, O-06-27, 2006 (DOGAMI)
- *Landslide Inventory Map of the Northwest Quarter of the Oregon City Quadrangle, Clackamas County, Oregon*, IMS-26, 2009 (DOGAMI)

5.0 PRELIMINARY ENGINEERING GEOLOGY

According to Oregon City’s Geologic Hazards Checklist, a preliminary engineering geology report must be prepared that relates the following items to the actual development proposal:

- (5.1) A description of geologic formations, bedrock and surficial materials including artificial fill; location of any faults, folds, etc.
- (5.2) Structural data including bedding, jointing, and shear zones

- (5.3) Off-site geologic conditions that may pose a hazard to the site or that may be affected by on-site development
- (5.4) Cross sections showing subsurface structure, logs of subsurface explorations and analysis if necessary to evaluate the site
- (5.5) Signature and certification number of the engineering geologist
- (5.6) The report shall also contain a statement as to whether any hazard areas should not be disturbed because of the potential for damage to the site or neighboring properties
- (5.7) The report shall include specific comments resulting from their review of the civil plans for the project including recommendations on maximum cuts, structural fills, rockery walls, drainage behind any type of walls, maximum slopes above walls, removal of toe of slopes, the use of rock hammers and blasting, and so forth.

The above items are discussed individually in the following sections.

5.1 Geologic Description

Geologically, the site is located in the northern Willamette Valley, which consists of a structural trough between the Coastal Range and the Cascade Range. This basin is underlain by thick deposits of sand and gravel washed into it during the Pliocene epoch when the climate in the area was very dry. These granular deposits are locally covered by the Boring lavas (Qtb) in northwest Clackamas County.

Based on the *Oregon Geologic Data Standard v. 2.1* and Oregon Department of Geology and Mineral Industries *Geologic Map of the Oregon City 7.5' Quadrangle, Clackamas County, Oregon, 2009* this site is located within a geologic unit mapped as Tbc-Basalt of Canemah defined as flow or flows of grey medium-grained, olivine basalt. The Oregon Department of Geology and Mineral Industries (DOGAMI), Bulletin 99, *Geologic Map of the Canby and Oregon City Quadrangles, Oregon 1979*, maps the site as consisting of Boring lavas (Qtb), which it describes as Pliocene-Pleistocene lavas, light-gray, open-textured olivine basalt; flow structures common; includes some pyroclastic material of local extent; widely spaced joint pattern. Lavas and breccias have weathered to a residual red clay surface soil. Vertical exposures are susceptible to mass movement and deep bedrock sliding because of failure of underlying material (see the description below with clay materials within the Troutdale unit).

The Boring Lava deposits overly the Troutdale (Tpt), which are described as Pliocene sandstone and conglomerate; indurated beds and lenses of well-sorted sand and cobbly gravel with up to 30 percent quartzite clasts. Some sand originally composed of volcanic glass have altered to an impermeable high shrink-swell clay. The clay can be unstable and cause overlying competent units to fail by landslide. The publications indicate that on slopes where this clay layer daylights, one generally encounters a spring. Also, if layers dip out of the slope, it can become a failure

plane for a slump or slump-earthflow when the pore water pressure has built up to a critical value on top of the clay layer.

Based on the *Map of Landslide Geomorphology of Oregon City, Oregon, and Vicinity Interpreted from Lidar Imagery and Aerial Photographs, O-06-27, 2006* and the *Landslide Inventory Map of the Northwest Quarter of the Oregon City Quadrangle, Clackamas County, Oregon, IMS-26, 2009,* a mapped landslide was identified adjacent to the site to the east. The landslide is identified as a prehistoric or ancient landslide (movement greater than 150 years ago). This is defined by landslide features that are slightly eroded and there is no evidence of historic (recent in last 150 years) movement. In some cases, the observed landslide features have been greatly eroded and/or covered with deposits that result in smoothed and subdued morphology.

The borings completed for the previously referenced 2004 ZZA report are generally consistent with the above geologic mapping for the Boring Lavas/Basalt of Canemah, although the basalt has become deeply weathered in certain areas. The Troutdale unit was not encountered to the maximum depth of the borings at approximately 50½ feet below the ground surface. Although direct evidence of landslide features were not readily observed during our exploration programs for the 2004 report, we did observe the general headscarp area of the ancient landslide area during our 2012 slope reconnaissance with the aid of the recent Lidar-based landslide maps. An excerpt of the landslide map is appended as Exhibit A-2.

5.2 Structural Data

Bedrock outcrops or exposures were not observed during our site visits on the subject property or immediately downslope of the subject property. As discussed above, the bedrock in the site vicinity is mapped as Tbc-Basalt of Canemah defined as flow or flows of grey medium-grained, open-textured, olivine basalt. Flow structures are common, includes some pyroclastic material of local extent, and widely spaced joint pattern. Lavas and breccias have weathered to residual red clay surface soil. Vertical exposures are susceptible to mass movement and deep bedrock sliding because of failure of underlying material. The rock cores completed for the previously referenced 2004 ZZA report indicate close fracture spacing in the upper, weathered zones of the bedrock grading to wide fracture spacing in the fresh, competent bedrock at depth.

5.3 Off-Site Geologic Conditions

The *Map of Landslide Geomorphology of Oregon City, Oregon, and Vicinity Interpreted from Lidar Imagery and Aerial Photographs, O-06-27, 2006* and the *Landslide Inventory Map of the Northwest Quarter of the Oregon City Quadrangle, Clackamas County, Oregon, IMS-26, 2009,* indicate a mapped landslide area adjacent to the east side of the site. The landslide is identified as a prehistoric or ancient landslide (movement greater than 150 years ago). This is defined by landslide features that are slightly eroded and there is no evidence of historic (recent in last 150

years) movement. In some cases, the observed landslide features have been greatly eroded and/or covered with deposits that result in smoothed and subdued morphology.

During our initial exploration period during 2001-2002, we performed a surface reconnaissance of the steep slope area on the eastern edge of the site and immediately downslope of the site to the east. We also re-visited these areas on July 31, 2012 to determine the current conditions. During our slope reconnaissance visits, we walked and mapped the landslide area. We identified a main head scarp along the eastern site boundary, followed by numerous (3 to 5) internal scarps further east of the site within the ancient mapped landslide itself. A spring was observed at the base of the head scarp approximately 100 feet east of the northeast corner of the site at approximately 350 feet in elevation. A second spring was observed approximately 150 feet east of the southeast corner of the site at approximately 290 feet in elevation. Four nick points (i.e., drops in the streambed from erosion) were observed in the stream bed at the base of the ancient landslide ranging in height from 1½ feet to 6 feet. Gray, stiff to medium stiff, wet, lean clay with cemented clasts of gray clay was observed at various points along the stream bed. These deposits can be correlated to the fine grained portion of the Troutdale formation described above. At the time of our site reconnaissance Terracon did not identify new slide areas immediately downslope of the proposed development.

Our field observations agree with the above-referenced published landslide mapping. We did not observe indications of recent movement during our slope reconnaissance during the 2001-2002 ZZA exploration programs and our recent site visit in July 2012.

5.4 Geologic Cross-Sections

Our interpretation of the site's geologic cross-section is shown in Exhibit A-3 of this report.

5.5 Signature and Certification Number of Engineering Geologist

The signature and certification number of the engineering geologist is provided on the report signature page after the front cover.

5.6 Disturbance of Hazards Statement

The geologic hazards of concern for the site development are the steep slope area and ancient landslide to the east of the site. This geologic hazard area should not be disturbed due to the potential for damage to the site and/or neighboring properties. An exception for disturbance would be the removal of invasive vegetation, such as blackberry bushes, and replanting with species suitable for erosion control purposes. After removal of the invasive vegetation, minor grading may necessary, such as bucket smoothing and track walking the slope with a tracked

excavator, to reduce erosion and help temporary and permanent ground cover (e.g., hydroseed, mulch, bark, plantings, etc.) become established on the slope.

5.7 Civil Plans Review Comments

We have reviewed the current civil grading plans. The current site development plans are described in the Section 3 of this report and do not propose to disturb the geologic hazard area. These plans were developed using the 2004 ZZA report recommendations as a guideline. According to these plans, the maximum permanent cuts are relatively low, on the order of 2 to 3 feet for the retaining walls along the north property line. Fills will be up to approximately 12 feet along the east retaining wall area for the proposed truck route, but this wall will be located outside of a top of slope setback of 35 feet. The retaining walls, drainage behind the walls, and maximum slopes above and below the walls will be engineered as part of future design work for the site, and will consider the weight of the fill and loads on the retaining structure on the stability of the slope area. Consideration of the wall type, bedrock conditions, and associated installation procedures will also be included in the retaining wall design. In our opinion, the proposed site development is feasible from a geotechnical perspective without adverse impacts on the stability to the adjacent slope.

6.0 PRELIMINARY SOIL ENGINEERING REPORT

According to Oregon City's Geologic Hazards Checklist, a preliminary soil engineering report must be prepared that relates the following items to the actual development proposal:

- (6.1) The engineering feasibility of the proposed development and addressing strength properties of surface and subsurface soils with regard to stability of slopes
- (6.2) Appropriate types of foundations together with bearing values and settlement criteria for foundation design, soil erosion potential, permeability and infiltration rates
- (6.3) Excavation, filling and grading criteria including recommended final slopes
- (6.4) Surface and subsurface drainage; planting and maintenance of slopes
- (6.5) Other identified soil or subsurface constraints together with geotechnical remediation and other recommendations to alleviate or minimize their effects; and signature and seal of the geotechnical engineer
- (6.6) The report shall also contain a statement as to whether the proposed development, constructed in accordance with the recommended methods, is reasonably likely to be safe and prevent landslide or other damage to other properties over the long term, and whether any specific areas should not be disturbed by construction.

- (6.7) The report shall include specific comments resulting from their review of the civil plans for the project including recommendations on maximum cuts, structural fills, rockery walls, drainage behind any type of walls, maximum slopes above walls, removal of toe of slopes, the use of rock hammers and blasting, and so forth.

The above items are discussed individually in the following sections.

6.1 Engineering Feasibility

In our opinion, the proposed site development is feasible from a geotechnical perspective. Exhibits A-4 and A-5 show our preliminary slope stability models for static and seismic conditions, respectively. The following soil parameters were used in our analysis.

STRATA	FRICTION ANGLE (DEGREES)	COHESION (PSF)	UNIT WEIGHT (PCF)
Proposed Structural Fill	32	0	125
Existing Fill: Silt w/Debris	27	0	120
Highly – Moderately Weathered Basalt	30	250	125
Slightly Weathered to Fresh Basalt	45	250	150
Possible Slide Material	5	100	120

These parameters were partly based on the direct shear test results reported in the 2004 ZZA report and partly based on our engineering judgment. A horizontal seismic coefficient of 0.13g was used in our analysis, which is approximately one-half of the design earthquake peak ground acceleration determined per 2009 IBC methods. The models indicate factors of safety greater than 1.5 and 1.1 for static and seismic conditions, respectively. Based on the slope stability model, the proposed retaining wall and fill are far enough away from the slope and have low effect on the slope stability at the site from a preliminary standpoint.

6.2 Foundation Types, Soil Erosion Potential, Permeability/Infiltration

The appropriate type of foundation for the proposed buildings are conventional shallow spread footings. Allowable bearing values of 2,000 psf for up to 1 inch of settlement may be used for planning purposes.

According to the USDA Soil Conservation Service, the erosion potential of the site soils are "slight" on the relatively flat areas of the site and "severe" on the steep slope areas east of the site. Permeability ranges from 0.6 to 2.0 in the sites soils, however, infiltration systems are not recommended due to the location of the site adjacent the steep slope area.

6.3 Excavation, Filling, and Grading Criteria

Recommendations for excavation, filling and grading are included in the 2004 ZZA report and may be used for preliminary purposes. This information will be updated in the final geotechnical report.

6.4 Other Soil or Subsurface Constraints

Due to the previous development at the site, including existing foundations and floor slabs, existing fill will likely be encountered during subgrade preparation for fills and foundations. Within the proposed building pad, we recommend that all existing fill be removed down to suitable native soils, and the backfilled with compacted structural fill as recommended in the previous section and the 2004 report. Overexcavation of the existing fill soils will also likely be necessary in the retaining wall area along the east retaining wall (truck route). Alternatives, such as partial overexcavation and replacement or the use of aggregate pier ground improvement, should be considered during the final geotechnical report phase.

6.5 Proposed Development Stability Statement

In our opinion, the proposed development should not adversely affect the stability of the slope nor increase landslide risk to other properties with the incorporation of the 35-foot development setback. Additional fill or loads should not be placed over the unstable steep slope areas. The preliminary setback from the top of slope is currently 35 feet, but this may change on examination of new data and analysis from upcoming exploration and testing. It should be noted that there are documented, existing, ancient and recent landslides further downslope of the property that may continue to move but will not be adversely impacted by the subject site development. One benefit to the site development will actually be control of surface water, which currently is not being controlled above the steep slope area.

6.6 Civil Plans Review Comments

We have reviewed the current civil grading plans. The current site development plans are described in the Section 3 of this report and do not propose to disturb the geologic hazard area. These plans were developed using the 2004 ZZA report recommendations as a guideline. The maximum permanent cuts are relatively low, on the order of 2 to 3 feet for the retaining walls along the north property line. Fills will be up to approximately 12 feet along the east retaining

wall area for the proposed truck route, but this wall will be located outside of a top of slope setback of 35 feet. The retaining walls, drainage behind the walls, and maximum slopes above and below the walls will be engineered as part of future design work for the site, and will consider the weight of the fill and loads on the retaining structure on the stability of the slope area. Consideration of the wall type, bedrock conditions, and associated installation procedures will also be included in the retaining wall design. In our opinion, the proposed site development is feasible from a geotechnical perspective without adversely impacted the stability of the slope to the east.

7.0 GENERAL COMMENTS

Terracon should be retained to review the final design plans and specifications so comments can be made regarding interpretation and implementation of our geotechnical recommendations in the design and specifications. Terracon also should be retained to provide observation and testing services during grading, excavation, foundation construction and other earth-related construction phases of the project.

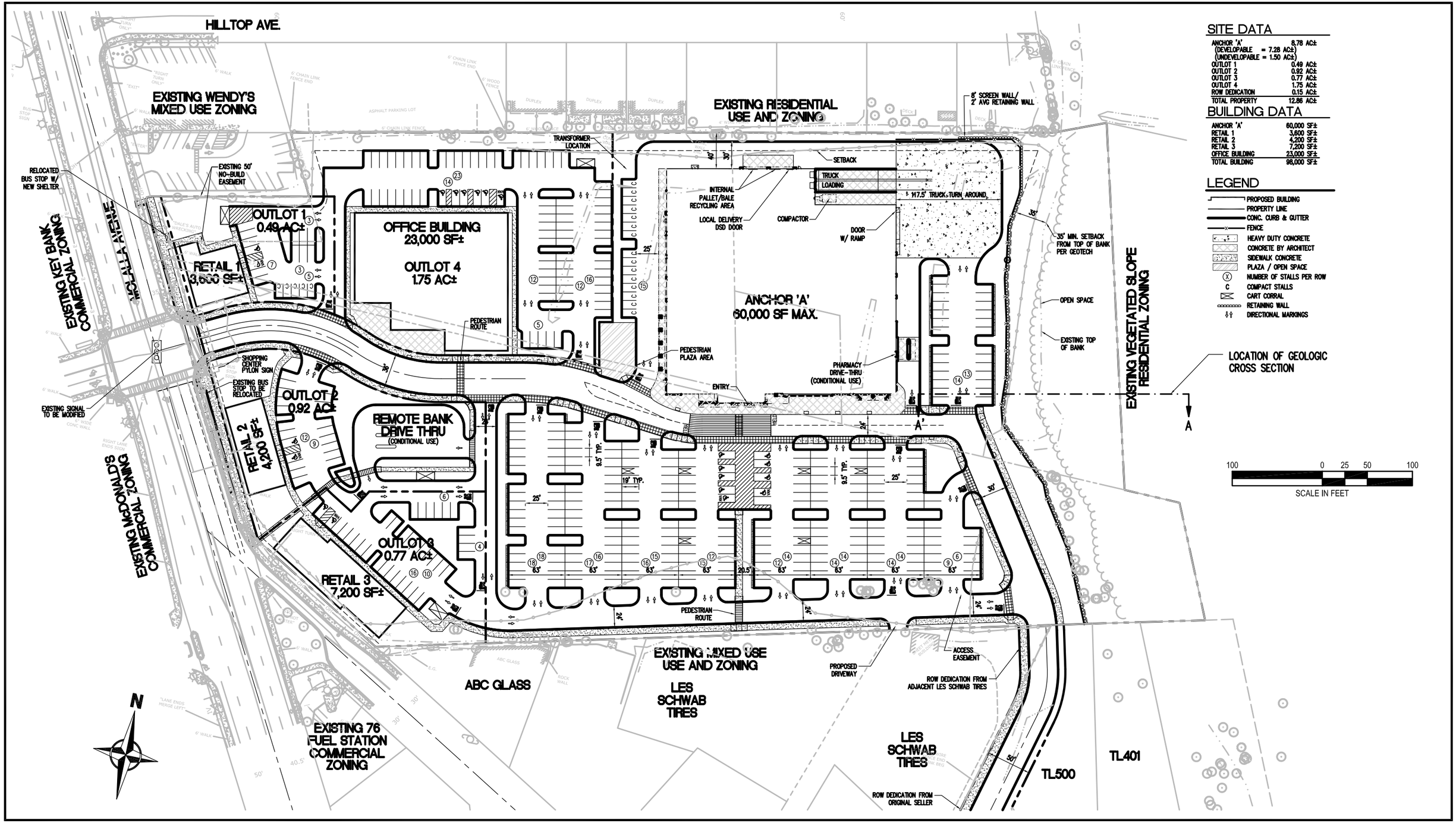
The analysis and recommendations presented in this report are based upon the data obtained from the borings performed at the indicated locations and from other information discussed in this report. This report does not reflect variations that may occur between borings, across the site, or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. If variations appear, we should be immediately notified so that further evaluation and supplemental recommendations can be provided.

The scope of services for this project does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

This report has been prepared in accordance with generally accepted geotechnical engineering practices for the exclusive use of PACLAND, and their respective successors and assigns, for specific application to the project location and stated purpose. No warranties, either express or implied, are intended or made. Site safety, excavation support, and dewatering requirements are the responsibility of others. In the event that changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless Terracon reviews the changes and either verifies or modifies the conclusions of this report in writing.

APPENDIX A

EXHIBITS A-1 to A-5



SITE DATA

ANCHOR 'A' (DEVELOPABLE = 7.28 AC±) (UNDEVELOPABLE = 1.50 AC±)	8.78 AC±
OUTLOT 1	0.49 AC±
OUTLOT 2	0.92 AC±
OUTLOT 3	0.77 AC±
OUTLOT 4	1.75 AC±
ROW DEDICATION	0.15 AC±
TOTAL PROPERTY	12.86 AC±

BUILDING DATA

ANCHOR 'A'	60,000 SF±
RETAIL 1	3,600 SF±
RETAIL 2	4,200 SF±
RETAIL 3	7,200 SF±
OFFICE BUILDING	23,000 SF±
TOTAL BUILDING	98,000 SF±

LEGEND

- PROPOSED BUILDING
- PROPERTY LINE
- CONC. CURB & GUTTER
- FENCE
- HEAVY DUTY CONCRETE
- CONCRETE BY ARCHITECT
- SIDEWALK CONCRETE
- PLAZA / OPEN SPACE
- (X) NUMBER OF STALLS PER ROW
- C COMPACT STALLS
- CART CORRAL
- RETAINING WALL
- DIRECTIONAL MARKINGS

100 0 25 50 100

SCALE IN FEET

REV.	DATE	BY	DESCRIPTION

Terracon
Consulting Engineers and Scientists
4103 SE INTERNATIONAL WAY, SUITE 300 PORTLAND, OREGON 97222
PH. (503) 659-3281 FAX. (503) 659-1287

SITE PLAN

PACLAND

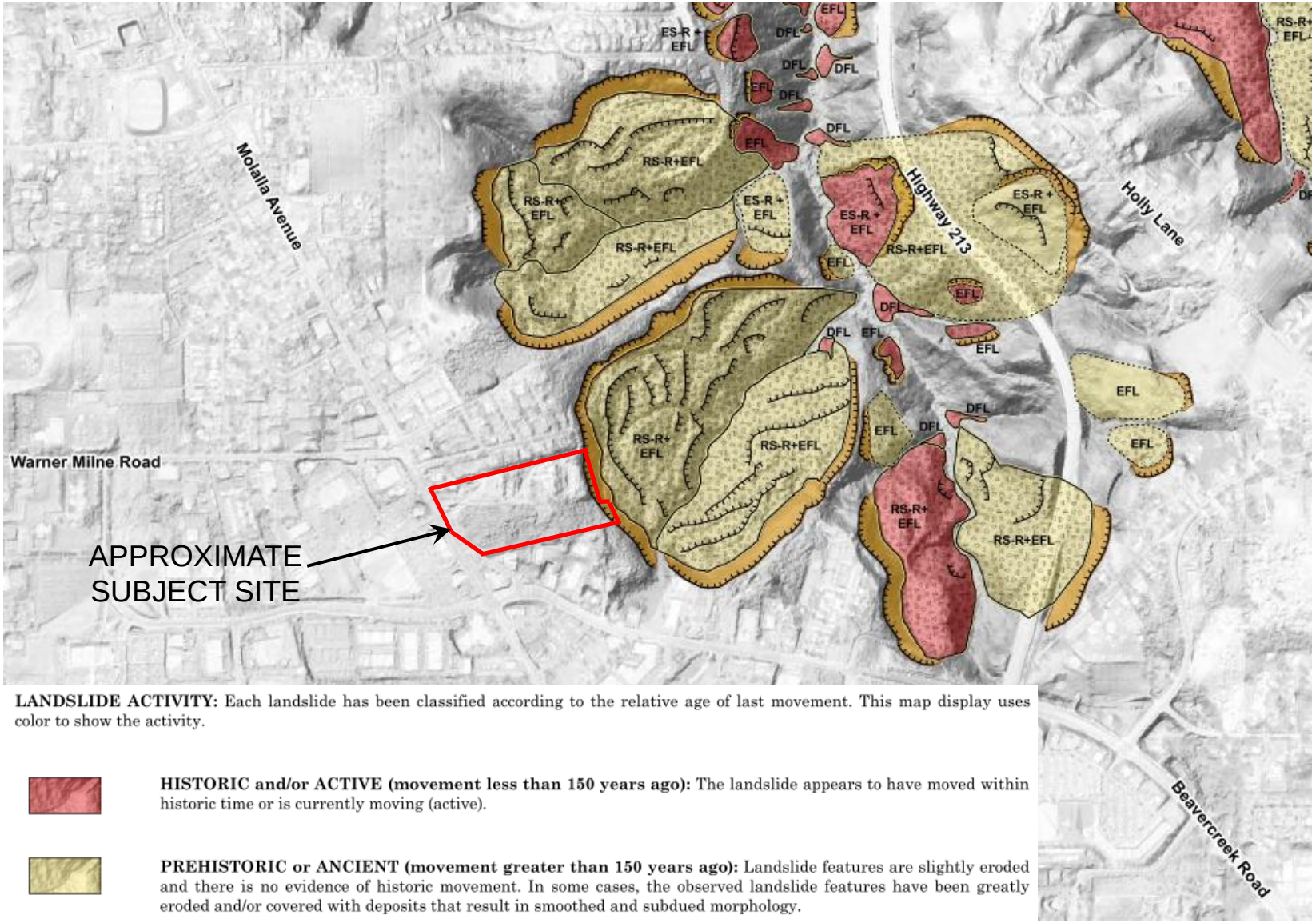
PROPOSED RETAIL DEVELOPMENT

MOLALLA AVENUE AND BEAVERCREEK ROAD

OREGON CITY OREGON

EXHIBIT A-1

DESIGNED BY:	EJL
DRAWN BY:	EJL
APPVD. BY:	EJL
SCALE:	AS SHOWN
DATE:	OCT 2012
JOB NO.	82125030
ACAD NO.	EXH A-1
SHEET NO.:	1 OF 1



LANDSLIDE ACTIVITY: Each landslide has been classified according to the relative age of last movement. This map display uses color to show the activity.

HISTORIC and/or ACTIVE (movement less than 150 years ago): The landslide appears to have moved within historic time or is currently moving (active).

PREHISTORIC or ANCIENT (movement greater than 150 years ago): Landslide features are slightly eroded and there is no evidence of historic movement. In some cases, the observed landslide features have been greatly eroded and/or covered with deposits that result in smoothed and subdued morphology.

REF: Landslide Inventory Map of the Northwest Quarter of the Oregon City Quadrangle, Clackamas County, Oregon (DOGAMI, IMS 26).

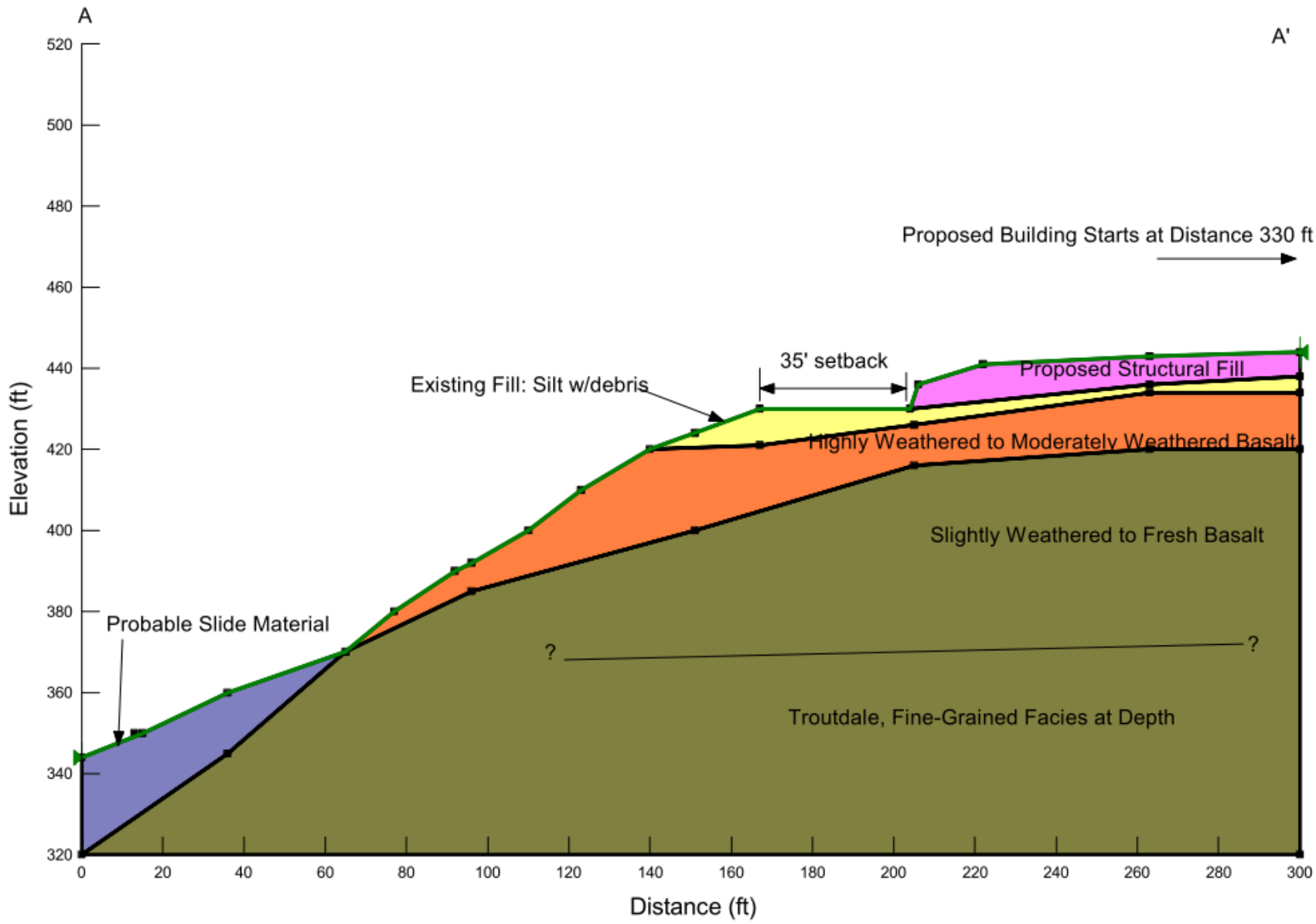
Project Manager:	EJL
Drawn by:	EJL
Checked by:	EJL
Approved by:	EJL
Project No.	82125030
Scale:	As Shown.
File Name:	Exhibit A-2
Date:	Oct. 2012

Terracon
Consulting Engineers & Scientists
4103 SE International Way, #300 Portland, OR 97222
PH. (503) 659-3281 FAX. (503) 659-1287

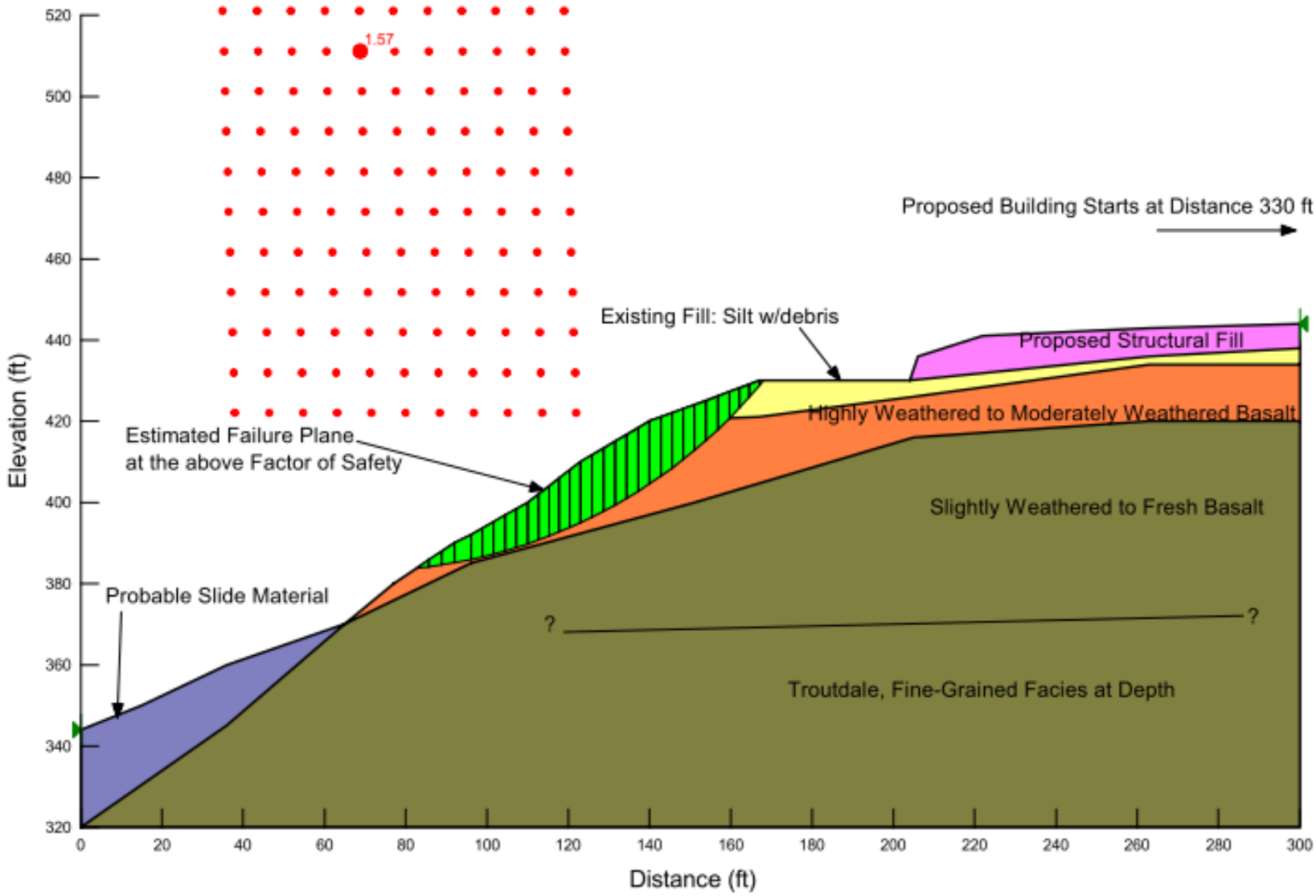
LANDSLIDE MAP EXCERPT

PROPOSED RETAIL DEVELOPMENT
Molalla Avenue and Beavercreek Road
Oregon City, Oregon

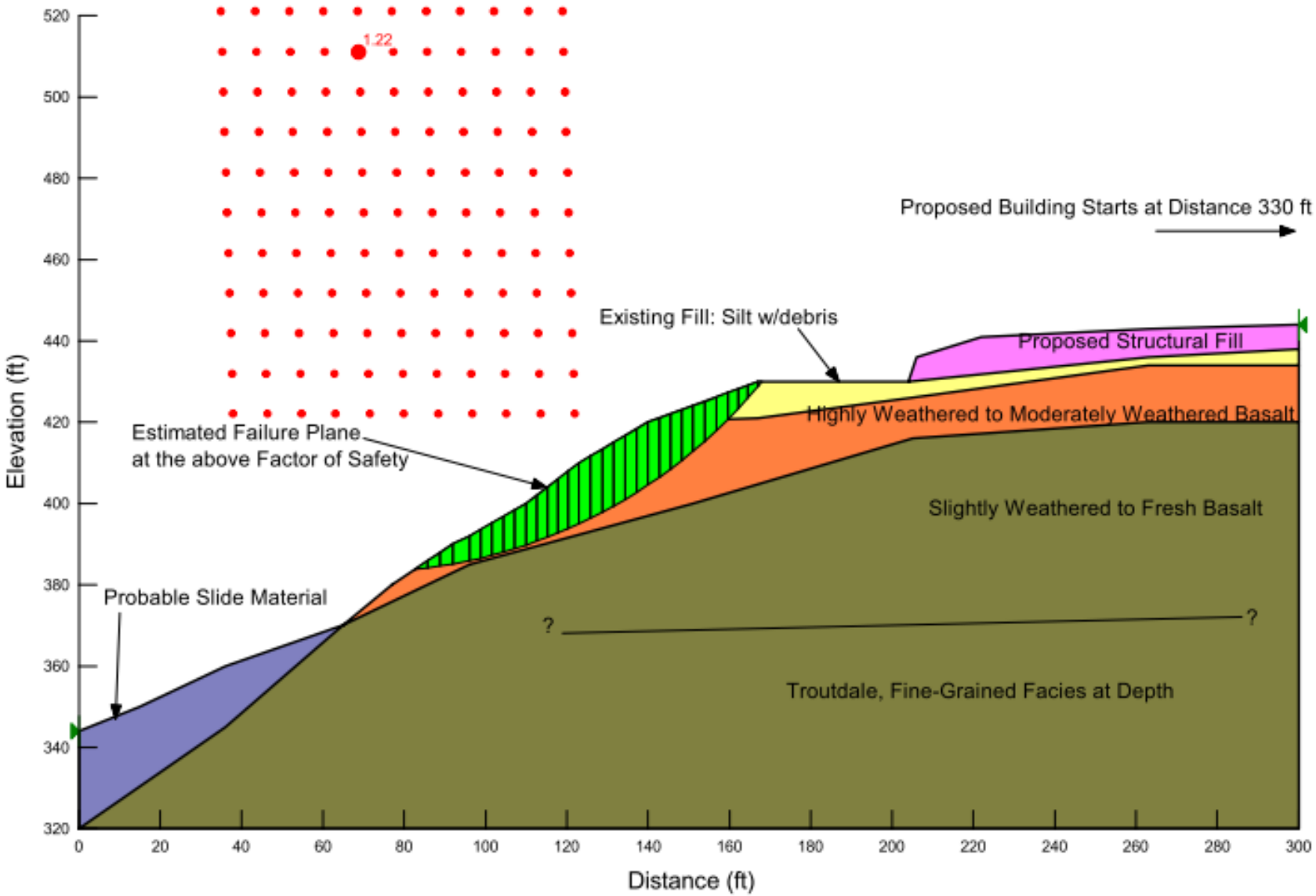
Exhibit
A-2



Project Manager: EJL	Project No. 82125030	Terracon Consulting Engineers & Scientists	PRELIMINARY GEOLOGIC CROSS SECTION
Drawn by: EJL	Scale: N.T.S.	4103 SE International Way, #300 Portland, OR 97222	PROPOSED RETAIL DEVELOPMENT Molalla Avenue and Beavercreek Road Oregon City, Oregon
Checked by: EJL	File Name: Exhibit A-2	PH. (503) 659-3281 FAX. (503) 659-1287	Exhibit A-3
Approved by: EJL	Date: Oct. 2012		



Project Manager: EJL	Project No. 82125030	Terracon Consulting Engineers & Scientists	PRELIMINARY STATIC SLOPE STABILITY	Exhibit
Drawn by: EJL	Scale: N.T.S.	4103 SE International Way, #300 Portland, OR 97222	PROPOSED RETAIL DEVELOPMENT	A-4
Checked by: EJL	File Name: Exhibit A-2	PH. (503) 659-3281 FAX. (503) 659-1287	Molalla Avenue and Beavercreek Road	
Approved by: EJL	Date: Oct. 2012		Oregon City, Oregon	



Project Manager: EJL	Project No. 82125030	Terracon Consulting Engineers & Scientists	PRELIMINARY SEISMIC SLOPE STABILITY
Drawn by: EJL	Scale: N.T.S.	4103 SE International Way, #300 Portland, OR 97222	PROPOSED RETAIL DEVELOPMENT
Checked by: EJL	File Name: Exhibit A-2	PH. (503) 659-3281 FAX. (503) 659-1287	Molalla Avenue and Beavercreek Road
Approved by: EJL	Date: Oct. 2012		Oregon City, Oregon

Exhibit A-5

EXPLORATION AND TESTING PROCEDURES

Field Exploration

2001 - 2002 Explorations (J-1200-01)

Exploration Number	Exploration Type	Exploration Depth (feet)	Location	
			Latitude	Longitude
02-B-1	Drilled boring	19.5	45.3355°N	122.5872°W
02-B-2	Drilled boring	13.1	45.3355°N	122.5867°W
02-B-3	Drilled boring	20	45.3360°N	122.5869°W
02-B-4	Drilled boring	21.5	45.3364°N	122.5869°W
02-B-5	Drilled boring	21.5	45.3359°N	122.5875°W
02-B-6	Drilled boring	10	45.3366°N	122.5861°W
02-B-7	Drilled boring	8.5	45.3363°N	122.5860°W
02-B-8	Drilled boring	11	45.3357°N	122.5856°W
02-B-9	Drilled boring	5.5	45.3364°N	122.5863°W
02-B-10	Drilled boring	12.75	45.3361°N	122.5862°W
02-B-11	Drilled boring	13	45.3357°N	122.5861°W
02-B-12	Drilled boring	46	45.3351°N	122.5856°W
02-B-13	Drilled boring	24	45.3352°N	122.5855°W
02-B-14	Drilled boring	50.5	45.3354°N	122.5858°W
02-B-15	Drilled boring	41.5	45.3355°N	122.5858°W
02-B-16	Drilled boring	45.5	45.3357°N	122.5859°W
02-B-17	Drilled boring	24.75	45.3359°N	122.5860°W
02-B-18	Drilled boring	41	45.3361°N	122.5861°W
02-B-19	Drilled boring	26	45.3363°N	122.5861°W
02-B-20	Drilled boring	45	45.3366°N	122.5861°W
02-B-21	Drilled boring	11.5	45.3368°N	122.5867°W
02-B-22	Drilled boring	21.5	45.3366°N	122.5879°W
02-B-23	Drilled boring	18.5	45.3365°N	122.5887°W
02-B-24	Drilled boring	16.5	45.3340°N	122.5854°W
02-MW-1	Drilled boring	20	45.3362°N	122.5875°W
02-MW-2	Drilled boring	26.5	45.3357°N	122.5863°W

Exploration Number	Exploration Type	Exploration Depth (feet)	Location	
			Latitude	Longitude
02-MW-3	Drilled boring	20	45.3359°N	122.5884°W
02-MW-4	Drilled boring	19.5	45.3351°N	122.5892°W
02-MW-5	Drilled boring	20	45.3349°N	122.5891°W
02-TP-1	Test Pit	10	45.3352°N	122.5856°W
02-TP-2	Test Pit	7	45.3351°N	122.5862°W
02-TP-3	Test Pit	11.5	45.3350°N	122.5867°W
02-TP-4	Test Pit	11	45.3349°N	122.5873°W
02-TP-5	Test Pit	7	45.3348°N	122.5878°W
02-TP-6	Test Pit	10	45.3347°N	122.5881°W
02-TP-7	Test Pit	10	45.3347°N	122.5885°W
02-TP-8	Test Pit	11	45.3348°N	122.5889°W
02-TP-9	Test Pit	10.5	45.3350°N	122.5886°W
02-TP-10	Test Pit	11	45.3350°N	122.5882°W
02-TP-11	Test Pit	11	45.3351°N	122.5877°W
02-TP-12	Test Pit	9	45.3352°N	122.5875°W
02-TP-13	Test Pit	6	45.3354°N	122.5875°W
02-TP-14	Test Pit	5.5	45.3354°N	122.5879°W
02-TP-15	Test Pit	10.5	45.3353°N	122.5883°W
02-TP-16	Test Pit	10	45.3353°N	122.5887°W
02-TP-17	Test Pit	10.5	45.3352°N	122.5890°W
02-TP-18	Test Pit	7	45.3356°N	122.5855°W
02-TP-19	Test Pit	7.5	45.3354°N	122.5853°W
02-TP-20	Test Pit	10	45.3354°N	122.5892°W
02-TP-21	Test Pit	10.5	45.3355°N	122.5888°W
02-TP-22	Test Pit	10	45.3355°N	122.5884°W
02-TP-23	Test Pit	7.5	45.3357°N	122.5880°W
02-TP-24	Test Pit	4	45.3358°N	122.5876°W
02-TP-25	Test Pit	10.5	45.3360°N	122.5878°W
02-TP-26	Test Pit	11	45.3359°N	122.5881°W
02-TP-27	Test Pit	10.5	45.3359°N	122.5885°W
02-TP-28	Test Pit	8.5	45.3358°N	122.5890°W

Exploration Number	Exploration Type	Exploration Depth (feet)	Location	
			Latitude	Longitude
02-TP-29	Test Pit	11	45.3355°N	122.5895°W
02-TP-30	Test Pit	11.5	45.3358°N	122.5898°W
02-TP-32	Test Pit	11	45.3361°N	122.5890°W
02-TP-33	Test Pit	11	45.3361°N	122.5886°W
02-TP-31	Test Pit	11.5	45.3359°N	122.5892°W
02-TP-34	Test Pit	12.5	45.3362°N	122.5882°W
02-TP-35	Test Pit	10.5	45.3363°N	122.5879°W
02-TP-36	Test Pit	11	45.3364°N	122.5871°W
02-TP-37	Test Pit	12.5	45.3365°N	122.5867°W
02-TP-38	Test Pit	5.5	45.3364°N	122.5863°W
02-TP-39	Test Pit	13	45.3357°N	122.5860°W
02-TP-40	Test Pit	10	45.3352°N	122.5864°W
02-TP-41	Test Pit	10	45.3351°N	122.5870°W
02-TP-42	Test Pit	6.5	45.3353°N	122.5859°W
02-TP-43	Test Pit	11	45.3341°N	122.5854°W
02-TP-44	Test Pit	11	45.3343°N	122.5858°W
02-TP-45	Test Pit	6	45.3346°N	122.5856°W
02-TP-46	Test Pit	7	45.3347°N	122.5857°W
02-TP-47	Test Pit	11	45.3349°N	122.5855°W
02-TP-48	Test Pit	10	45.3364°N	122.5862°W
02-TP-1A	Test Pit	9	45.3357°N	122.5860°W
02-TP-2A	Test Pit	11	45.3359°N	122.5860°W
02-TP-3A	Test Pit	12	45.3360°N	122.5861°W
02-TP-4A	Test Pit	12	45.3361°N	122.5861°W
02-TP-5A	Test Pit	11	45.3363°N	122.5861°W
02-TP-6A	Test Pit	6.5	45.3364°N	122.5863°W
02-TP-7A	Test Pit	9	45.3359°N	122.5865°W
02-TP-8A	Test Pit	7.5	45.3359°N	122.5866°W
02-TP-9A	Test Pit	9.5	45.3363°N	122.5871°W
02-TP-10A	Test Pit	7	45.3364°N	122.5870°W
02-TP-11A	Test Pit	11	45.3358°N	122.5877°W

Exploration Number	Exploration Type	Exploration Depth (feet)	Location	
			Latitude	Longitude
02-TP-12A	Test Pit	10	45.3361°N	122.5880°W
02-TP-13A	Test Pit	9.5	45.3363°N	122.5879°W
02-TP-14A	Test Pit	4.5	45.3362°N	122.5875°W
02-TP-15A	Test Pit	11.5	45.3360°N	122.5891°W
02-TP-16A	Test Pit	9.5	45.3361°N	122.5885°W
02-TP-17A	Test Pit	10	45.3359°N	122.5883°W
02-TP-18A	Test Pit	10	45.3357°N	122.5883°W
02-TP-19A	Test Pit	8	45.3357°N	122.5887°W
02-TP-20A	Test Pit	10	45.3357°N	122.5895°W

2021 Exploration

Exploration Number	Exploration Type	Exploration Depth (feet)	Location	
			Latitude	Longitude
21-B-1	Drilled Boring	90½	45.3363°N	122.5863°W

Exploration Layout and Elevations: Terracon personnel provided the exploration layout. Coordinates were obtained with a handheld GPS unit (estimated horizontal accuracy of about ±10 feet) and approximate elevations were obtained from Google Earth Pro data. If elevations and a more precise exploration layout are desired, we recommend explorations be surveyed following completion of fieldwork.

Subsurface Exploration Procedures: We advance soil borings with a truck-mounted drill rig using continuous flight augers (hollow stem or solid stem). Four samples were typically obtained in the upper 10 feet of each boring and at intervals of 5 feet thereafter. Soil sampling was performed using thin-wall tube and/or split-barrel sampling procedures. In the thin-walled tube sampling procedure, a thin-walled, seamless steel tube with a sharp cutting edge is pushed hydraulically into the soil to obtain a relatively undisturbed sample. In the split barrel sampling procedure, a standard 2-inch outer diameter split barrel sampling spoon is driven into the ground by a 140-pound automatic hammer falling a distance of 30 inches. The number of blows required to advance the sampling spoon the last 12 inches of a normal 18-inch penetration is recorded as the Standard Penetration Test (SPT) resistance value. The SPT resistance values, also referred to as N-values, are indicated on the boring logs at the test depths. The samples were placed in appropriate containers, taken to our soil laboratory for testing, and classified by a geotechnical engineer. In addition, we observed and recorded groundwater levels during drilling and sampling.

All explorations were supervised and logged by a field geologist who recorded field test data, classified soils, and collected the samples from the explorations. Our exploration team prepared field boring logs as part of standard drilling operations including sampling depths, penetration distances, and other relevant sampling information. Field logs include visual classifications of materials encountered during drilling, and our interpretation of subsurface conditions between samples. Final boring logs, prepared from field logs, represent the geotechnical engineer's interpretation, and include modifications based on observations and laboratory tests.

Upon encountering bedrock or refusal-to-drilling conditions, rock coring (using NQ/NX rock core barrel) was performed within select borings.

All explorations were supervised and logged by a field engineer or field geologist who recorded field test data, classified soils, and collected the samples from the explorations. Our exploration team prepared field boring logs as part of standard drilling operations including sampling depths, penetration distances, and other relevant sampling information. Field logs include visual classifications of materials encountered during drilling, and our interpretation of subsurface conditions between samples. Final boring logs, prepared from field logs, represent the geotechnical engineer's interpretation, and include modifications based on observations and laboratory tests.

Vibrating Wire Piezometer: We installed one vibrating wire piezometer (VWP) in boring 21-B-1 on December 17, 2021. The VWP was installed at a depth of approximately 30¾ feet below the ground surface (bgs), at the top of the intact, very low permeability, Boring lava (basaltic bedrock). This depth was determined by the project geotechnical engineer following completion of drilling. Prior to installation, the lower portion of the boring was filled with a bentonite chip-grout mixture and low-permeability grout was extended from approximately 35 feet bgs to about 1-foot bgs.

During installation, the VWP was taped to a one-inch diameter PVC pipe with the pressure sensor facing upwards. The VWP cable was taped to the PVC pipe on approximate 3-foot intervals as it was lowered into the boring. Once the VWP was at the target depth, a bentonite chip-grout mixture was placed from the bottom of the exploration to a depth of approximately 35 feet bgs. Then a low permeability grout was introduced to seal the upper portion of the exploration and allow the mini data logger to record changes in the vibrating wire frequency, and thus changes in pressure. The VWP wire was connected to a mini data logger housed within a steel, flush-mount wellhead. The mini data logger was set to record vibrating wire readings every 4 hours, starting December 20, 2021 at 5:00PM. Completion of the VWP is summarized in the following table:

Depth (feet bgs)	Description	Detail
0	Steel, flush-mount wellhead	Approximate 8-inch diameter and 18-inches tall
0 to 1	Void (open space)	---
1 to 35	Low permeability grout	50 PSI Grout for Medium to Hard Soils 30 gallon Water / 94 lb. Portland Cement
30¾	VWP piezometer installation	Geokon 4500S-350KPA (51psi)
35 to 90½	Bentonite chip-low permeability grout mixture	50 PSI Grout for Medium to Hard Soils 30 gallon Water / 94 lb. Portland Cement / 25 lb. Bentonite

Property Disturbance: We backfilled borings according to local jurisdiction requirements after completion of each exploration. Our services do not include repair of the site beyond backfilling our boreholes. Excess auger cuttings were dispersed in the general vicinity of each borehole. Since backfill material often settles below the surface after a period, we recommend boreholes be checked periodically and additional backfill added, if necessary.

Laboratory Testing

The project engineer reviewed the field data and assigned laboratory tests to understand the engineering properties of the various soil strata, as necessary, for this project. The following tests were performed for this project.

- ASTM D2216 Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
- ASTM D6913 Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis
- AASHTO T-267 Standard Method of Test for Determination of Organic Content in Soils by Loss on Ignition
- ASTM D1883 Standard Test Method for California Bearing Ratio (CBR) of Laboratory-Compacted Soils
- ASTM D6913 Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis
- ASTM D1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort
- ASTM G51 Standard Test Method for Measuring pH of Soil for Use in Corrosion Testing
- ASTM C 1580 Standard Test Method for Water-Soluble Sulfate in Soil
- ASTM G187 Standard Test Method for Measurement of Soil Resistivity Using the Two-Electrode Soil Box Method
- ASTM D2938 Standard Test Method for Unconfined Compressive Strength of Intact Rock Core Specimens
- ASTM D3080 Standard Test Method for Direct Shear Test Of Soils Under Consolidated Drained Conditions

The laboratory testing program included examination of soil samples by an engineer. Based on the material's texture and plasticity, we described and classified the soil samples in accordance with the Unified Soil Classification System.

Rock classification was conducted using locally accepted practices for engineering purposes; petrographic analysis may reveal other rock types. Rock core samples typically provide an improved specimen for this classification. Boring log rock classification was determined using the Description of Rock Properties.



Western portion of site, facing north



Central portion of site, facing west



Top of headscarp, facing south



Base of scarp in area of observed spring, facing south

EXPLORATION RESULTS

Contents:

2021 Boring Log (21-B-1)
2002-4 Exploration Logs (B-1 through B-24, MW-1 through MW-5, TP-1 through TP-46, TP-1A through TP-20A)
2002 Lab Test Results
- Grain Size Distribution Results (12 pages)
- Atterberg Limits Results
- CBR Results
- Direct Shear Test Results
- Unconfined Compression Test Results
- Soil Chemical Analysis Results
- Organic Content Results

Note: All attachments are one page unless noted above.

BORING LOG NO. 21-B-1

PROJECT: Oregon City Development

CLIENT: The Wolff Company LLC
Scottsdale, AZ

SITE: 1367 Molalla Avenue
Oregon City, OR

LOCATION See Exploration Plan

Latitude: 45.3363° Longitude: -122.5863°

Surface Elev.: 429 (Ft.)

DEPTH	ELEVATION (Ft.)	Description	DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS
0.2	429	**ASPHALT**, moist			
1.0	428	**FILL - LEAN CLAY WITH GRAVEL (CL)**, medium to high plasticity, red, moist			
		FILL - POORLY GRADED GRAVEL WITH CLAY AND SAND (GP-GC), dark gray, moist Basalt boulder from 5 to 7 feet bgs	5		50/1"
7.0	422	**CLAYEY SAND WITH GRAVEL (SC)**, low to medium plasticity, red, white, and black, moist, very loose, residual soil	10		3-5-7 N=12 .25 (HP)
		nonplastic, gray, moist, very dense, probably heavily weathered rock	15		21-38-50/5" 1.75 (HP)
		basalt frgaments present	20		50/5"
			25		50/1"
30.5	398.5	vibrating wire piezometer installed at 30 ft bgs	30		50/5" RQD = 0%
		BASALT, gray, moist, sound, moderate spacing, unweathered, very strong	35		RQD = 88%
			40		RQD = 95%
			45		RQD = 92%
			50		RQD = 91%

STRENGTH TEST			WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS
TEST TYPE	COMPRESSIVE STRENGTH (tsf)	STRAIN (%)			LL-PL-PI

Stratification lines are approximate. In-situ, the transition may be gradual.
Vibrating wire piezometer installed at 30' bgs

Hammer Type: Automatic

Advancement Method:
Mud Rotary/Coring

Abandonment Method:
Boring Grouted with vibrating wire piezometer

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevation estimated from site topographic map

Notes:
Vibrating Piezometer installed at this depth

Serial No. 2146354

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
700 NE 55th Ave
Portland, OR

Boring Started: 12-16-2021 | Boring Completed: 12-17-2021

Drill Rig: Truck-mounted | Driller: Western States

Project No.: 82215043

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 82215043 OREGON CITY DEVEL.GPJ TERRACON_DATATEMPLATE.GDT 1/5/22

BORING LOG NO. 21-B-1

PROJECT: Oregon City Development

CLIENT: The Wolff Company LLC
Scottsdale, AZ

SITE: 1367 Molalla Avenue
Oregon City, OR

LOCATION See Exploration Plan

Latitude: 45.3363° Longitude: -122.5863°

Surface Elev.: 429 (Ft.)

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI
		55	RQD = 78%						
		60	RQD = 68%						
		65	RQD = 70%						
		70	RQD = 67%						
		75	RQD = 30%						
		80	RQD = 0%						
		85	RQD = 0%						
		90	RQD = 91%						

BASALT, gray, moist, sound, moderate spacing, unweathered, very strong *(continued)*

moderately fractured, very close fracture spacing, slightly weathered, fractured zone 70 to 80 feet bgs

sound, moderate spacing, unweathered, strong rock

90.5 338.5

Boring Terminated at 90.5 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.
Vibrating wire piezometer installed at 30' bgs

Hammer Type: Automatic

Advancement Method:
Mud Rotary/Coring

Abandonment Method:
Boring Grouted with vibrating wire piezometer

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevation estimated from site topographic map

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
700 NE 55th Ave
Portland, OR

Boring Started: 12-16-2021 | Boring Completed: 12-17-2021

Drill Rig: Truck-mounted | Driller: Western States

Project No.: 82215043

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 82215043 OREGON CITY DEVEL.GPJ TERRACON_DATATEMPLATE.GDT 1/5/22

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-1 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 443 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot)	N-values	Testing
	Soft, wet, brown, SILT with some clay and fine roots. (Topsoil)						
	Stiff to very stiff, moist, orange-brown, SILT with trace clay and trace to some sand.						
5	Medium dense, wet, orange-brown, silty, fine to medium SAND and stiff to very stiff, wet, orange-brown, SILT with trace clay and sand with occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)		S-1		23		
			S-2		15		
			S-3		57 / 17		
10			S-4		58 / 47		
	Dense, damp, light gray, moderately weathered ANDESITE boulder encountered from 11 to 12.5 feet.						
15	Grades to dense, orange-gray, silty, fine to medium SAND and stiff, wet, orange-brown, SILT with trace clay and sand.		S-5		49 / 37		
	Very dense, damp, light gray, moderately weathered ANDESITE boulder encountered from 17 to 19.5 feet.						
20	Boring completed at 19.5 feet on 10/29/01. No groundwater seepage observed at time of drilling.		S-6		50/4"		
25							

0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc.
Geotechnical & Environmental Consultants

BORING LOG | **Figure A-1**

Date Drilled: 10/29/01 | **Logged By: JPG**

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-2	PAGE 1 OF 1
Location: Oregon City, Oregon	Approximate Elevation: 440 Feet		

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot)	N-values	Testing
	Soft, wet, brown, SILT with trace clay and fine roots. (Topsoil)						
	Very stiff to hard, damp to moist, orange-brown, SILT with trace clay and some sand.						
	Very dense, moist, orange-gray, silty, fine to medium SAND with trace to some clay and occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)		S-1			34	
5			S-2			52	
	Very dense, damp, gray, moderately weathered ANDESITE boulder encountered from 7 to 8.5 feet.		S-3			50/1"	
10			S-4			50/6"	
	Very dense, damp, gray, moderately weathered ANDESITE boulder encountered from 12.5 to 13.5 feet.						
	Boring completed at approximately 13.1 feet on 10/29/01 with refusal on Andesitic boulder. No groundwater seepage observed at time of drilling.		S-5			50/1"	
15							
20							
25							

Penetration Resistance scale: 0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 10/29/01	Logged By: JPG

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-3 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 440 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (Standard ▲ / Other △; Blows per foot)	N-values	Testing
	6" Asphalt pavement.						
	Stiff to medium stiff, orange-brown, SILT with trace to some clay and sand.		S-1		4		
5	Medium dense, wet, orange-brown, silty, fine to medium SAND and stiff to very stiff, wet, orange-brown, clayey SILT with trace sand with occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)		S-2		50	12	
			S-3		48	14	
10			S-4		57	14	
15	Grades to orange-gray.		S-5		55	33	
20	Grades to saturated at 19 feet.		S-6	ATD	50	50/4"	
	Boring completed at 20 feet on 10/29/01. Perched groundwater seepage observed at 19 feet at time of drilling.						
25							

0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

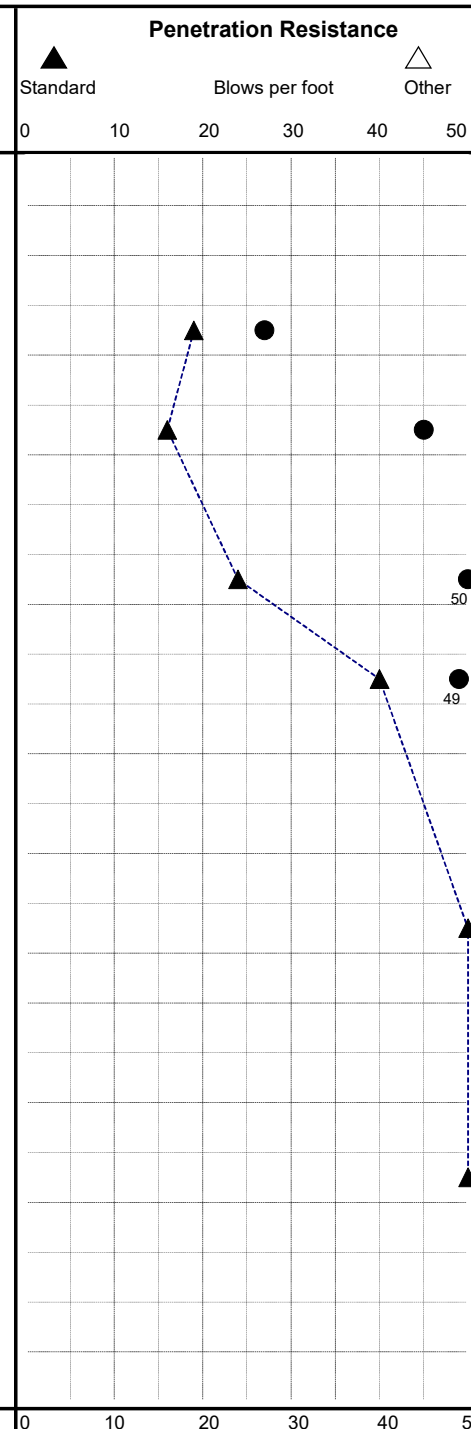
Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 10/29/01	Logged By: JPG

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-4	PAGE 1 OF 1
Location: Oregon City, Oregon	Approximate Elevation: 439 Feet		

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	N-values	Testing
	10" Asphalt pavement.					
	Stiff grading to very stiff, moist to wet, orange-brown, SILT with trace to some clay and sand.					
	Medium dense , moist to wet, orange-brown, silty, fine to medium SAND and stiff to very stiff, wet, orange-brown, clayey SILT with trace sand with occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)		S-1		19	
5			S-2		16	
	Grades to wet		S-3		24	
10	Grades to dense and orange-gray.		S-4		40	
15			S-5		50	
20	Grades to very dense.		S-6		52	
	Boring completed at 21.5 fet on 10/29/01. No groundwater seepage observed at time of drilling.					
25						



Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 10/29/01	Logged By: JPG

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-5 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 445 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot)	N-values	Testing
	4" Asphalt pavement.						
	Loose, moist to wet, brown, SILT with trace to some fine sand. (Topsoil)						
	Medium dense, moist to wet, orange-brown, SILT with trace to some clay and fine sand.		S-1		13		
5	Medium dense, wet, orange-brown, silty SAND and stiff to very stiff, wet, orange-brown, SILT with trace clay and sand with occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)		S-2		55 / 21		
			S-3		49 / 50/6"		
10	Very dense, damp, light gray, moderately weathered ANDESITE boulder encountered from 8.5 to 9.5 feet.		S-4		52 / 16		
15	Grades to dense.		S-5		33		
20			S-6		53 / 33		
	Boring completed at 21.5 feet on 10/29/01. No groundwater seepage observed at time of drilling.						
25							

0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 10/29/01	Logged By: JPG

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-6 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 425 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0 10 20 30 40 50)	N-values	Testing
	6" Very loose, wet, brown, sandy SILT with some organic debris and roots. (Topsoil)						
	Very stiff, moist, orange-brown, SILT with some sand to sandy SILT.						
	Medium dense, moist to wet, orange-brown, silty SAND and stiff to very stiff, wet, orange-brown, SILT with trace clay and sand with occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)		S-1			24	
5			S-2			14	
			S-3			25	
	Grades to orange gray.						
10			S-4			29	
	Boring completed at 10 feet on 10/29/01 with refusal. No groundwater seepage observed at time of drilling.						
15							
20							
25							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 10/29/01	Logged By: JPG

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-7 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 400 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot)	N-values	Testing
	Very loose, moist to wet, orange-brown, sandy SILT.						
	Very loose, moist to wet, orange-brown, sandy SILT						
	Medium dense, moist to wet, orange-brown, silty SAND and stiff to very stiff, wet, orange-brown, SILT with trace clay and sand with occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)	I	S-1			33	
5	Grades to dense. (Possible boulder)	I	S-2			50	
	Grades to medium dense.	I	S-3			37	
	Boring completed at 8.5 feet on 10/29/01 with refusal. No groundwater seepage observed at time of drilling.						
10							
15							
20							
25							

0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc.
Geotechnical & Environmental Consultants

BORING LOG | **Figure A-1**

Date Drilled: 10/29/01 | **Logged By: JPG**

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-8 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 395 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (Standard ▲ / Other △; Blows per foot)	N-values	Testing
	Very loose, wet, brown, sandy SILT with some organic debris and roots. (Topsoil)						
	Very loose, moist, orange-brown, sandy SILT. (Colluvium)						
	Loose, moist to wet, orange-brown, silty SAND and stiff to very stiff, wet, orange-brown, SILT with trace clay and sand with occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)	I	S-1		▲ 7	7	
5	Grades to medium dense.	I	S-2		▲ 25	25	
	Grades to dense.	I	S-3		▲ 42	42	
10	Grades to very dense and light gray. (Probable boulder)	I	S-4		▲ 50/4"	50/4"	
	Boring completed at approximately 11 feet on 10/31/01 with refusal. No groundwater seepage observed at time of drilling.						
15							
20							
25							

Penetration Resistance scale: 0 10 20 30 40 50

Explanation

- I — 2-inch O.D. split spoon sample
- II — 3-inch I.D Shelby tube sample
- ⊗ — No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 10/31/01	Logged By: JPG

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-9 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 433 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot)	N-values	Testing
0	Loose, moist to wet, mottled orange-brown and brown, sandy SILT with trace to some gravel. Occasional clasts of asphalt and plastic observed. (Fill)		S-1			10	
5	Concrete debris in tip of sampler.		S-2			50/6"	
	Boring terminated at 5.5 feet with refusal on concrete debris. Moved drill rig approximately 8 feet east and redrilled to refusal on concrete at 6.5 feet. No groundwater seepage observed at time of drilling.						
10							
15							
20							
25							

Penetration Resistance scale: 0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 10/31/01	Logged By: JPG

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-10 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 433 Feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot)	N-values	Testing
	6" Asphalt pavement						
	Medium dense, wet, mottled brown-gray, SILT with trace to some clay and gravel. Slight hydrocarbon odor. (Fill)		S-1			12	
5	Stiff, wet, orange-brown, SILT with some sand.		S-2			15	
	Medium dense , moist to wet, orange-brown, silty, fine to medium SAND and stiff to very stiff, wet, orange-brown, SILT with trace clay and sand with occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)		S-3		54	24	
10	grades to very dense, wet, and orange-gray.		S-4			57	
			S-5			50/4"	
	Boring completed at approximately 12.75 feet on 11/1/01. No groundwater seepage observed at time of exploration.						
15							
20							
25							

Penetration Resistance scale: 0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

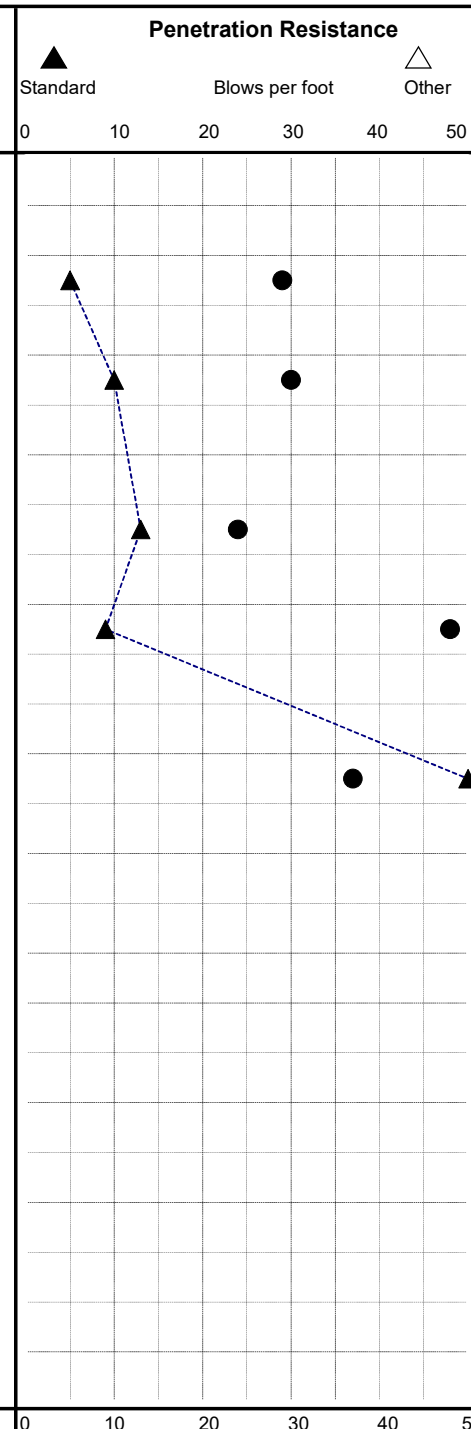
Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 11/1/01	Logged By: JPG

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-11	PAGE 1 OF 1
Location: Oregon City, Oregon	Approximate Elevation: 433 Feet		

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	N-values	Testing
	6" Asphalt pavement.					
	Medium stiff to stiff, wet, mottled brown, sandy SILT with trace to some gravel. (Fill)		S-1		5	
5	Grades to SILT with some sand. (Fill)		S-2		9	
	Asphalt observed at 7 feet.					
	Loose to medium dense, wet, orange-brown, silty SAND and stiff to very stiff, wet, orange-brown, SILT with trace clay and sand with occasional andesitic boulders and cobbles. (Severely weathered, decomposed Andasitic Bedrock)		S-3		13	
10			S-4		9	
	Very dense, damp, light gray, moderately weathered ANDESITE boulder encountered from 11.5 to 13 feet.		S-5		53	
	Boring completed at 13 feet on 11/1/01. No groundwater seepage observed at time of drilling.					
15						
20						
25						

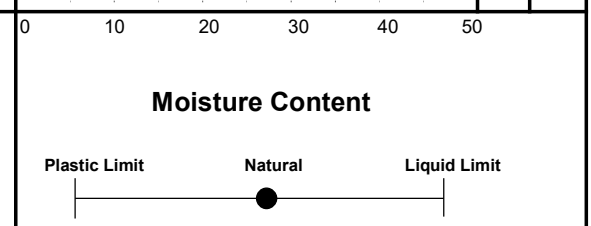


Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing



Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 11/1/01	Logged By: JPG

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-12	PAGE 1 OF 3
Location: Oregon City, Oregon	Approximate Elevation: 433 feet		

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	N-values	Testing
	Blackberries and wood refuse.					
	Stiff, moist, red-brown, clayey SILT with some sand (probable fill).		S-1		9	
5	Stiff, moist, brown, SILT with trace to some clay and some fine organics (probable fill).		S-2		10	
	Medium stiff, moist, red, brown, and gray, sandy CLAY (completely weathered bedrock).		S-3		7	
10	Medium dense, moist, red, brown, and gray, friable, silty SAND with trace clay and gravel (completely weathered bedrock).		S-4		15	GS
15	Medium stiff, moist, red, brown, and gray, friable, sandy SILT with trace clay (completely weathered bedrock).		S-5		7	
20	Very stiff, moist, red, brown, and gray, friable, sandy SILT with trace clay (completely weathered bedrock).		S-6		28	
25						

Penetration Resistance

▲ Standard — Blows per foot — △ Other

0 10 20 30 40 50

59

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- ⊗ No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-12
	Date Drilled: 3/14/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-12 | **PAGE 2 OF 3**

Location: Oregon City, Oregon | **Approximate Elevation:** 433 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot)	N-values	Testing
	Stiff, moist, red, brown, and gray, friable, sandy (completely weathered bedrock).	I	S-7			10	
30	Dense, gray, slightly weathered to fresh, basaltic ANDESITE (bedrock). Switch to coring - see next sheet.	I	S-8			50/6"	
35							
40							
45							
50							

Penetration Resistance scale: 0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-12
	Date Drilled: 3/14/02	Logged By: EL

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-12	PAGE 3 OF 3
Location: Oregon City, Oregon	Approximate Elevation: 433 feet		

Depth (ft)	Fracture: Profile	Fracture: Infilling	Fracture: Inclination	Rock Description	Time	Core Run	RQD (%)	Recovery (%)	Comments
30				Coring intiated at 31 feet					
35			65°	Gray, slightly to moderately weathered, closely to moderately fractured, weak to moderately strong, basaltic ANDESITE.	1:24 1:32	1	63	100	
40				Gray with red discoloration, moderately weathered, very closely to closely fractured, weak, basaltic ANDESITE. Gray, fresh, widely fractured, strong, basaltic ANDESITE.	1:35 1:47	2	30	100	
45				Gray, fresh, widely fractured, strong, basaltic ANDESITE.		3	100	100	Circulation loss.
50				Coring terminated at 46 feet.					
55									

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	CORING LOG	Figure A-12
	Date Drilled: 3/14/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-13 | **PAGE 1 OF 2**

Location: Oregon City, Oregon | **Approximate Elevation:** 425 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40, 50)	N-values	Testing
	Blackberry bushes over very soft, wet, brown, SILT with forest duff (topsoil).						
	Medium stiff, wet, red, residual silty CLAY with trace to some sand, silty SAND, and sandy SILT (completely weathered bedrock).		S-1		▲	6	
5	Stiff, moist, red/gray/black, residual silty CLAY (completely weathered bedrock).		S-2		▲	15	
	Stiff, moist, red/gray/black, friable, residual sandy SILT/silty SAND with trace clay (completely weathered bedrock).		S-3		▲ 63	8	GS
10	Stiff, moist, red/gray/black, friable, residual, sandy SILT/silty SAND with trace clay (highly to completely weathered bedrock).		S-4		▲	13	
15	Stiff, moist, red/gray/black, friable, residual sandy SILT with trace to some clay (highly to completely weathered bedrock).		S-5		▲	12	
20	Refusal bedrock at 19 feet. Start of coring - see next sheet.						
25							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-13
	Date Drilled: 3/14/02	Logged By: EL

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-13	PAGE 2 OF 2
Location: Oregon City, Oregon	Approximate Elevation: 425 feet		

Depth (ft)	Fracture: Profile	Fracture: Infilling	Fracture: Inclination	Rock Description	Time	Core Run	RQD (%)	Recovery (%)	Comments
				Coring initiated at 19 feet.					
20				Gray, fresh, widely fractured, strong, basaltic ANDESITE.	9:15	1	52	95	Unconfined compressive strength = 8880 psi.
				Red-brown with black specks, highly weathered, very closely fractured, friable, basaltic ANDESITE.	9:28				Infilling soil loss.
25				Coring terminated at 24 feet.					
30									
35									
40									
45									

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	CORING LOG	Figure A-13
	Date Drilled: 3/13/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-14 | **PAGE** 1 OF 3

Location: Oregon City, Oregon | **Approximate Elevation:** 424 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	Very soft, wet, brown, organic SILT (forest duff and organic-rich topsoil).						
	Medium stiff to stiff, moist to wet, red with gray and black, residual silty CLAY/clayey SILT with some fine sand (completely weathered bedrock).		S-1		▲	8	
5	Stiff, moist to wet, red with gray and black, residual silty CLAY/clayey SILT with some fine sand (completely weathered bedrock).		S-2		▲	10	
	Very stiff, moist, gray and red, friable, residual sandy SILT/silty SAND with trace clay (completely weathered bedrock).		S-3		▲	21	
10	Very stiff, moist, gray and red, friable, residual sandy SILT/silty SAND with trace clay (completely weathered bedrock).		S-4		▲	20	
15	Very stiff, moist, gray and red, friable, residual sandy SILT/silty SAND (highly weathered bedrock).		S-5		▲	50/2"	
	Drilling terminated on bedrock. Switch to coring. See next sheet.						
20							
25							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- ⊗ No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

0 10 20 30 40 50

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-14
	Date Drilled: 3/13/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-14 | **PAGE 2 OF 3**

Location: Oregon City, Oregon | **Approximate Elevation:** 424 feet

Depth (ft)	Fracture: Profile	Fracture: Infilling	Fracture: Inclination	Rock Description	Time	Core Run	RQD (%)	Recovery (%)	Comments
15				Coring initiated at 15.5 feet.					
20				Gray, fresh, moderately fractured, strong, basaltic ANDESITE. Red-brown with black specks, moderately to highly weathered, very closely fractured, friable to weak, basaltic ANDESITE.	11:52 12:01	1	18	100	
25				Red-brown and black, moderately to highly weathered, very closely fractured, friable to weak. basaltic ANDESITE. Gray, red and black, moderately weathered, very closely fractured, weak, basaltic ANDESITE.	12:05 12:20	2	8	100	
30				Gray and black, moderately weathered, very closely to closely fractured, weak to moderately strong, basaltic ANDESITE.	12:24 12:37	3	13	100	Circulation loss.
35				Gray, fresh, widely fractured, strong, basaltic ANDESITE.	13:41	4	100	100	
40				Gray, fresh, widely fractured, strong, basaltic ANDESITE.	13:55	5	100	100	

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	CORING LOG	Figure A-14
	Date Drilled: 3/13/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-14 | **PAGE 3 OF 3**

Location: Oregon City, Oregon | **Approximate Elevation:** 424 feet

Depth (ft)	Fracture: Profile	Fracture: Infilling	Fracture: Inclination	Rock Description	Time	Core Run	RQD (%)	Recovery (%)	Comments
45		Red clay	70° 70°	Gray, fresh, widely fractured, strong, basaltic ANDESITE.	14:05	6	75	100	
50			70°	Gray, fresh, widely fractured, strong, basaltic ANDESITE.	14:30	7	100	100	
55				Coring terminated at 50.5 feet.					
60									
65									
70									

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	CORING LOG	Figure A-14
	Date Drilled: 3/13/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-15 | **PAGE 1 OF 2**

Location: Oregon City, Oregon | **Approximate Elevation:** 422 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	N-values
	Very soft, wet, brown, organic SILT (topsoil).				
	Medium stiff, moist to wet, red and black, residual, silty CLAY/clayey SILT (completely weathered bedrock).		S-1		7
5	Medium stiff to stiff, moist, red, gray and black, friable, residual sandy SILT/silty SAND with trace clay (completely weathered bedrock).		S-2		8
	Stiff, moist, red, gray and black, friable, residual sandy SILT/silty SAND with trace clay (completely weathered bedrock).		S-3		11
10	Very stiff, moist, red, gray and black, friable, residual sandy SILT/silty SAND with trace clay (completely weathered bedrock).		S-4		23
15	Stiff, moist, red, gray and black, friable, residual sandy SILT/silty SAND witht race clay (completely weathered bedrock).		S-5		11
20	Very stiff, moist, red, gray and black, friable, residual sandy SILT/silty SAND with trace clay (completely weathered bedrock).		S-6		24
25					

Penetration Resistance

▲ Standard — Blows per foot — △ Other

0 10 20 30 40

Testing

0 10 20 30 40 50

Moisture Content

Plastic Limit — Natural — Liquid Limit

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- ⊗ No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-15
	Date Drilled: 3/12/02-3/13/02	Logged By: EL

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-15	PAGE 2 OF 2
Location: Oregon City, Oregon	Approximate Elevation: 422 feet		

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	Dense, moist, red with gray and black, silty SAND with trace clay (highly to completely weathered bedrock).		S-7		▲ 32	32	
30	Dense, moist, gray, friable, residual silty SAND with trace clay (moderately to highly weathered bedrock).		S-8		▲ 43	43	
35	Medium dense, moist, gray, friable, residual silty SAND with trace clay (moderately to highly weathered bedrock).		S-9		▲ 27	27	
40	Very dense, moist, gray, friable, residual silty SAND with trace clay (moderately to highly weathered bedrock).		S-10		▲ 50/5"	50/5"	
	Drilling terminated on bedrock at 41.5 feet. No groundwater observed at time of drilling.						
45							
50							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- ⊗ No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-15
	Date Drilled: 3/12/02-3/13/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-16 | **PAGE 1 OF 3**

Location: Oregon City, Oregon | **Approximate Elevation:** 430 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (Standard ▲ / Other △; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	Blackberry bushes, junk, asphalt debris over soft, moist, red, sandy silty CLAY (fill).						
	Medium stiff, moist, red, residual sandy SILTwith some clay (fill).		S-1		▲	5	
5	Soft, moist, red, residual sandy silty CLAY/clayey SILT (fill).		S-2		▲	3	
	Soft, moist, red, residual sandy silty CLAY (fill).		S-3		▲	3	
	Soft, wet, dark gray-brown, clayey SILT with small pieces of rubber and glass (relic topsoil).						
10	Med. dense, moist, tan, residual, silty SAND with trace clay		S-4		▲	5	
	Medium stiff, moist to wet, red, residual silty CLAY (completely weathered bedrock).						
15	Hard, moist, red, gray, and black, friable, residual sandy SILT/silty SAND with trace clay (highly weathered bedrock).		S-5		▲	50/5"	
	Very dense, damp, gray, fine to coarse SAND (moderately weathered bedrock). Rough/difficult drilling action.						
20	No recovery.	⊗	S-6		▲	15	
25							

0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- ⊗ No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-16
	Date Drilled: 3/8/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-16 | **PAGE 2 OF 3**

Location: Oregon City, Oregon | **Approximate Elevation:** 430 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	Medium dense, moist, gray, friable, residual silty fine to coarse SAND (moderately weathered bedrock).		S-7			25	
	Medium dense, wet, red and gray, friable, residual silty SAND with trace to some clay (highly weathered bedrock).						
30	No recovery. Switch to coring - see next sheet.		S-8		50/1"		
35							
40							
45							
50							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-16
	Date Drilled: 3/8/02	Logged By: EL

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-16	PAGE 3 OF 3
Location: Oregon City, Oregon	Approximate Elevation: 430 feet		

Depth (ft)	Fracture: Profile	Fracture: Infilling	Fracture: Inclination	Rock Description	Time	Core Run	RQD (%)	Recovery (%)	Comments
				Coring initiated at 29.5 feet.					
30				Gray, fresh, widely fractured, strong, basaltic ANDESITE.	11:00 11:15	1	100	100	
			70°	Gray with red discoloration, moderately weathered, closely fractured, weak, basaltic ANDESITE.	11:36 12:00	2	33	100	
35									
			70°	Gray with red discoloration, slightly weathered, moderately to widely fractured, moderately strong, basaltic ANDESITE.	12:45	3	43	100	
40				Gray, fresh, moderately fractured, strong, basaltic ANDESITE.					
				Gray, fresh, moderately fractured, strong, basaltic ANDESITE.	13:30	4	98	100	
45				Gray, slightly weathered, closely fractured, moderately strong, basaltic ANDESITE.					
				Coring terminated at 45.5 feet.					
50									
55									

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	CORING LOG	Figure A-16
	Date Drilled: 3/8/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-17 | **PAGE** 1 OF 1

Location: Oregon City, Oregon | **Approximate Elevation:** 431 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40, 50)	N-values	Testing
	Junk and asphalt debris over soft, wet, red, silty CLAY with some fine sand (probable fill).						
	Soft, wet, red, silty CLAY/clayey SILT with some fine sand (probable fill).		S-1		▲	2	
5	Soft to medium stiff, wet, red, silty CLAY/clayey SILT with some fine sand (probable fill).		S-2		▲	4	
	Soft to medium stiff, wet, red, silty CLAY with some fine sand (probable fill).		S-3		▲	4	
10	Very soft, wet, brown, silty CLAY (probable relic topsoil).		S-4		▲ ●	6	ATT
	Medium stiff, moist, red, gray-brown, and black, friable, residual silty clayey SAND (completely weathered bedrock).						
15	Medium stiff, moist, red, gray-brown, and black, friable, residual silty clayey SAND (completely weathered bedrock).		S-5		▲	9	
20	Medium stiff, moist, red, gray-brown, and black, friable, residual silty SAND with trace clay (highly weathered bedrock).		S-6		▲	50/5"	
	Very dense, moist, gray with red discoloration, slightly to moderately weathered, basaltic ANDESITE (bedrock).						
25	Refusal on bedrock at 24.75 feet. No groundwater observed at time of drilling.				▲	50/3"	

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-17
	Date Drilled: 3/11/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-18 | **PAGE** 1 OF 2

Location: Oregon City, Oregon | **Approximate Elevation:** 432 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	Junk debris over soft, wet, red, silty CLAY with some fine sand (probable fill).						
	Soft, wet, red, silty CLAY with some sand and gravel (probable fill).		S-1		▲	3	
5	Soft, wet, red, silty CLAY with some sand and gravel (probable fill).		S-2		▲	2	
	Soft, wet, brown, silty CLAY with fine woody debris (relic topsoil).		S-3		▲	8	
10	Very stiff, moist, red, gray, and black, friable, residual silty SAND with trace to some clay (highly to completely weathered bedrock).		S-4		▲	21	
15	Very stiff, moist, red, gray, and black, friable, residual silty SAND with trace clay (highly weathered bedrock).		S-5		▲	50/4"	
	Drilling terminated at 16 feet. Start of coring - see next sheet.						
20							
25							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit (0, 10, 20, 30, 40, 50)

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-18
	Date Drilled: 3/11/02	Logged By: EL

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-18	PAGE 2 OF 2
Location: Oregon City, Oregon	Approximate Elevation: 432 feet		

Depth (ft)	Fracture: Profile	Fracture: Infilling	Fracture: Inclination	Rock Description	Time	Core Run	RQD (%)	Recovery (%)	Comments
				Coring initiated at 16 feet.					
20				Gray with red discoloration, moderately weathered, closely to moderately fractured, weak to moderately strong, basaltic ANDESITE.	13:45 14:00	1	42	100	
25				Gray, slightly weathered, moderately fractured, strong, basaltic ANDESITE. Gray with red discoloration, moderately weathered, very closely fractured, weak, basaltic ANDESITE.	14:55 15:15	2	43	90	
30				Gray with red discoloration, moderately weathered, very closely fractured, friable to weak, basaltic ANDESITE. Gray, fresh, moderately to widely fractured, strong, basaltic ANDESITE.	15:32	3	28	100	Loss of circulation.
35			45°	Gray, fresh to slightly weathered, moderately fractured, strong, basaltic ANDESITE.	15:32 ~15:45	4	100	100	
40			45°	Gray, fresh, widely fractured, strong, basaltic ANDESITE.	~16:00 16:11	5	100	100	
45				Coring terminated at 41 feet.					

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	CORING LOG	Figure A-18
	Date Drilled: 3/11/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-19 | **PAGE 1 OF 2**

Location: Oregon City, Oregon | **Approximate Elevation:** 431 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0 10 20 30 40 50)	N-values	Testing
	Blackberry bushes over soft, wet, red, silty CLAY with some sand (probable fill).						
	Medium stiff, wet, red, silty CLAY with some sand (probable fill).		S-1		▲ ●	5	ATT
5	Soft, wet, red, silty CLAY with some sand (probable fill).		S-2		▲	3	
	Medium stiff, wet, red, silty CLAY with some sand (probable fill).		S-3		▲	3	
10	Very soft, wet, brown, organic silty CLAY (relic topsoil).						
	Medium stiff, moist to wet, red, residual silty CLAY (completely weathered bedrock).		S-4		▲	8	
15	Dense, moist, gray and red, friable, residual silty SAND (highly to moderately weathered bedrock).		S-5		▲	42	
20	Medium dense, moist, gray and red, friable, residual silty SAND (highly to moderately weathered bedrock).		S-6		▲	20	
25							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- ⊗ No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. **Geotechnical & Environmental Consultants**	**BORING LOG**	**Figure A-19**
	Date Drilled: 3/12/02	**Logged By: EL**

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-19	PAGE 2 OF 2
Location: Oregon City, Oregon	Approximate Elevation: 431 feet		

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	Very dense, moist, gray, slightly weathered ANDESITE bedrock.	I	S-7		▲ 50/1"		
	Drilling terminated at 26 feet. No groundwater observed at time of drilling.						
30							
35							
40							
45							
50							

Explanation

- I — 2-inch O.D. split spoon sample
- II — 3-inch I.D Shelby tube sample
- ⊗ — No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-19
	Date Drilled: 3/12/02	Logged By: EL

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-20	PAGE 1 OF 2
Location: Oregon City, Oregon	Approximate Elevation: 429 feet		

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (Standard ▲, Other △; Blows per foot: 0 10 20 30 40 50)	N-values	Testing
	Soft, wet, red, sandy silty CLAY (probable fill).						
	Medium stiff, wet, red, sandy silty CLAY (probable fill).		S-1		▲	6	
5	Very loose, wet, red, silty SAND with some clay and gravel (probable fill).		S-2		▲ ●	4	GS
	Very soft, wet, red, sandy silty CLAY (probable fill).		S-3		▲	1	
	Very soft, wet, brown, organic SILT (relic topsoil).						
10	Very soft, wet, brown, organic SILT (relic topsoil).		S-4		▲	8	
	Medium stiff, moist to wet, red, residual silty CLAY with some sand (completely weathered bedrock).						
15	Very stiff, moist, gray, red, and black, friable, residual silty SAND with trace clay (highly weathered bedrock).		S-5		▲	18	
	Drilling terminated at 18 feet. Start of coring - see next sheet.		S-6		▲	50/1"	
20							
25							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

0 10 20 30 40 50

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-20
	Date Drilled: 3/12/02	Logged By: EL

PROJECT: Oregon City Retail	JOB NO. J-1200	BORING B-20	PAGE 2 OF 2
Location: Oregon City, Oregon	Approximate Elevation: 429 feet		

Depth (ft)	Fracture: Profile	Fracture: Infilling	Fracture: Inclination	Rock Description	Time	Core Run	RQD (%)	Recovery (%)	Comments
				Coring initiated at 18 feet.					
20				Gray, fresh, widely fractured, basaltic ANDESITE.	11:45 11:50	1	100	100	
25		Red clay		Gray with red discoloration, moderately to highly weathered, very closely fractured, friable to weak, basaltic ANDESITE. Gray, fresh, moderately fractured, strong, basaltic ANDESITE.	12:05	2	18	60	Loss of circulation.
30		Red clay		Gray with red discoloration, moderately to highly weathered, very closely fractured, friable to weak, basaltic ANDESITE.	13:12	3	18	80	Loss of circulation.
35		Red clay		Gray with red discoloration, moderately to highly weathered, very closely fractured, weak to moderately strong, basaltic ANDESITE.	13:30	4	25	90	Intermittent loss of circulation.
40		Red clay		Gray with red and black discoloration, moderately to highly weathered, closely fractured, weak, basaltic ANDESITE.	13:50	5	20	100	
45		Red clay		Gray with red discoloration, moderately to highly weathered, closely fractured, weak, basaltic ANDESITE. Gray with slight red discoloration, slightly weathered, moderately fractured, moderately strong, basaltic ANDESITE.		6	22	100	Loss of circulation.
				Coring terminated at 45 feet.					

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	CORING LOG	Figure A-20
	Date Drilled: 3/12/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-21 | **PAGE 1 OF 1**

Location: Oregon City, Oregon | **Approximate Elevation:** 442 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	Sod over soft, wet, brown, silty CLAY with some fine sand.						
	Soft, wet, brown with red-orange and black specks, residual silty CLAY with some sand.	I	S-1		▲	2	
5	Medium stiff, wet, orange, gray, and brown, residual silty CLAY/clayey SILT with some sand.	I	S-2		▲	5	
	Stiff, wet, orange, gray, and brown, silty CLAY/clayey SILTwith some sand.	I	S-3		▲	13	
10	Medium stiff, wet, orange, gray, and brown, residual sandy SILT with clay stringers.	I	S-4		▲	5	
	Drilling terminated at 11.5 feet. No groundwater observed at time of drilling.						
15							
20							
25							

0 10 20 30 40 50

Explanation

- I — 2-inch O.D. split spoon sample
- II — 3-inch I.D Shelby tube sample
- ⊗ — No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-21
	Date Drilled: 3/7/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-22 | **PAGE** 1 OF 1

Location: Oregon City, Oregon | **Approximate Elevation:** 451 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	Sod over soft, wet, brown, silty CLAY with some sand.						
	Medium stiff, wet, red, residual silty CLAY with some sand.		S-1			6	
5	Stiff to very stiff, moist, red, friable, residual silty SAND/sandy SILT with trace to some clay.		S-2			18	
	Stiff, moist to wet, red and gray, friable, residual silty SAND/sandy SILT with trace to some clay.		S-3			9	
10	Stiff, moist to wet, red and gray, friable, residual silty SAND/sandy SILT with trace to some clay.		S-4			9	
15	Stiff, moist to wet, red and gray, friable, residual silty SAND/sandy SILT with trace to some clay.		S-5			11	
20	Stiff, saturated, red and gray, friable, residual silty SAND/sandy SILT with trace clay.		S-6	▼ ATD		13	
	Drilling terminated at 21.5 feet. Groundwater observed at approximately 20 feet at time of drilling.						
25					0 10 20 30 40 50		

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- ⊗ No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-22
	Date Drilled: 3/7/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-23 | **PAGE** 1 OF 1

Location: Oregon City, Oregon | **Approximate Elevation:** 456 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	3" asphalt and 6" crushed rock over medium stiff, moist, red, silty CLAY.						
	Medium stiff, moist, red, residual silty CLAY with some sand.		S-1		▲	7	
5	Very stiff, moist, red, residual silty CLAY with some sand.		S-2		▲	17	
	Medium stiff to stiff, moist to wet, red and gray, friable, residual sandy SILT with trace to some clay.		S-3		▲	8	
10	Stiff, moist to wet, red and gray, friable, residual clayey silt with some sand.		S-4		▲	11	
15	Stiff, moist to wet, red and gray, friable, residual sandy SILT with trace clay.		S-5		▲	12	
	Drilling terminated at 16.5 feet. No groundwater observed at time of drilling.						
20							
25							

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

0 10 20 30 40 50

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-23
	Date Drilled: 3/7/02	Logged By: EL

PROJECT: Oregon City Retail | **JOB NO.** J-1200 | **BORING** B-24 | **PAGE** 1 OF 1

Location: Oregon City, Oregon | **Approximate Elevation:** 427 feet

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0, 10, 20, 30, 40)	N-values	Testing
	1" crushed rock over medium stiff, moist, dark brown, SILT with fine woody debris (fill).						
5	Medium stiff, moist, dark brown, clayey SILT with fine woody debris (fill),	I	S-1		▲	7	
10	Medium stiff, moist, dark brown, clayey SILT with fine woody debris (fill),	I	S-2		▲	5	
15	Soft, wet, dark brown, clayey SILT with fine woody debris (probable fill, possible relic topsoil),	I	S-3		▲	3	
	Drilling terminated at 16.5 feet. No groundwater observed at time of drilling.						
20							
25							

0 10 20 30 40 50

Explanation

- I — 2-inch O.D. split spoon sample
- II — 3-inch I.D Shelby tube sample
- ⊗ — No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- Cuttings
- Bentonite
- Grout
- Screened Casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-24
	Date Drilled: 3/14/02	Logged By: EL

PROJECT: Proposed Retail Development - Phase II ESA | **JOB NO.** J-1200-02 | **BORING** MW-1 | **PAGE** 1 OF 1

Location: Oregon City, Oregon | **Approximate Elevation:** 443 feet +/-

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (Standard ▲ / Other △; Blows per foot)	N-values	Testing
	Grass and debris over medium dense, damp, brown-gray, sandy silty GRAVEL. (FILL)		S-1			25	
			S-2			9	
5	Loose, damp to wet, orange-brown, SILT with trace fine sand and occasional volcanic cinders.		S-3			8	
			S-4	11/2/01 15:32		14	
10			S-5			17	
15	Medium dense grading to dense, damp to moist, orange-brown, SILT with fine sand. (Severely weathered, highly fractured, gray basaltic andesite.)		S-6	ATD		17	
20							
	Monitoring well completed at 20.0 feet on 10/30/01. Wells included above-ground monuments and protective bollards. Groundwater encountered at 14 feet bgs at time of drilling, later measured at 8 feet bgs at time of development.					50/1"	
25							

Penetration Resistance axis: 0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- 2" Sch. 40 PVC
- Bentonite
- Concrete
- 10-slot screened casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-1
	Date Drilled: 10/30/01	Logged By: MJB

PROJECT: Proposed Retail Development - Phase II ESA | **JOB NO.** J-1200-02 | **BORING** MW-2 | **PAGE 1 OF 2**

Location: Oregon City, Oregon | **Approximate Elevation:** 438 feet +/-

Depth (ft)	Soil Description	Sample Number	N-values
	Asphalt surfacing.		
	Dense, damp to moist, gray to dark gray, sandy silty GRAVEL with occasional asphalt. (FILL)	S-1	44
5		S-2	8
		S-3	11
10	Medium stiff to stiff, damp to moist, orange-brown grading to red-brown, SILT with trace fine sand and clay.	S-4	6
15		S-5	42
20	Dense to very dense, damp to moist, orange to red-brown, SILT with fine sand. (Severely weathered, highly fractured, gray basaltic andesite.)	S-6	54
25			

Sample Type | Ground Water | Penetration Resistance (▲ Standard, △ Other; Blows per foot: 0 10 20 30 40 50) | Testing

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- 2" Sch. 40 PVC
- Bentonite
- Concrete
- 10-slot screened casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-2
	Date Drilled: 10/30/01	Logged By: MJB

PROJECT: Proposed Retail Development - Phase II ESA **JOB NO.** J-1200-02 **BORING MW-2** **PAGE 2 OF 2**

Location: Oregon City, Oregon **Approximate Elevation:** 438 feet +/-

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (▲ Standard, △ Other; Blows per foot)	N-values	Testing
	Very dense, damp to moist, orange to red-brown, SILT with fine sand. (Severely weathered, highly fractured, gray basaltic andesite.)	I	S-7			61	
	Boring completed at 26.5 feet on 10/30/01, Monitoring well installed from 25 feet bgs. Wells included above-ground monuments and protective bollards. No groundwater encountered at time of drilling or at time of development, 16:31 on 11/2/01.						
30							
35							
40							
45							
50							

Penetration Resistance scale: 0 10 20 30 40 50

Explanation

- I — 2-inch O.D. split spoon sample
- II — 3-inch I.D Shelby tube sample
- ⊗ — No Recovery
- ▼ ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- 2" Sch. 40 PVC
- Bentonite
- Concrete
- 10-slot screened casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-2
	Date Drilled: 10/30/01	Logged By: MJB

PROJECT: Proposed Retail Development - Phase II ESA | **JOB NO.** J-1200-02 | **BORING** MW-3 | **PAGE** 1 OF 1

Location: Oregon City, Oregon | **Approximate Elevation:** 450 feet +/-

Depth (ft)	Soil Description	Sample Number	N-values
	2-inches asphalt over loose to medium dense, damp to wet, orange-brown, SILT with trace fine sand and occasional volcanic cinders.	S-1	7
		S-2	16
5		S-3	10
		S-4	10
10	Loose grading to dense, damp to moist, orange-brown, SILT with fine sand. (Severely weathered, highly fractured, gray basaltic andesite.)	S-5	9
15		S-6	9
20		S-7	36
	Monitoring well completed at 20.0 feet on 10/30/01. Wells included above-ground monuments and protective bollards. Groundwater encountered at 16 feet bgs at time of drilling, later measured at 17.5 feet bgs at time of development.		
25			

Penetration Resistance: ▲ Standard, Blows per foot, △ Other; 0 10 20 30 40 50

Ground Water: ATD 11/2/01 15:43

Testing

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- 2" Sch. 40 PVC
- Bentonite
- Concrete
- 10-slot screened casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-3
	Date Drilled: 10/31/01	Logged By: MJB

PROJECT: Proposed Retail Development - Phase II ESA | **JOB NO.** J-1200-02 | **BORING** MW-4 | **PAGE** 1 OF 1

Location: Oregon City, Oregon | **Approximate Elevation:** 445 feet +/-

Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water	Penetration Resistance (Standard ▲, Blows per foot, Other △)	N-values	Testing
5	Grass over loose, damp to wet, orange-brown, SILT with trace fine sand, occasional gravel and pieces of visqueen. (FILL)		S-1			8	
			S-2			8	
			S-3			7	
10			S-4	11/2/01 13:50		4	
15	Dense, damp to moist, orange-brown, SILT with fine sand. (Severely weathered, highly fractured, gray basaltic andesite.)		S-5	ATD		36	
20	Very dense, wet, gray, moderately to severely weathered, highly fractured,basaltic andesite.		S-6			50/5"	
25	Monitoring well completed at 19.5 feet on 10/30/01 due to drilling refusal. Wells included above-ground monuments and protective bollards. Groundwater encountered at 15 feet bgs at time of drilling, later measured at 11.2 feet bgs at time of development.						

Penetration Resistance scale: 0 10 20 30 40 50

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- 2" Sch. 40 PVC
- Bentonite
- Concrete
- 10-slot screened casing

Moisture Content

Plastic Limit — Natural — Liquid Limit

0 10 20 30 40 50

Zipper Zeman Associates, Inc.
Geotechnical & Environmental Consultants

BORING LOG | **Figure A-4**

Date Drilled: 10/31/01 | **Logged By: MJB**

PROJECT: Proposed Retail Development - Phase II ESA **JOB NO.** J-1200-02 **BORING MW-5** **PAGE 1 OF 1**

Location: Oregon City, Oregon **Approximate Elevation:** 445 feet +/-

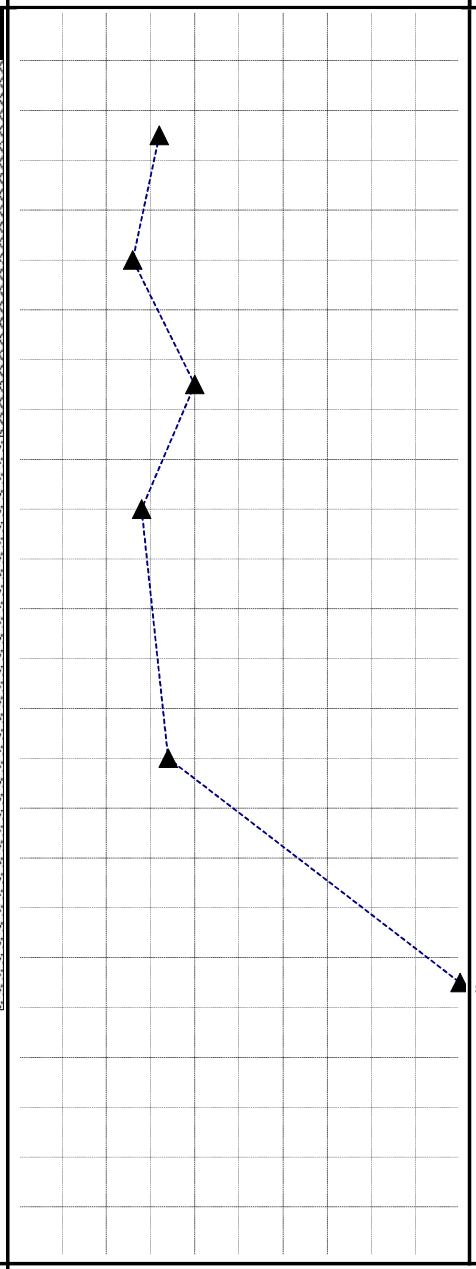
Depth (ft)	Soil Description	Sample Type	Sample Number	Ground Water
	Grass over loose, damp to moist, brown, sandy gravelly SILT. (FILL)		S-1	
5	Medium dense, damp to wet, orange-brown, SILT with trace fine sand and occasional angular pieces of gray, severely weathered, highly fractured basaltic andesite.		S-2	
			S-3	
10			S-4	11/2/01 12:49 ATD
15	Medium dense, damp to moist, orange-brown, SILT with fine sand. (Severely weathered, highly fractured, gray basaltic andesite.)		S-5	
20	Very dense, wet, gray, moderately to severely weathered, highly fractured,basaltic andesite.		S-6	
25	Monitoring well completed at 20.0 feet on 10/30/01 due to drilling refusal. Wells included above-ground monuments and protective bollards. Groundwater encountered at 15 feet bgs at time of drilling, later measured at 11.2 feet bgs at time of development.			

Penetration Resistance

▲ Standard △ Other — Blows per foot

0 10 20 30 40 50

N-values	Testing
16	
13	
20	
14	
17	
50/6"	



0 10 20 30 40 50

Moisture Content

Plastic Limit — Natural — Liquid Limit

Explanation

- 2-inch O.D. split spoon sample
- 3-inch I.D Shelby tube sample
- No Recovery
- ATD — Groundwater level at time of drilling or date of measurement

Monitoring Well Key

- Clean Sand
- 2" Sch. 40 PVC
- Bentonite
- Concrete
- 10-slot screened casing

Zipper Zeman Associates, Inc. Geotechnical & Environmental Consultants	BORING LOG	Figure A-5
	Date Drilled: 10/31/01	Logged By: MJB

Test Pit TP-1
Approximate ground surface elevation: 425 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Duff over soft, damp, brown, SILT with trace fine sand. (Topsoil) Sparse fine roots to 1.2 feet and sparse medium roots to 2 feet.	S-1@0.5' MC=24%
1.0-3.0	Soft grading to stiff, damp, orange-brown, SILT with trace clay and trace to some 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, rounded, basaltic andesite cobbles.	S-2@2' MC=16%
3.0-10.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp to moist, reddish orange-brown sandy silt with trace clay.	
	Test pit completed at 10.0 feet on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-2
Approximate ground surface elevation: 435 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.8	Duff over soft, damp to moist, dark brown, SILT with trace fine sand and occasional fine gravel. (Topsoil) Sparse fine roots to one foot and sparse medium to large roots to 2 ½ feet. Pocket penetrometer at 0.5 feet = 1.75 tons per square foot (tsf.)	
0.8-3.0	Soft grading to stiff, damp, orange-brown, SILT with trace clay, fine sand, and trace to some 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, rounded, basaltic andesite boulders. Pocket penetrometer at 1.5 feet > 4.5 tsf.	S-1@1.5'
3.0-7.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish orange-brown silt with trace clay to silty SAND. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-2@3.5' MC=31%
	Digging refusal at 7.0 feet on a boulder on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-3
Approximate ground surface elevation: 440 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Duff over soft, moist to wet, dark brown, SILT with trace fine sand and occasional gray, moderately weathered, round, basaltic andesite boulders. (Topsoil) Sparse fine to medium roots to 1.2 feet.	S-1@0.5' S-2@1.0' MC=41%
1.0-2.5	Soft grading to stiff, damp to moist, orange-brown, SILT with trace clay and trace to some 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Pocket penetrometer at 2.0 feet = 2.75 tsf.	S-3@2.0' MC=25%
2.5-11.5	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish orange-brown sandy silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-4@10.5' MC=44%
	Test pit terminated at 11.5 feet on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-4
Approximate ground surface elevation: 440 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.3	Duff over soft, damp to moist, dark brown, SILT with trace fine sand (Topsoil.) Moderate to dense fine roots to 1.2 feet and sparse medium roots to 1.2 feet.	S-1@1.0' MC=36%
1.3-3.0	Medium stiff, damp to moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Pocket penetrometer at 2.5 feet = 1.5 tsf.	S-2@2.5' MC=24%
3.0-11.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown silt with trace clay.	S-3@6.0' MC=53%
	Test pit terminated at 11.0 feet on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-5
Approximate ground surface elevation: 441 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.7	Duff over soft, moist to wet, dark brown, SILT with trace fine sand (Topsoil) Moderate to dense fine roots to 1.0 feet and sparse medium roots to 1.2 feet.	S-1@0.5’
0.7-3.5	Medium stiff, damp to moist, orange-brown, sandy SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Pocket penetrometer at 3 feet > 4.5 tsf.	
3.5-7.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown sandy silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite boulders.	S-2@7.0’
	Test pit terminated at 7.0 feet on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-6
Approximate ground surface elevation: 442 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.7	Duff over soft, moist, dark brown, SILT with trace fine sand. (Topsoil) Moderate to dense fine roots to 0.8 feet and sparse medium roots to 1.2 feet.	
0.7-3.5	Medium stiff, damp to moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Pocket penetrometer at 3 feet = 2.0 to 2.5 tsf.	S-1@1.0’ S-2 @3.0’
3.5-10.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay.	S-3@5.5’
	Test pit terminated at 10.0 feet on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-7
Approximate ground surface elevation: 443 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Short to medium length grass and blackberry vines over soft, moist to wet, dark brown, SILT with trace fine sand and occasional pockets of 3/8" minus crushed rock (Topsoil/FILL) Moderate to dense fine roots to medium roots to 1.2 feet.	S-1@0.5' MC=30%
1.0-3.5	Medium stiff, damp to moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Pocket penetrometer at 2.0 feet = 3.75 tsf.	S-2@2.0' MC=21%
3.5-10.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown silt with trace clay. Occasional dark gray, subangular, slightly weathered, basalt with visible vesicles.	S-3@10.0' MC=56%
	Test pit terminated at 10.0 feet on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-8
Approximate ground surface elevation: 443 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.2	Grass over soft, moist to wet, dark brown, sandy, gravelly SILT (Topsoil/FILL) Dense fine roots to 1.0 feet.	S-1@1.0'
1.2-4.0	Medium stiff, damp to moist, orange-brown, SILT with trace clay and trace to some 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, round, basaltic andesite boulders. Pocket penetrometer at 3.0 feet > 4.5 tsf.	
4.0-11.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	S-2@10.5'
	Test pit terminated at 11.0 feet on 11/1/01. Slight groundwater seepage observed at 11.0 feet. No caving observed.	

Test Pit TP-9
Approximate ground surface elevation: 444 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.7	Short grass and blackberry vines over soft, moist to wet, brown, gravelly SILT with trace fine sand. (Topsoil/FILL) Moderate to dense fine to medium roots to 1.0 feet.	S-1@0.5’
0.7-6.0	Medium stiff, damp to moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
6.0-10.5	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay.	
	Test pit terminated at 10.5 feet on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-10
Approximate ground surface elevation: 444 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Blackberry vines over soft, moist to wet, brown, SILT with trace fine sand. (Topsoil) Moderate to dense fine to medium roots to 1.2 feet.	S-1@1.0’ MC=28%
1.0-3.0	Soft grading to stiff, damp to moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
3.0-11.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay.	S-2@5.0’ MC=20%
	Test pit terminated at 11.0 feet on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-11
Approximate ground surface elevation: 444 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Blackberry vines over soft, moist to wet, dark brown, SILT with occasional gravel. (Topsoil) Moderate to dense fine to medium roots to 1.8 feet.	S-1@0.5 MC=32%
1.0-3.0	Medium stiff, damp to moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2@2.0' MC=29% S-3@5.0' MC=44%
3.0-11.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders. Test pit terminated at 11.0 feet on 11/1/01. No groundwater seepage observed. No caving observed.	S-4@9.0' MC=59%

Test Pit TP-12
Approximate ground surface elevation: 444 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.5	Short grass and blackberry vines over soft, moist to wet, brown, gravelly SILT with trace fine sand. (Topsoil/FILL) Moderate fine to medium roots to 0.9 feet.	S-1@1.0'
1.5-3.5	Soft grading to stiff, damp to moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Pocket penetrometer at 2.0 feet = 1.75 tsf. Pocket penetrometer at 3.0 feet > 4.5 tsf.	
3.5-9.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders. Test pit terminated at 9.0 feet on 11/1/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-13
Approximate ground surface elevation: 445 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.5	Short grass and blackberry vines over soft, wet, brown, SILT with trace to some sand. (Topsoil) Moderate fine to medium roots to 1.5 feet.	S-1@0.3' MC=24%
0.5-3.0	Medium stiff grading to stiff, moist to wet, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2@2.0'
3.0-6.0	Medium dense grading to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	
	Test pit terminated at 6.0 feet on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-14
Approximate ground surface elevation: 447 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.5	Short grass and blackberry vines over soft, wet, brown, SILT with trace to some sand. (Topsoil) Moderate fine roots to 1.0 feet.	S-1@0.3'
0.5-4.0	Medium stiff to stiff, moist to wet, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2@3.0'
4.0-5.5	Medium dense grading to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	
	Test pit terminated at 5.5 feet on 11/2/01 due to equipment failure. No groundwater seepage observed. No caving observed.	

Test Pit TP-15
Approximate ground surface elevation: 447 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.5	Grass over soft, damp to moist, brown, SILT with SILT and occasional gravel. (Topsoil) Moderate fine roots to 2.0 feet.	S-1@1.0' MC=27%
1.5-7.0	Medium stiff to stiff, damp to moist, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
7.0-10.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown sandy silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	S-2@9.0' MC=59%
	Test pit terminated at 10.5 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-16
Approximate ground surface elevation: 446 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Grass and blackberry vines over soft, damp, brown, SILT with trace fine sand. (Topsoil) Moderate to dense fine roots to 1.0 feet.	S-1@0.5'
1.0-4.0	Medium stiff to stiff, damp to moist, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
4.0-7.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown sandy silt with trace clay.	S-2@6.0'
7.0-10.0	Medium dense to very dense, dark gray, moderately weathered, subangular to rounded, poorly sorted, vesicular basalt clasts in a matrix of medium stiff to stiff, damp, red silt with trace clay.	
	Test pit terminated at 10.0 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-17
Approximate ground surface elevation: 447 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.7	Grass and blackberry vines over soft, damp, brown, SILT with trace fine sand. (Topsoil) Moderate to dense fine roots to 1.0 feet.	S-1@0.5' MC=26% S-2@1.0' MC=26%
1.7-3.0	Medium stiff, damp to moist, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-3@2.5' MC=21%
3.0-7.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay.	S-4@5.5' MC=26%
7.0-10.5	Medium dense to very dense, dark gray, moderately weathered, subangular to rounded, poorly sorted, vesicular basalt clasts in a matrix of medium stiff to stiff, damp, red silt with trace clay.	S-5@9.5' MC=55%
	Test pit terminated at 10.5 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-18
Approximate ground surface elevation: 405 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Soft, wet, dark brown, SILT with some gravel, organic debris and roots. (Topsoil)	
1.0-7.0	Very dense, moderately weathered, sub-rounded basaltic andesite boulders in matrix of medium dense, moist, orange-gray, silty SAND to sandy SILT.	
	Test pit completed at 7.0 on feet on 11/2/01 with refusal on boulder. No groundwater seepage observed. No caving observed.	

Test Pit TP-19
Approximate ground surface elevation: 402 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.8	Soft, wet, dark brown, SILT with some clay and sand, organic debris and roots. (Topsoil)	
0.8-2.5	Loose to medium dense, moist, orange-gray, silty SAND to sandy SILT with occasional cobbles and boulders of severely weathered basalt.	S-1@2’
2.5-7.5	Very dense basaltic andesite boulders from 2 to 8 feet in diameter in a medium stiff, sandy SILT matrix.	
	Test pit completed at 7.5 feet on 11/2/01 with refusal on boulder. No groundwater seepage observed. No caving observed.	

Test Pit TP-20
Approximate ground surface elevation: 448 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.8	Grass over soft, damp, brown, SILT with trace fine sand. (Topsoil) Moderate fine roots to 0.8 feet, sparse medium roots to 1.2 feet.	
0.8-2.5	Medium stiff, damp to moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-1@1.5’ MC=28%
2.5-10.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional, gray, moderately weathered, round basaltic andesite cobbles and boulders.	S-2@4.0’ MC=56%
	Test pit terminated at 10.0 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-21
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.3	Grass and blackberry vines over soft, damp, brown, SILT with trace fine sand. (Topsoil) Moderate fine to medium roots to 1.5 feet.	S-1@0.5’
1.3-9.5	Medium stiff to stiff, damp to moist, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2@2.0’
9.5-10.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	
	Test pit terminated at 10.5 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-22
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Grass and blackberry vines over soft, damp, brown, SILT with trace fine sand. (Topsoil) Moderate fine and medium roots to 1.0 feet.	
1.0-6.5	Medium stiff to stiff, damp to moist, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	
6.5-10.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	
	Test pit terminated at 10.0 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-23
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.7	Wood debris and blackberry vines over soft, damp, brown, SILT with trace fine sand. (Topsoil) Moderate fine and medium roots to 1.0 feet.	S-1@0.5' MC=25%
0.7-6.5	Medium stiff to stiff, damp to moist, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Pocket penetrometer at 2.0 feet = 1.75 tsf. Pocket penetrometer at 3.5 feet = 3.0 to >4.5 tsf.	S-2@1.5' MC=26%
6.5-7.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay.	
	Test pit terminated at 7.5 feet due to space constraints on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-24
Approximate ground surface elevation: 448 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.8	Metal debris over soft, damp, brown, blocky, SILT with trace fine sand. (Fill) Trace fine roots to 0.7 feet.	S-1@0.5' S-2@1.0'
0.8-1.5	Soft to medium stiff, moist, brown, SILT with trace clay. (FILL)	
1.5-3.5	Soft to medium stiff to stiff, moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-3@2.5'
3.5-4.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay.	
	Test pit terminated at 4.0 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-25
Approximate ground surface elevation: 448 Feet

Depth (feet)	Material Description	Sample No.
0.0-4.5	Wrecking yard debris over soft to medium stiff, damp, brown, SILT with occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite and wrecking yard debris. (Fill) Trace fine to medium roots to 1.0 feet.	S-1@0.5' S-2@2.0'
4.5-7.5	Medium stiff to stiff, moist, orange-brown, sandy SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
7.5-10.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-3@10.5'
	Test pit terminated at 10.5 feet on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-26
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.4	1-inch of asphalt over 3-inches of 5/8" minus crushed rock base.	S-1@0.5' MC=26%
0.4–1.1	Soft to medium stiff, damp to moist, brown, SILT with trace fine sand and occasional gravel (Topsoil prior to paving.) Trace fine to medium roots to 0.6 feet. Pocket penetrometer at 1.0 feet > 1.5 tsf.	S-2@1.0' MC=27%
1.1-4.5	Medium stiff to stiff, damp to moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders. Pocket penetrometer at 2.5 feet = A.5 tsf.	S-3@2.5' MC=37%
4.5-11.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay to silty SAND.	S-4@10.5' MC=46%
	Test pit terminated at 11.0 feet on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-27
Approximate ground surface elevation: 451 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.6	Grass over loose, damp to wet, brown silty GRAVEL and wrecking yard debris. (FILL). Trace fine to medium roots to 1.6 feet.	S-1@0.5’
0.6–1.3	Soft to medium stiff, damp, brown, SILT with trace fine sand and occasional gravel (Relic topsoil)	
1.3-3.0	Medium stiff to stiff, moist, orange-brown, sandy SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2@1.5’
3.0-10.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	
	Test pit terminated at 10.5 feet on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-28
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.8	Blackberry vines over loose, damp to wet, brown silty GRAVEL and wrecking yard debris. (FILL) Trace fine to medium roots to 1.5 feet.	S-1@0.5' MC=16%
0.8–1.5	Soft to medium stiff, damp to moist, dark brown, SILT with trace fine sand and occasional gravel. (Relic topsoil)	S-2@1.0' MC=32%
1.3-3.2	Medium stiff to stiff, moist, orange-brown grading to reddish-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-3@2.5' MC=31%
3.2-8.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite and boulders.	S-4@6.0' MC=57%
	Test pit terminated at 8.5 feet on a boulder on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-29
Approximate ground surface elevation: 449 Feet

Depth (feet)	Material Description	Sample No.
0.0-4.0	Grass over soft to medium stiff, damp to moist, brown, SILT with gravel and occasional asphalt debris. (Fill) Dense fine roots to 0.5 feet.	S-1@1.5'
4.0-7.5	Medium stiff to stiff, moist, orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2@5.0'
7.5-11.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	
	Test pit terminated at 11.0 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-30
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.8	Grass and gravel over soft to medium stiff, damp to moist, brown, SILT with gravel and occasional asphalt debris. (FILL) Moderate fine roots to 0.3 feet. Occasional gray, moderately weathered, round, basaltic andesite boulders.	S-1@1.0’
1.8-6.0	Medium stiff to stiff, moist, orange-brown grading to red-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
6.0-11.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	
	Test pit terminated at 11.5 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-31
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-5.0	Grass and gravel over soft to medium stiff, damp to moist, brown, SILT with gravel and occasional asphalt debris. (FILL) Moderate fine roots to 1.1 feet.	
5.0-9.5	Medium stiff to stiff, moist, orange-brown grading to red-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-1@6.0’ MC=25%
9.5-11.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-2@11.0’ MC=53%
	Test pit terminated at 11.0 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-32
Approximate ground surface elevation: 451 Feet

Depth (feet)	Material Description	Sample No.
0.0–1.0	Blackberry vines over loose, damp to moist, dark brown, SILT with gravel and occasional metal debris. (Topsoil/FILL) Moderate fine to medium roots to 1.2'.	S-1@0.5' MC=11%
1.0-1.7	Soft to medium stiff, damp, light brown, SILT with trace sand and occasional gravel and metal debris. (FILL)	S-2@1.3' MC=25%
1.7-3.0	Medium stiff, damp, light brown, SILT with occasional asphalt and metal debris. (FILL)	S-3@2.5' MC=20%
3.0-4.7	Medium stiff, damp, reddish-brown, SILT with occasional fine to medium roots.	
4.7-9.0	Medium stiff to stiff, moist, orange-brown grading to reddish-brown, sandy SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-4@7.5' MC=27%
9.0-11.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-5@9.5'

Test pit terminated at 11.0 feet on 11/2/01.
No groundwater seepage observed.
No caving observed.
Fill was from Molalla Avenue cut, approximately 50 years ago, according to Rocky Younger, property owner.

Test Pit TP-33
Approximate ground surface elevation: 451 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Short grass, blackberry vines, and metal debris over soft, damp, dark brown, SILT with trace fine sand and occasional pockets of gravel. (Topsoil/FILL) Moderate fine to medium roots to 1.0 feet.	S-1@0.8’
1.0-5.5	Medium stiff, damp, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
5.5-11.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	
	Test pit terminated at 11.5 feet on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-34
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-2.0	Short grass and metal debris over medium stiff to stiff, damp to moist, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-1@1.5’ MC=41%
2.0-12.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	S-2@9.5’ MC=66% S-3@12.0’ MC=62%
	Test pit terminated at 12.5 feet on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-35
Approximate ground surface elevation: 449 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Metal debris over loose, damp, dark brown, SILT with trace fine sand and occasional pockets of gravel and wrecking yard debris. (Topsoil/FILL) Moderate fine and medium roots to 1.0 feet.	S-1@0.5’
1.0-3.5	Medium stiff to stiff, damp to moist, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
3.5-10.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	
	Test pit terminated at 10.5 feet on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-36
Approximate ground surface elevation: 440 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Blackberry vines and metal debris over soft to medium stiff, damp to moist, brown, SILT with trace fine sand and wrecking yard debris (Topsoil/FILL) Moderate fine and medium roots to 1.0 feet. Pocket penetrometer at 1.0 feet = 1.5 tsf.	S-1@1.0’ MC=29%
1.0-5.0	Medium stiff to stiff, damp to moist, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Pocket penetrometer at 2.0 feet = 1.5 tsf. Pocket penetrometer at 2.5 feet = 2.5 tsf.	S-2@2.0’ MC=29%
5.0-11.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-3@10.5’ MC=50%
	Test pit terminated at 11.0 feet on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-37
Approximate ground surface elevation: 431 Feet

Depth (feet)	Material Description	Sample No.
0.0-5.0	Blackberry vines over soft to medium stiff, damp to moist, brown, SILT with significant large pieces of concrete and asphalt debris. (FILL) Moderate fine and medium roots to 1.4 feet.	S-1@1.0' MC=19%
5.0-8.0	Medium stiff to stiff, damp to moist, orange-brown grading to reddish-orange, sandy SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2@7.0' MC=35%
8.0-12.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-3@10.0' MC=50%
	Test pit terminated at 12.5 feet on a boulder on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-38
Approximate ground surface elevation: 431 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Blackberry vines and short grass over medium dense, moist to wet, brown, silty sandy GRAVEL with significant asphalt debris (FILL) Moderate fine and medium roots to 0.8 feet.	S-1@0.5'
1.0-5.5	Soft to medium stiff, damp, orange-brown SILT with significant large pieces of asphalt and concrete debris. (FILL)	S-2@2.0'
	Digging refusal at 5.5 feet due on concrete debris on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-39
Approximate ground surface elevation: 430 Feet

Depth (feet)	Material Description	Sample No.
0.0-3.5	Duff and asphalt debris over soft to medium stiff, damp to moist, orange-brown, SILT with some sand and occasional asphalt debris and 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. (FILL)	S-1@1.0' MC=46%
3.5-7.5	Soft to medium stiff, moist, brown, SILT with organics, and occasional wood and metal debris. (FILL)	S-2@4.0' MC=26% S-3@7.0' MC=28%
7.5-10.5	Medium stiff to stiff, damp to moist, orange-brown, sandy SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
10.5-13.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, rounded, basaltic andesite cobbles and boulders.	S-4@11.5' MC=42%
	Test pit terminated at 13.0 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-40
Approximate ground surface elevation: 440 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.9	Duff over soft, damp, brown, SILT with trace fine sand. (Topsoil) Sparse fine roots to 1.0 feet and sparse medium roots to 1.9 feet.	S-1@1.0' MC=23%
1.9-3.0	Medium stiff, damp, orange-brown, sandy SILT with trace clay and trace to some 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, rounded, basaltic andesite boulders. Pocket penetrometer at 2.0 feet >4.5 tsf.	S-2@2.5' MC=21%
3.0-10.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp to moist, reddish orange-brown silt with trace clay. Occasional gray, moderately weathered, rounded, basaltic andesite cobbles and boulders.	S-3@5.5' MC=21%
	Test pit completed at 10.0 feet on 11/3/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-41
Approximate ground surface elevation: 441 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.5	Duff over soft, damp to moist, brown, SILT with trace fine sand and occasional gravel. (Topsoil) Moderate fine to medium roots to 1.2 feet and sparse large roots to 1.5 feet.	S-1@0.5-2.0' S-1A@0.5-2.5'
1.5-2.5	Soft grading to stiff, damp, orange-brown, SILT with trace clay and trace to some 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, rounded, basaltic andesite boulders.	S-2@2.5' MC=26%
2.5-6.5	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp to moist, reddish orange-brown silt with trace clay. Occasional gray, moderately weathered, rounded, basaltic andesite cobbles and boulders.	S-3@5.5'
	Digging refusal at 10.0 feet on a boulder on 11/3/01. No groundwater seepage observed. No caving observed. Samples S-1 and S-1A were shelby tube samples.	

Test Pit TP-42
Approximate ground surface elevation: 432 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Soft to medium stiff, wet, brown grading to orange-brown, SILT with some sand, organic debris and roots to 3". (Topsoil)	
1.0-4.0	Soft grading to stiff, damp, orange-brown, SILT with trace clay and trace to some 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, rounded, basaltic andesite boulders.	
4.0-6.5	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp to moist, reddish orange-brown silt with trace clay. Occasional gray, moderately weathered, rounded, basaltic andesite cobbles and boulders to 3 feet in diameter.	
	Test pit completed at 6.5 feet on 11/2/01. No groundwater seepage observed. No caving observed.	

Test Pit TP-43
Approximate ground surface elevation: 426 Feet

Depth (feet)	Material Description	Sample No.
0.0-3.5	Medium stiff, moist to wet, orange-brown, sandy SILT with some gravel, clay, and debris consisting of concrete, asphalt, crushed rock, and wire. (Fill)	S-1@1'
3.5-7.8	Soft to medium stiff, wet, dark gray-brown, SILT with some clay, sand and gravel. Occasional clasts of concrete, asphalt, brick and trace organic material. (Fill)	S-2@5'
7.8-8.0	Pine needles and thin branches to 1-inch in diameter. (Fill)	
8.0-11.0	Large andesitic boulder encountered at east end of test pit. Boulder appeared to be in a matrix of stiff to medium stiff, gray-brown SILT. (Fill)	
	Test pit completed at 11.0 feet on 3/4/02. Very slight seepage observed at 9 feet at time of exploration. No caving observed.	

Test Pit TP-44
Approximate ground surface elevation: 421.5 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.3	Grass sod.	
0.3-6.0	Soft to medium stiff, wet, orange-brown, sandy SILT with some clay and gravels. Occasional clasts of asphalt and concrete to 2 feet in diameter. 2-½ foot diameter andestitic boulder encountered at 1.5 feet. (Fill)	S-1@2'
6.0-8.0	Soft grading to stiff, wet, orange-brown, SILT with some clay and trace to some gray, sub-rounded clasts of severely weathered basaltic ardisite.	
8.0-11.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular to sub-rounded, poorly sorted basaltic andesite clasts in a matrix of medium stiff to stiff, moist, orange-brown, sandy SILT with trace clay.	
	Test pit completed at 11.0 feet on 3/4/02. No groundwater observed at time of exploration. No caving observed.	

Test Pit TP-45
Approximate ground surface elevation: 433.5 Feet

Depth (feet)	Material Description	Sample No.
0.0-2.5	Soft grading to stiff, moist, orange-brown, SILT with trace to some clay, sand, and 3 inch minus fragments of severely weathered basaltic andesite.	S-1@1'
2.5-6.0	Very dense, damp, gray, moderately weathered andesitic boulders to 3 feet in diameter in a matrix of medium stiff to stiff, moist to wet, orange-brown, SILT with trace clay to silty SAND with trace clay. Boulders sub-angular to rounded.	
	Test pit completed at 6.0 feet with refusal on 6-foot diameter andesitic boulder. No groundwater observed at time of exploration. No caving observed.	

Test Pit TP-46
Approximate ground surface elevation: 438 Feet

Depth (feet)	Material Description	Sample No.
0.0-6.0	Concrete and asphalt debris with matrix of sandy GRAVEL with some silt (dirty crushed rock). Approximately 40% asphalt and 20% concrete based on visual estimation. (Fill)	
6.0-7.0	Soft to medium stiff, moist, orange-brown, SILT with some sand and clay.	
	Test pit completed at 7 feet on 3/4/02. No groundwater seepage observed at time of exploration. No caving observed.	

Test Pit TP-47
Approximate ground surface elevation: 435 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.2	Grass sod.	
0.2-3.0	Asphalt debris in matrix of sandy gravel with some silt (crushed rock). Approximately 40-50% asphalt based on visual estimation. (Fill)	S-1@1'
3.0-6.0	Medium stiff, moist, orange-brown, sandy SILT with some gravel and trace clay. (Fill)	
6.0-8.5	Soft grading to stiff, moist, orange-brown, SILT with trace to some clay, sand, and 3 inch minus fragments of severely weathered basaltic andesite.	S-2@4'
8.5-11.0	Very dense, damp, gray, moderately weathered andesitic boulders to 3 feet in diameter in a matrix of medium stiff to stiff, moist to wet, orange-brown, SILT with trace clay to silty SAND with trace clay. Boulders sub-angular to rounded.	
	Test pit completed at 11.0 feet on 3/4/02. No groundwater seepage observed at time of exploration. No caving observed.	

Test Pit TP-48
Approximate ground surface elevation: 433 Feet

Depth (feet)	Material Description	Sample No.
0.0-5.5	Stiff to medium stiff, moist to wet, orange-brown, SILT with some sand and trace clay and occasional clasts of asphalt and concrete. (Fill)	
5.5-10.0	Randomly oriented rebar reinforced concrete debris from 6 to 8 inches thick and up to 4 feet across. Approximately 5% of debris consisted of rebar, asphalt, and wire. (Fill)	
	Test pit completed at 10.0 feet on 3/4/02 due to refusal on large concrete debris. No groundwater seepage observed at time of exploration. No caving observed.	

Test Pit TP-1A
Approximate ground surface elevation: 430 Feet

Depth (feet)	Material Description	Sample No.
0.0-6.0	Duff and asphalt debris over very soft to medium stiff, moist, reddish-brown, SILT with some sand and occasional asphalt debris and 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. (FILL)	S-1 @ 0.5' S-2 @ 2'
6.0-9.0	Soft to medium stiff, moist, gray SILT with organic and metal debris and occasional cobbles of of severely to highly weathered, highly fractured, basaltic andesite. (FILL)	S-3 @ 8'
9.0-12.0	Medium stiff, moist, orange-red-brown SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-4 @ 9.5'
	Test pit terminated at 12.0 feet on 03/01/2002. Slight groundwater seepage observed at 9.0 feet, perched on native soils. No caving observed.	

Test Pit TP-2A
Approximate ground surface elevation: 430 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.8	Duff over 7-inches of asphalt over 3-inches of 3/8-inch minus crushed rock base.	S-1 @ 1'
0.8-8.0	Soft to medium stiff, damp, reddish-brown SILT with trace clay with occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. (FILL)	S-2 @ 8'
8.0-9.0	Soft, damp to moist, light gray to dark gray, SILT with trace clay and wood, metal, glass, and rubber debris. (FILL)	
9.0-11.0	Medium stiff, moist, orange-red-brown SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
	Test pit terminated at 11.0 feet on 03/01/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-3A
Approximate ground surface elevation: 430 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.3	Metal debris over soft, damp to moist, gray SILT with trace clay and occasional fine rootlets. Slight to moderate odor of oil impact. (FILL)	
0.3-7.5	Soft to medium stiff, damp, reddish-brown SILT with trace clay with occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. (FILL)	S-1 @ 0.5' S-2 @ 2'
7.5-8.0	Soft, damp to moist, orange-brown silt with trace clay and fine rootlets. (Relict topsoil horizon)	
8.0-12.0	Medium stiff, moist, orange-red-brown SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	
	Test pit terminated at 12.0 feet on 03/01/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-4A
Approximate ground surface elevation: 430 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.5	Metal debris over 5/8-inch minus crushed rock base. Very strong odor of oil impact. Visible free product (appears to be crankcase oil) in crushed rock. (FILL)	S-1 @ 1'
1.5-8.0	Soft to medium stiff, damp, reddish-brown SILT with trace clay with occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. (FILL)	S-2 @ 3' S-3 @ 7'
8.0-10.0	Medium stiff, moist, orange-red-brown SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
	Test pit terminated at 12.0 feet on 03/01/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-5A
Approximate ground surface elevation: 430 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Metal debris and grass over very soft, damp, gray SILT with trace clay and gravel. (FILL)	S-1 @ 1'
1.0-8.5	Soft to medium stiff, damp, reddish-brown SILT with trace clay with occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. (FILL)	S-2 @ 8'
8.5-9.0	Loose, damp, brown-gray SILT with trace clay, occasional gravel and fine rootlets. (Relict topsoil horizon.)	
9.0-11.0	Medium stiff, damp, orange-red-brown SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	
	Test pit terminated at 11.0 feet on 03/01/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-6A
Approximate ground surface elevation: 431 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Blackberry vines and short grass over soft, damp, dark gray SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. (FILL)	
1.0-6.0	Soft to medium stiff, damp, red-brown SILT with occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite and large pieces of asphalt and concrete debris. (FILL)	S-1@2.0'
6.0-6.5	Medium dense, damp, gray sandy SILT with some gravel. (FILL)	
	Digging refusal at 6.5 feet due on concrete debris on 03/01/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-7A

Approximate ground surface elevation: 430 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.4	8-inches of asphalt over 8-inches of 3/8-inch minus crushed rock base. Very strong odors of gasoline and weathered gasoline. Gasoline dissolving asphalt.	
1.4-2.5	Soft, moist, red-brown SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite and gravel. (FILL)	S-1 @ 1.5'
2.5-5.0	Soft to medium stiff, moist, red-brown SILT with trace clay and occasional 3-inch minus, gray angular fragments of severely to highly weathered, highly fractured basaltic andesite.	S-2 @ 3.5'
5.0-9.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	S-3 @ 6' S-4 @ 6.5'
	Test pit terminated at 9.0 feet on 03/01/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-8A

Approximate ground surface elevation: 430 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Soft, damp to moist, dark brown SILT with trace clay and occasional gravel.	
1.0-3.5	Soft to medium stiff, damp, red-brown SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite and gravel.	S-1 @ 3'
3.5-7.5	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay	S-2 @ 6.5'
	Test pit terminated at 7.5 feet on 03/01/2002. Moderate groundwater seepage observed at 6.5 feet. Slight caving observed below 6.5 feet.	

Test Pit TP-9A
Approximate ground surface elevation: 440 Feet

Depth (feet)	Material Description	Sample No.
0.0-3.5	Medium dense, damp, dark gray silty sandy GRAVEL with occasional cobbles. (FILL)	S-1 @ 1.5'
3.5-5.5	Soft to medium stiff, damp to moist, orange-red-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2 @ 3.5'
5.5-9.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	S-3 @ 9.5'
	Test pit terminated at 9.5 feet on 03/01/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-10A
Approximate ground surface elevation: 440 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.5	Loose to medium dense, damp, gray-brown SILT with trace clay and trace fine sand and occasional fine highly weathered, highly fractured basaltic andesite gravel.	S-1 @ 1'
1.5-4.5	Soft to medium stiff, damp, orange-red-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2 @ 2'
4.5-6.5	Medium stiff to stiff, damp, red-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
6.5-7.0	Medium dense to very dense, gray, highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	S-3 @ 7'
	Test pit terminated at 7.0 feet on 03/01/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-11A

Approximate ground surface elevation: 448 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.8	Sparse grass and metal debris over 5/8-inch minus crushed rock base. (FILL)	
0.8-2.0	Soft to medium stiff, damp, gray, SILT with trace clay and occasional metal, rubber, and glass debris. Slight odor of weathered gasoline and slight staining observed. (FILL)	S-1 @ 1.5'
2.0-4.5	Soft to medium stiff, damp, red-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-2 @ 3'
4.5-11.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay.	S-3 @ 5.5' S-4 @ 11'
	Test pit terminated at 11.0 feet on 03/02/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-12A

Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Grass and blackberry vines over soft, damp, dark brown, SILT with trace fine sand, trace clay and occasional gray, highly weathered, round, basaltic andesite gravel.	
1.0-4.0	Medium stiff to stiff, damp to moist, reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	
4.0-10.0	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, wet grading to damp, yellow silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-1 @ 4'
	Test pit terminated at 10.0 feet on 03/02/2002 Very slight groundwater seepage observed at 4 feet. No caving observed.	

Test Pit TP-13A

Approximate ground surface elevation: 449 Feet

Depth (feet)	Material Description	Sample No.
0.0-1.0	Metal debris over loose, damp, dark brown, SILT with trace fine sand and occasional pockets of gravel and debris. (Topsoil/FILL)	
1.0-4.0	Medium stiff to stiff, damp to moist, reddish-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-1@1'
4.0-9.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles.	S-2 @ 4.5' S-3 @ 9'

Test pit terminated at 9.5 feet on 03/02/2002.
No groundwater seepage observed.
No caving observed.

Test Pit TP-14A

Approximate ground surface elevation: 449 Feet

Depth (feet)	Material Description	Sample No.
0.0-2.0	Loose, damp, gray, SILT with trace clay and occasional pockets of 5/8-inch minus gravel and debris. Slight odor of oil impact to upper foot of soils, slight staining in upper foot of soils. (FILL)	S-1@1'
2.0-4.5	Soft to medium stiff, damp to moist, reddish-orange-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2 @ 2.5'

Test pit terminated at 4.5 feet on 03/02/2002.
No groundwater seepage observed.
No caving observed.

Test Pit TP-15A

Approximate ground surface elevation: 451 Feet

Depth (feet)	Material Description	Sample No.
0.0-4.5	5/8-inch minus crushed rock base over soft to medium stiff, damp, gray brown, SILT with trace sand and occasional gravel and asphalt debris. (FILL)	S-1 @ 2'
4.5-7.5	Soft to medium stiff, damp, reddish-brown, sandy SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2 @ 5'
7.5-9.5	Medium dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-3 @ 8.5'
9.5-11.5	Dense to very dense, gray, highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, reddish-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-4 @ 11.5'
	Test pit terminated at 11.5 feet on 03/02/2002 No groundwater seepage observed. No caving observed. Cesspool cistern discovered at 1.5 to 5 feet. Test pit relocated to north of cistern, adjacent.	

Test Pit TP-16A

Approximate ground surface elevation: 451 Feet

Depth (feet)	Material Description	Sample No.
0.0-0.5	Soft, damp, dark brown, SILT with trace fine sand and occasional pockets of gravel. (Topsoil/FILL)	
0.5-2.5	Soft, damp, orange-brown grading to reddish-orange, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-1 @ 2'
2.5-9.5	Medium dense to very dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-2 @ 5' S-3 @ 8.5'
	Test pit terminated at 9.5 feet on 03/02/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-17A
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-4.0	4-inches of asphalt over soft, damp, orange-brown grading to reddish-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-1 @ 1' S-2 @ 3'
4.0-10.0	Medium dense grading to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay to silty SAND.	S-3 @5.5' S-4 @ 9'

Test pit terminated at 10.0 feet on 03/02/2002.
No groundwater seepage observed.
No caving observed.

Test Pit TP-18A
Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-6.0	Broken asphalt over soft grading to medium stiff, damp, orange-brown grading to reddish-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-1 @ 3'
6.0-10.0	Medium dense grading to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay to silty SAND.	S-2 @ 6' S-3 @ 10'

Test pit terminated at 10.0 feet on 03/02/2002.
No groundwater seepage observed.
No caving observed.

Test Pit TP-19A

Approximate ground surface elevation: 451 Feet

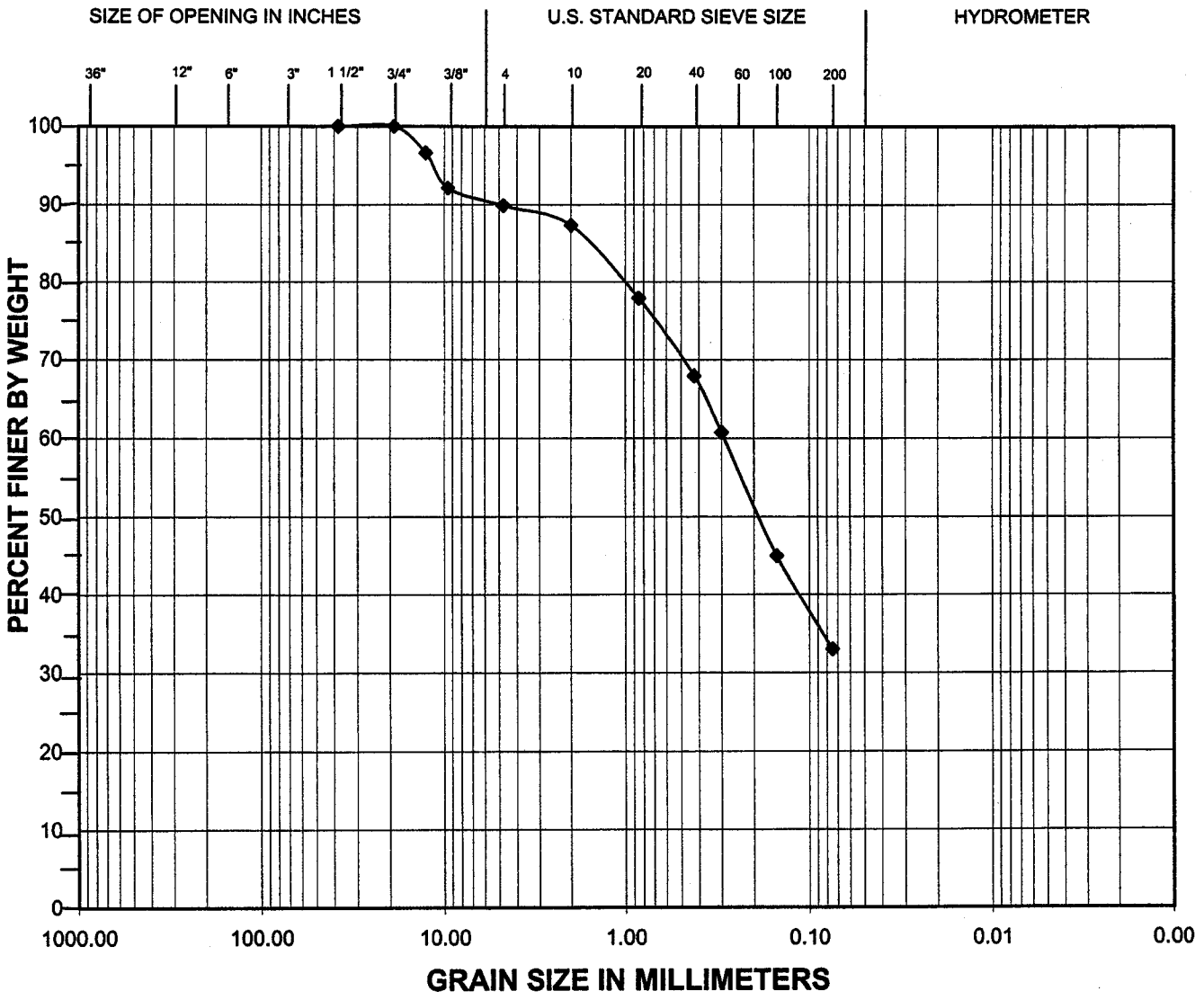
Depth (feet)	Material Description	Sample No.
0.0-1.5	2-inches of 5/8-inch minus crushed rock over soft, damp to moist, dark brown-gray, SILT with trace clay, occasional gravel and occasional metal debris. (FILL)	S-1 @ 1'
1.5-5.0	Medium stiff to stiff, moist, orange-brown, sandy SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2 @ 3'
5.0-8.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-3 @ 7'
	Test pit terminated at 8.0 feet on 03/02/2002. No groundwater seepage observed. No caving observed.	

Test Pit TP-20A

Approximate ground surface elevation: 450 Feet

Depth (feet)	Material Description	Sample No.
0.0-3.5	Gravel over soft to medium stiff, damp, reddish-brown, SILT with gravel and trace clay and occasional asphalt debris. Occasional gray, moderately weathered, round, basaltic andesite boulders. (FILL).	S-1 @ 2'
3.5-4.0	Soft to medium stiff, damp, brown, SILT with trace clay and fine rootlets. (Relict topsoil horizon.)	
4.0-9.0	Medium stiff, damp, orange-brown grading to reddish-brown, SILT with trace clay and occasional 3-inch minus, gray, angular fragments of severely to highly weathered, highly fractured, basaltic andesite.	S-2 @ 4' S-3 @ 7'
9.0-10.0	Medium dense to dense, gray, severely to highly weathered, highly fractured, angular, poorly sorted, basaltic andesite clasts in a matrix of medium stiff to stiff, damp to wet, orange-brown silt with trace clay. Occasional gray, moderately weathered, round, basaltic andesite cobbles and boulders.	S-4 @ 9.5'
	Test pit terminated at 10.0 feet on 03/02/2002. Moderate groundwater seepage observed at 9.5 feet. No caving observed.	

GRAIN SIZE DISTRIBUTION ASTM D422



		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

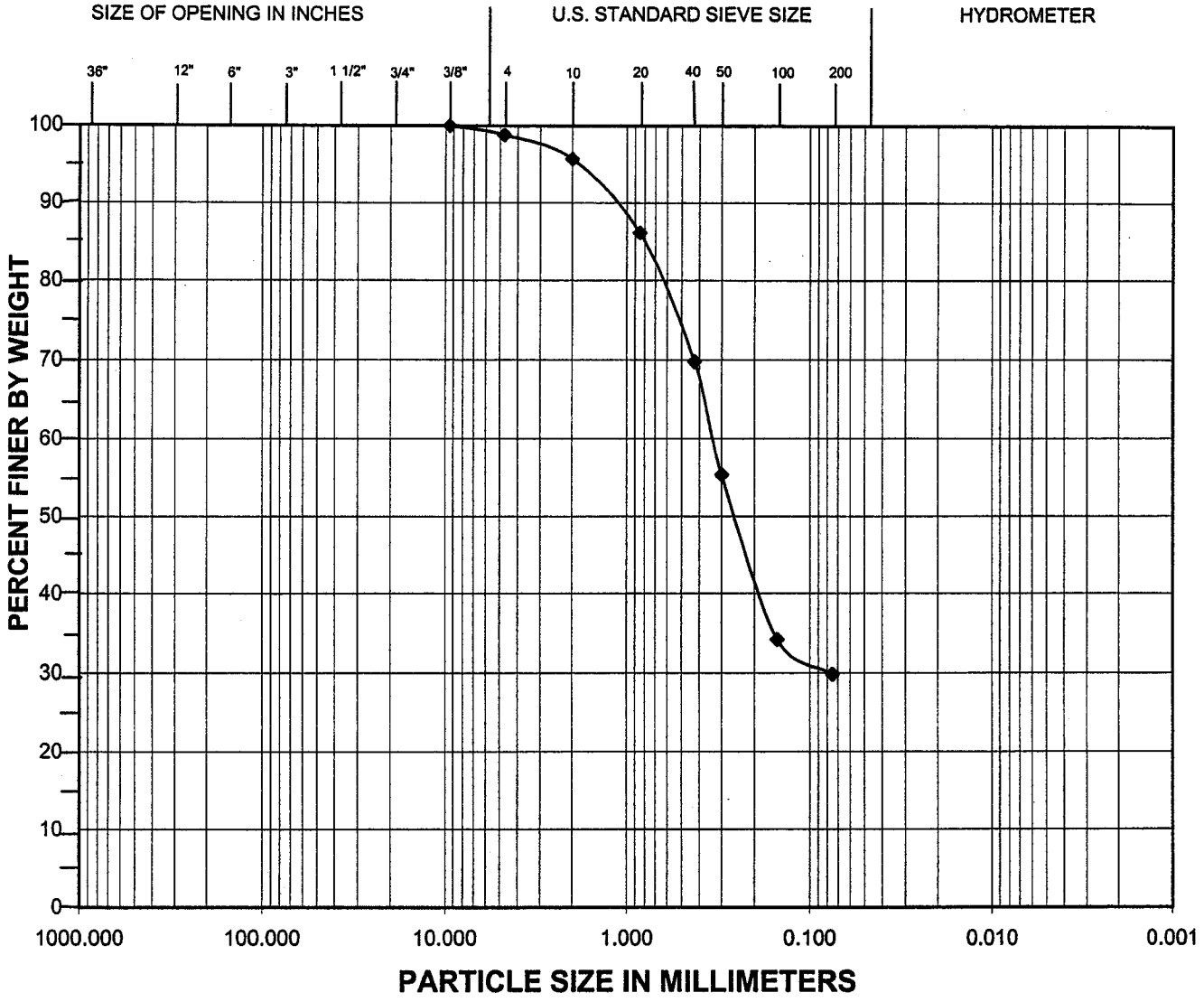
Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
B-4	S-4	10'	49	33	silty SAND w/ some gravel

ZIPPER ZEMAN ASSOCIATES, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTING	PROJECT NO: J-1200 DATE OF TESTING: 11/7/01	PROJECT NAME: Oregon City Retail

GRAIN SIZE ANALYSIS

Test Results Summary

ASTM D1140, D422



		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Comments:

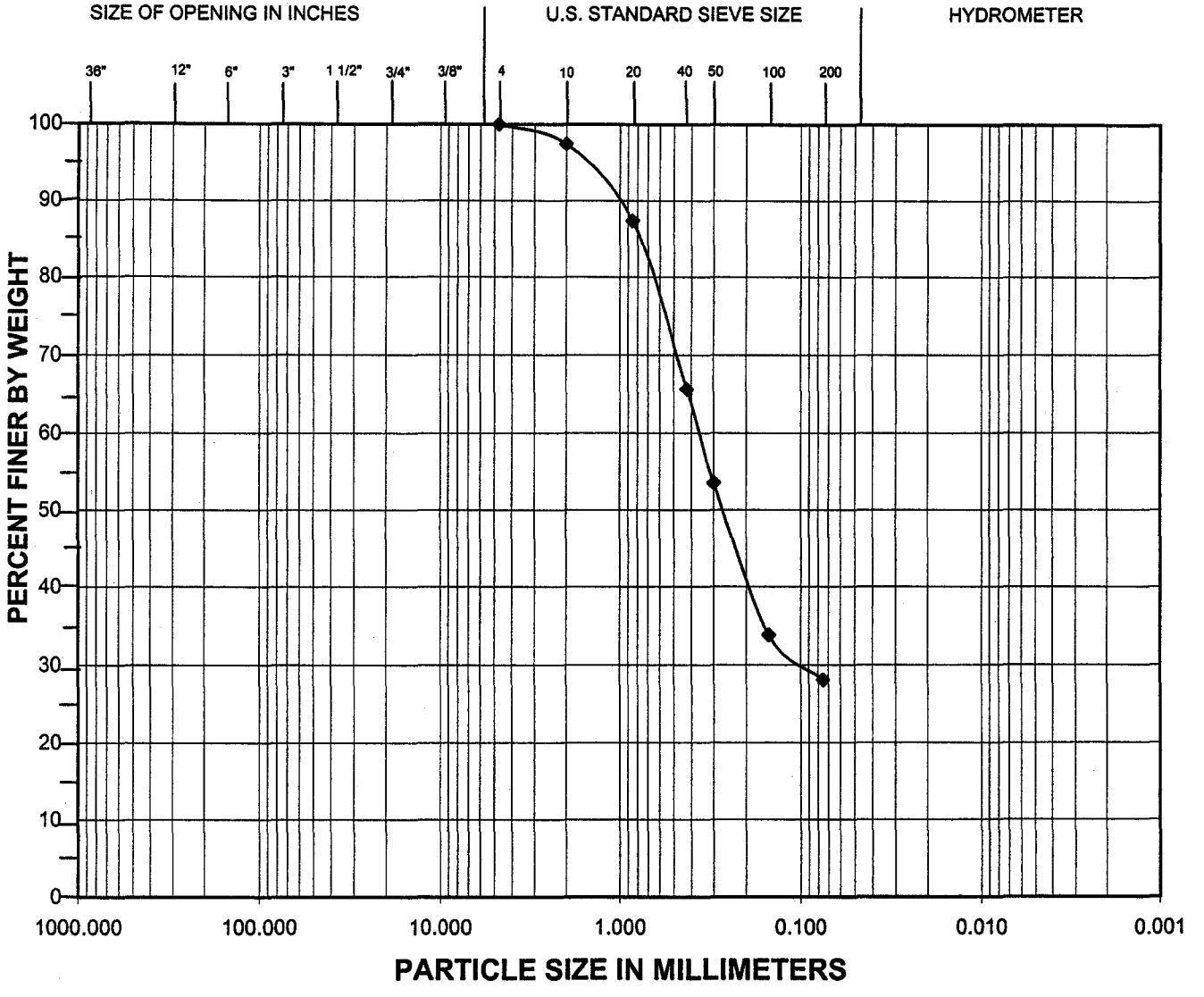
Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
B-12	S-4	10.0	59	29.8	silty SAND with trace gravel

Zipper Zeman Associates, Inc. Geotechnical and Environmental Consulting	PROJECT NO: J-1200 DATE OF TESTING: 5/17/02	PROJECT NAME: Oregon City Retail

GRAIN SIZE ANALYSIS

Test Results Summary

ASTM D1140, D422



		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Comments:

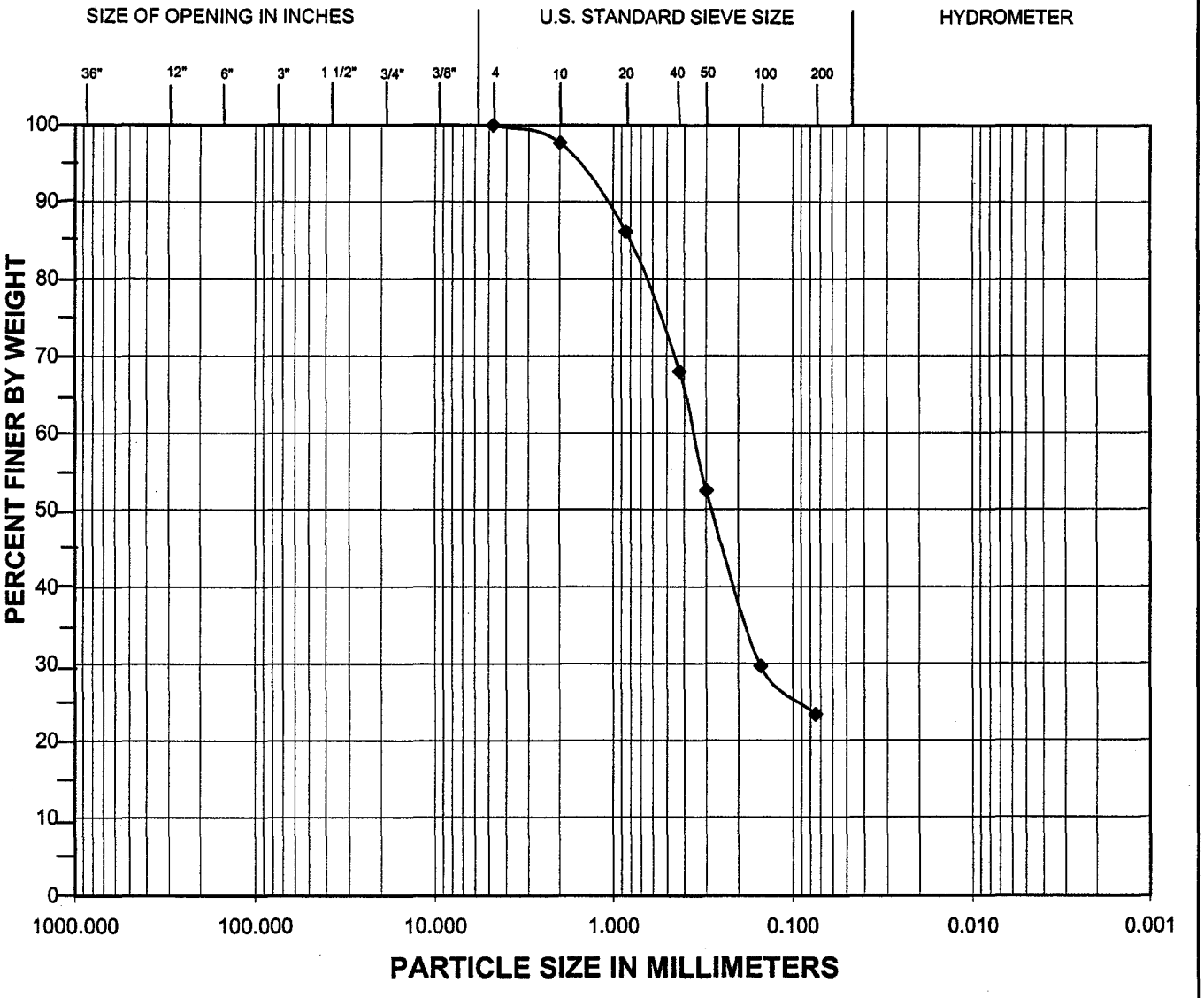
Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
B-13	S-3	7.5	63	28.1	silty SAND

Zipper Zeman Associates, Inc. Geotechnical and Environmental Consulting	PROJECT NO: J-1200 DATE OF TESTING: 5/15/02	PROJECT NAME: Oregon City Retail

GRAIN SIZE ANALYSIS

Test Results Summary

ASTM D1140, D422



		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Comments:

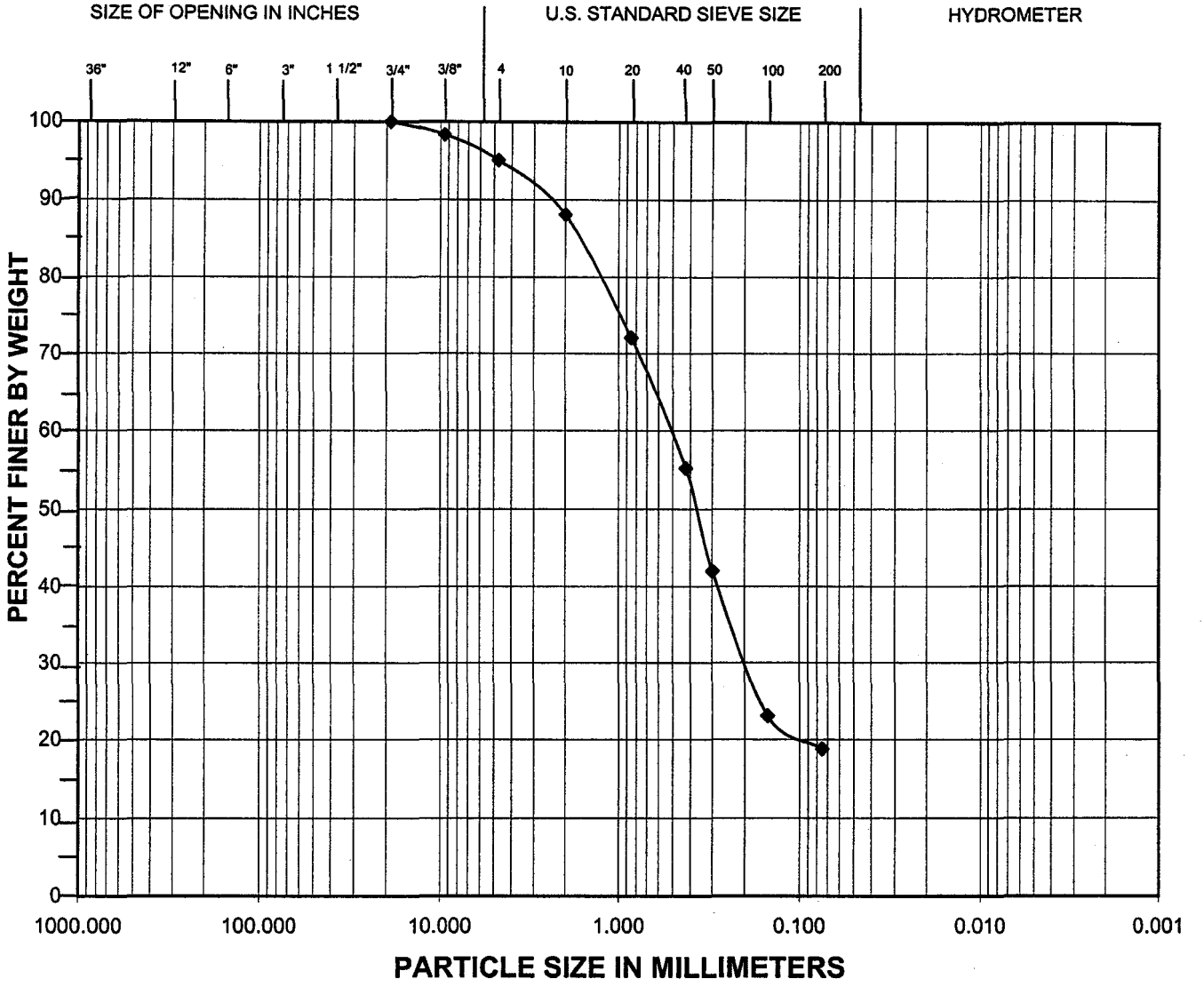
Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
B-15	S-2	5.0	54	23.3	silty SAND

Zipper Zeman Associates, Inc. Geotechnical and Environmental Consulting	PROJECT NO: J-1200 DATE OF TESTING: 5/15/02	PROJECT NAME: Oregon City Retail

GRAIN SIZE ANALYSIS

Test Results Summary

ASTM D1140, D422



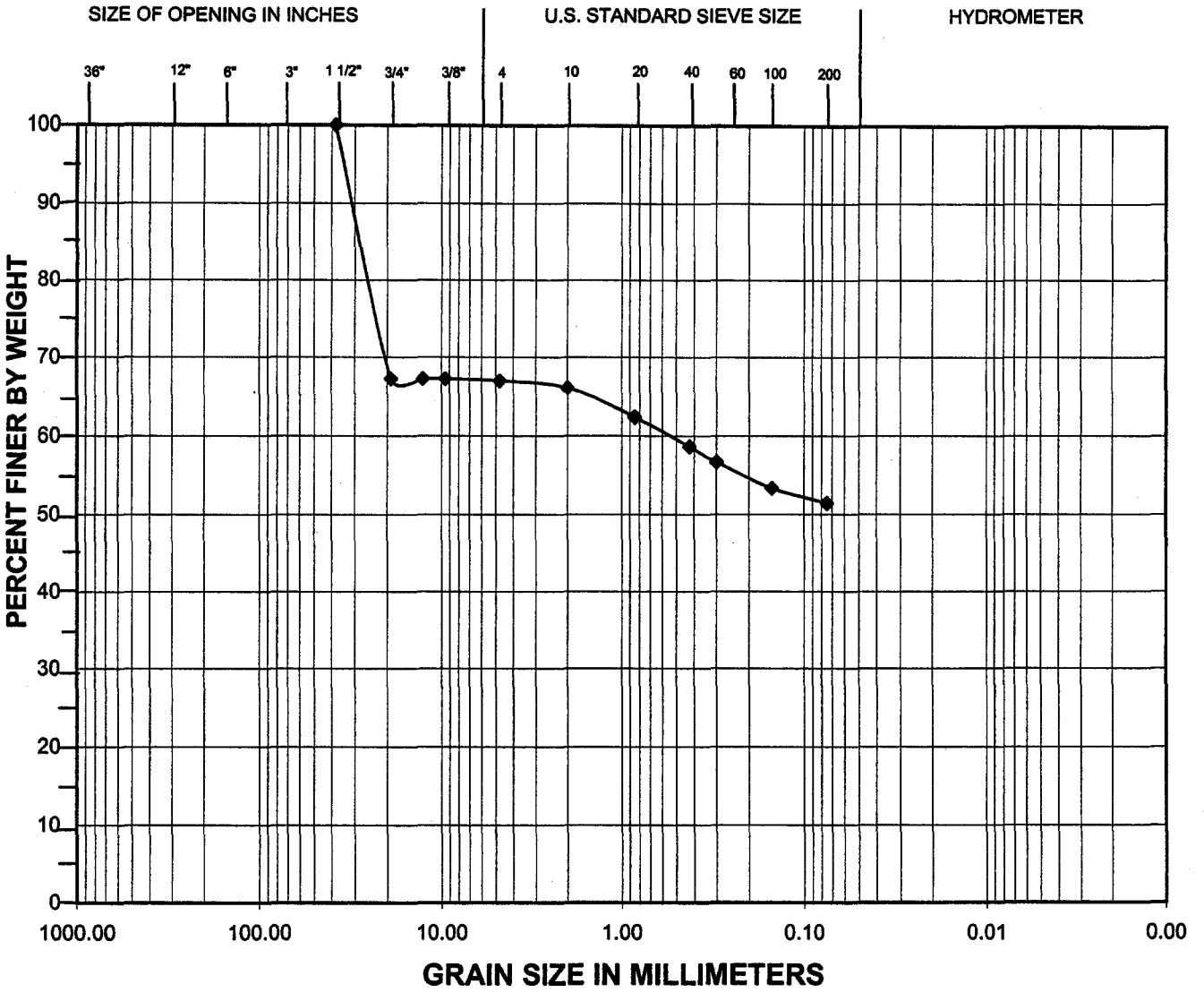
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Comments:

Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
B-20	S-2	5.0	38	18.8	silty SAND with trace to some gravel

Zipper Zeman Associates, Inc. Geotechnical and Environmental Consulting	PROJECT NO: J-1200 DATE OF TESTING: 5/17/02	PROJECT NAME: Oregon City Retail

GRAIN SIZE DISTRIBUTION ASTM D422

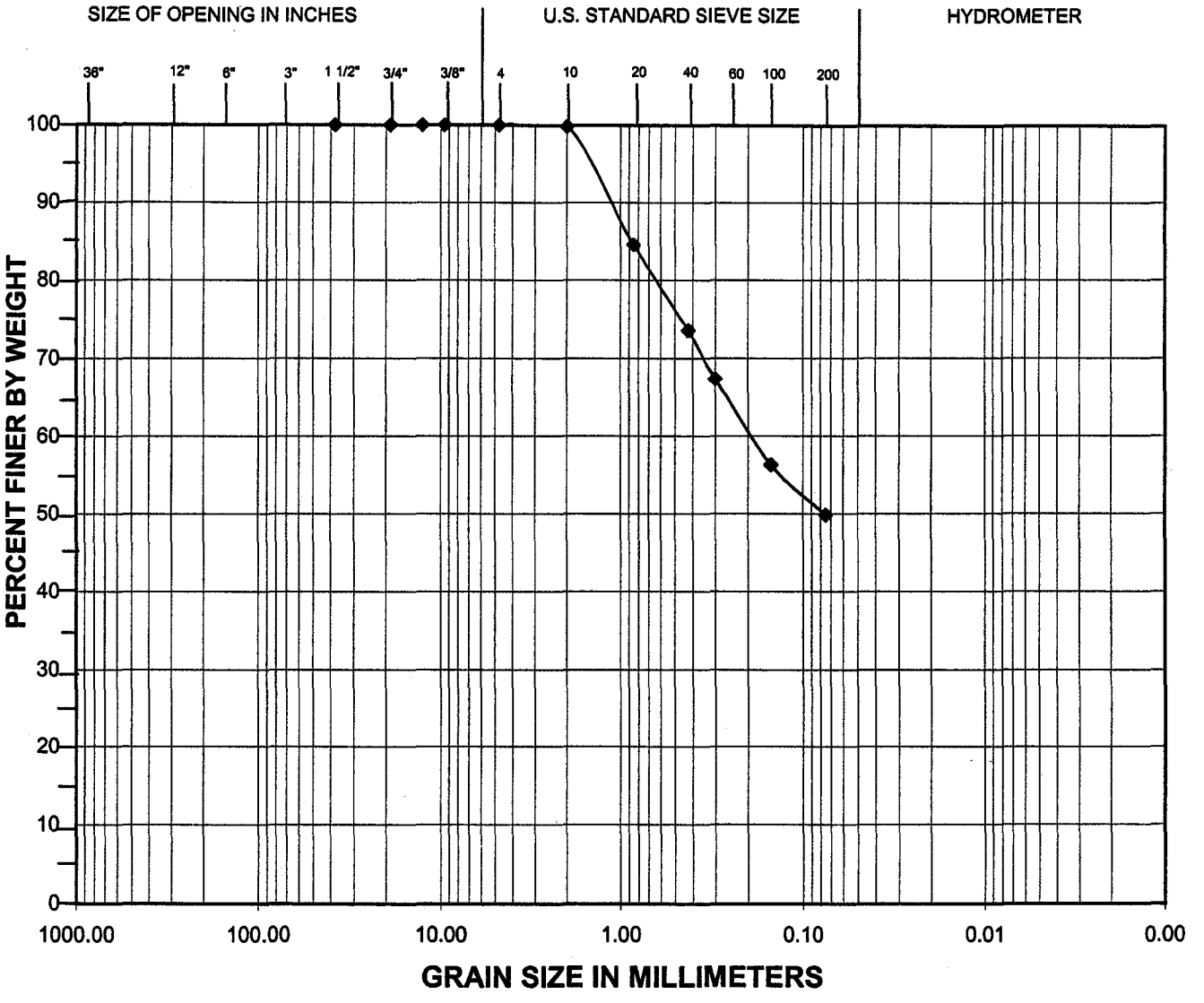


		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
TP-1	S-2	2'	16	51	sandy, gravelly,SILT

ZIPPER ZEMAN ASSOCIATES, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTING	PROJECT NO: J-1200 DATE OF TESTING: 11/7/01	PROJECT NAME: Organ City Retail

GRAIN SIZE DISTRIBUTION ASTM D422

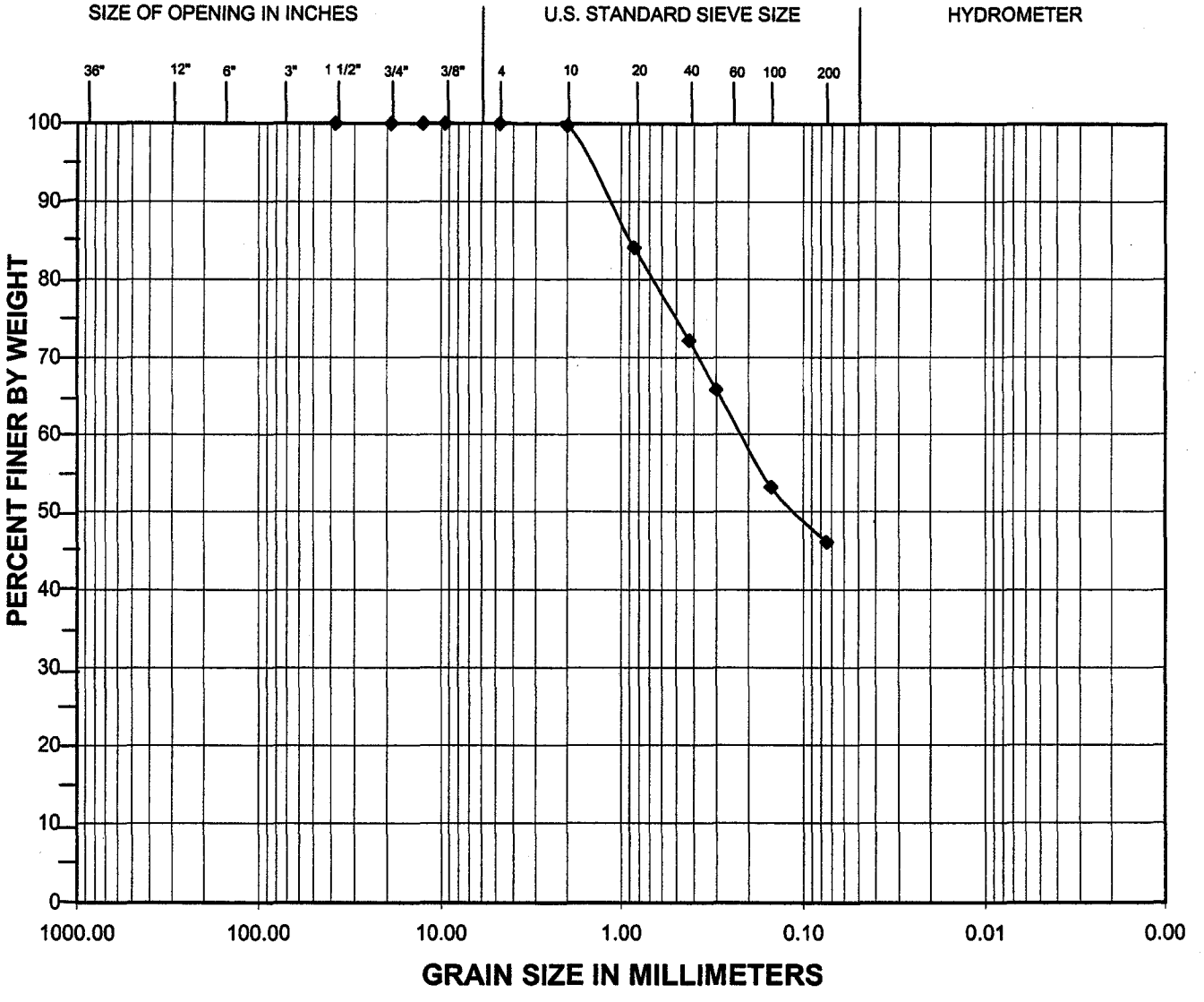


		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
TP-2	S-2	3.5'	31	49.8	silty SAND

ZIPPER ZEMAN ASSOCIATES, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTING	PROJECT NO: J-1200 DATE OF TESTING: 11/8/01	PROJECT NAME: Oregon City Retail

GRAIN SIZE DISTRIBUTION ASTM D422

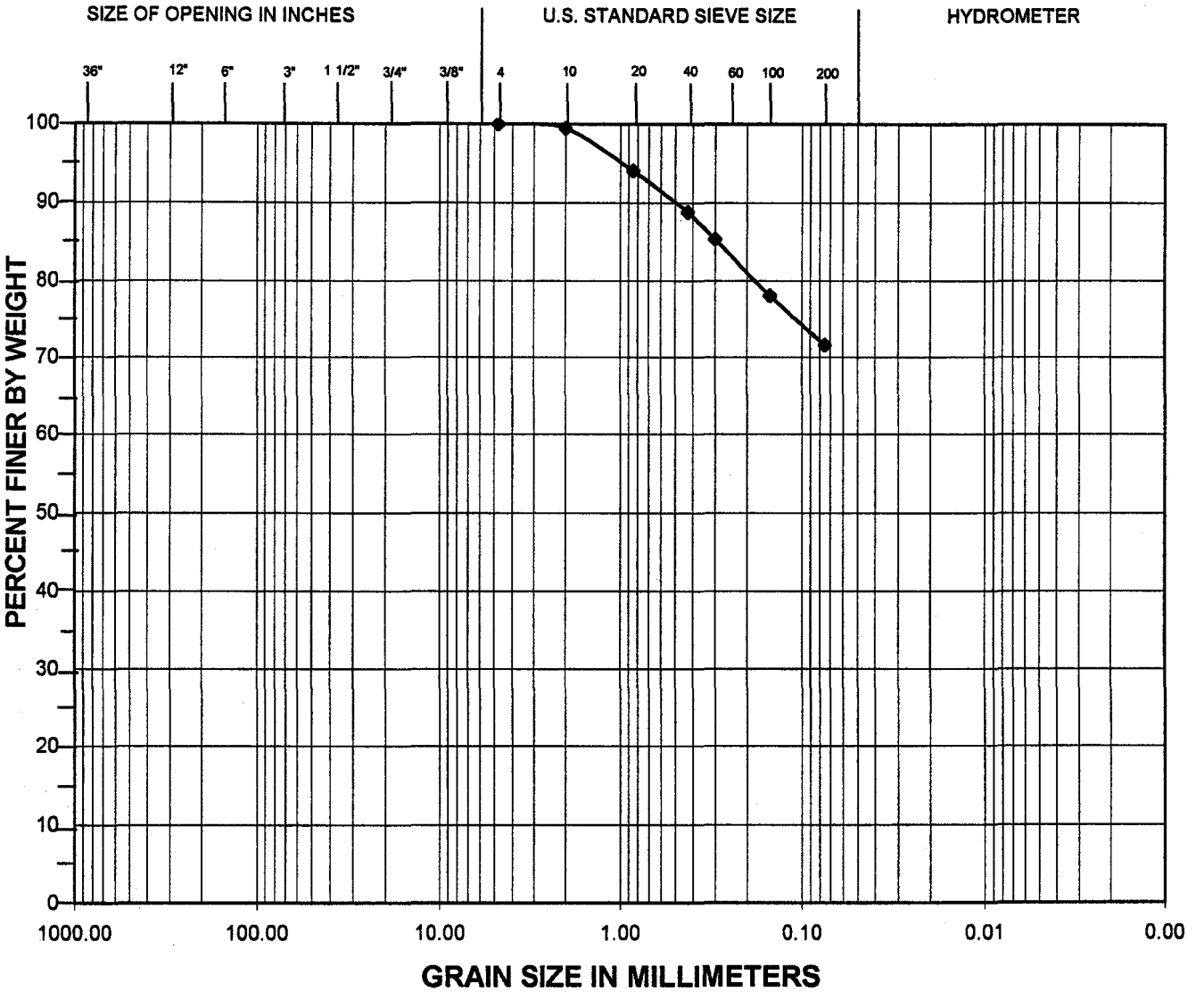


		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
TP-26	S-4	10.5'	60	46.1	silty SAND

ZIPPER ZEMAN ASSOCIATES, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTING	PROJECT NO: J-1200 DATE OF TESTING: 11/8/01	PROJECT NAME: Oregon City Retail

GRAIN SIZE DISTRIBUTION ASTM D422

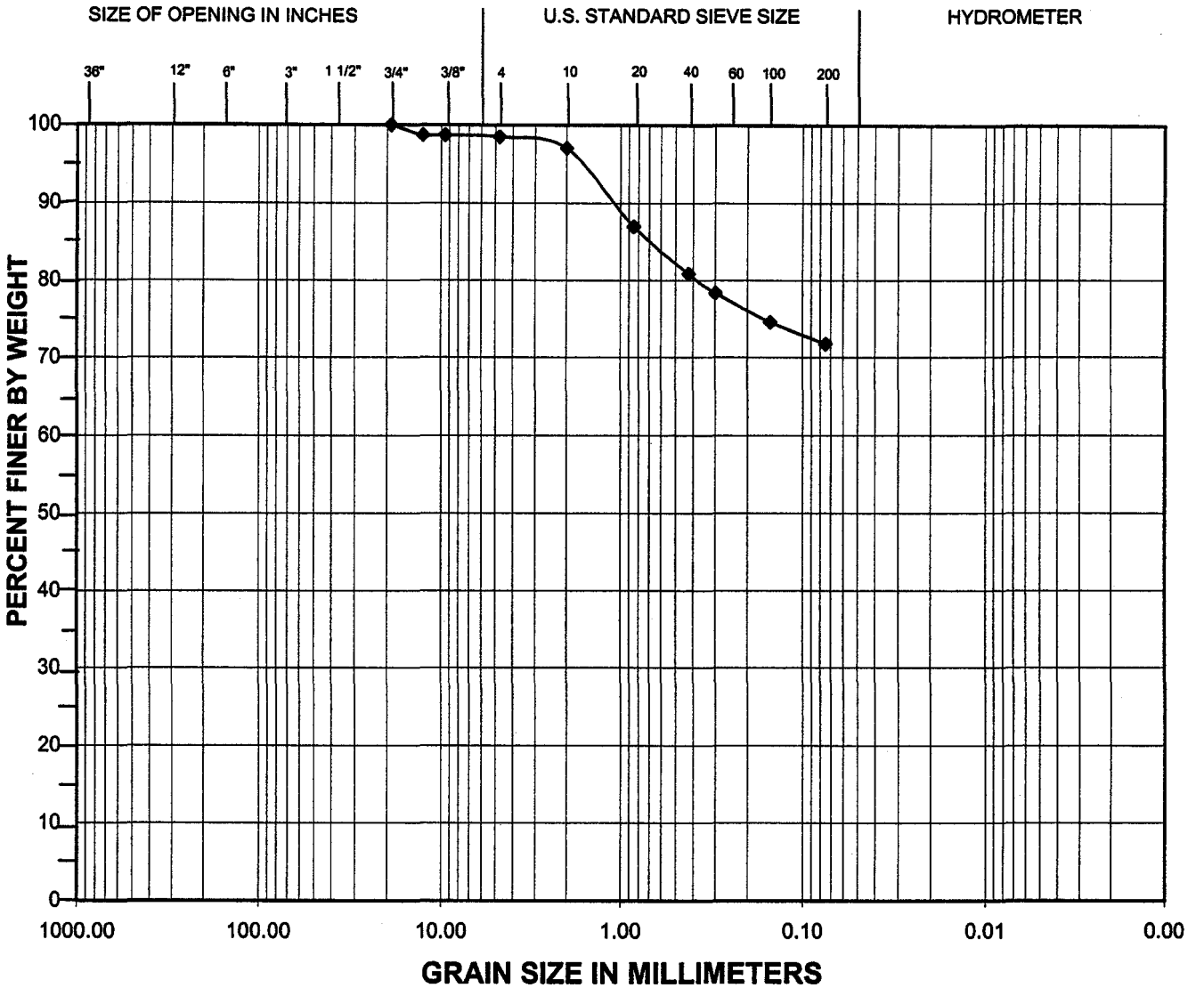


		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
TP-32	S-4	7.5'	27	72	sandy SILT

ZIPPER ZEMAN ASSOCIATES, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTING	PROJECT NO: J-1200 DATE OF TESTING: 11/07/2001	PROJECT NAME: Oregon City Retail

GRAIN SIZE DISTRIBUTION ASTM D422

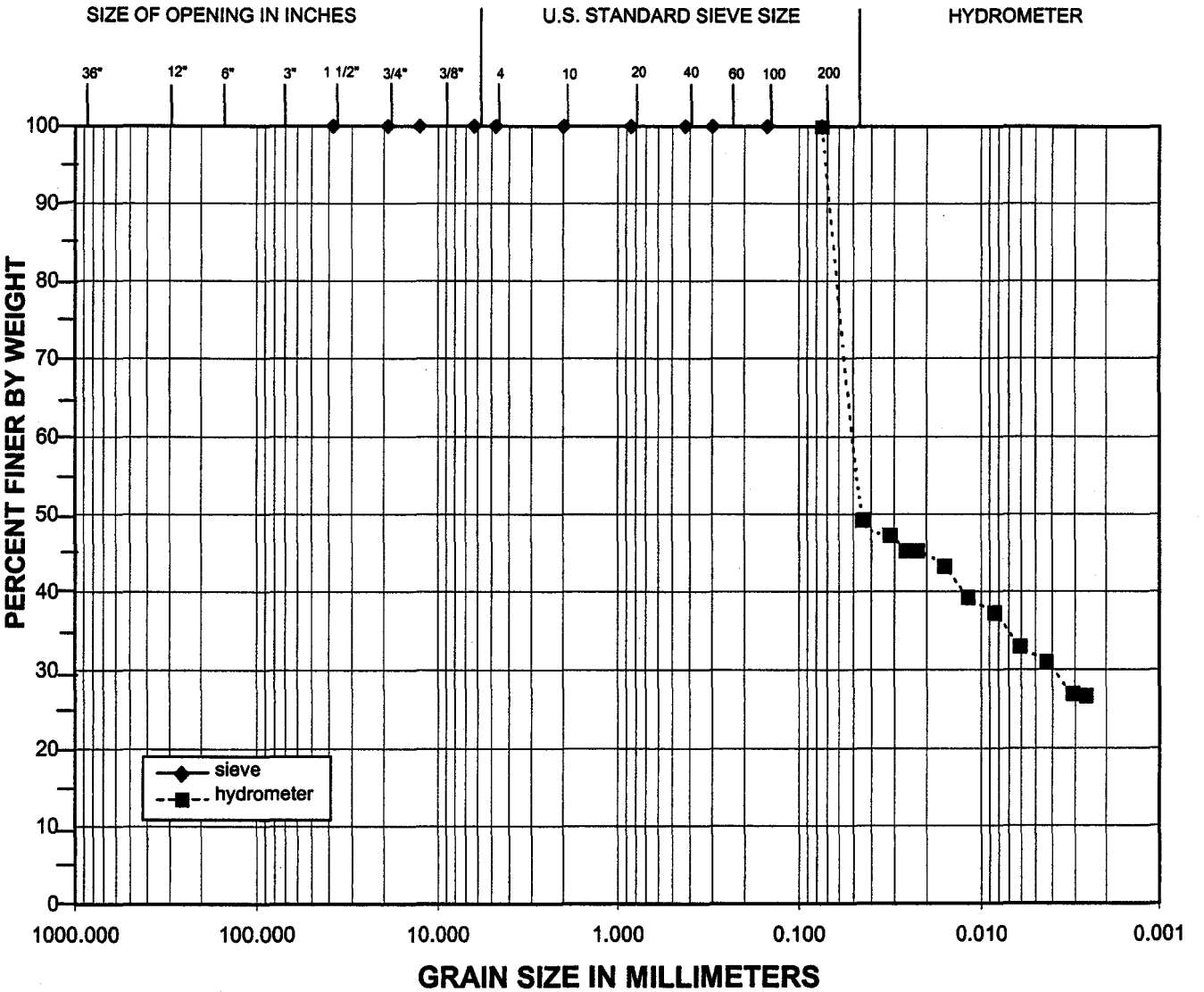


		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
TP-40	S-2	2.5'	21	72	sandy, SILT w/ trace gravel

ZIPPER ZEMAN ASSOCIATES, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTING	PROJECT NO: J-1200 DATE OF TESTING: 11/7/01	PROJECT NAME: Oregon City Retail

GRAIN SIZE DISTRIBUTION ASTM D 422

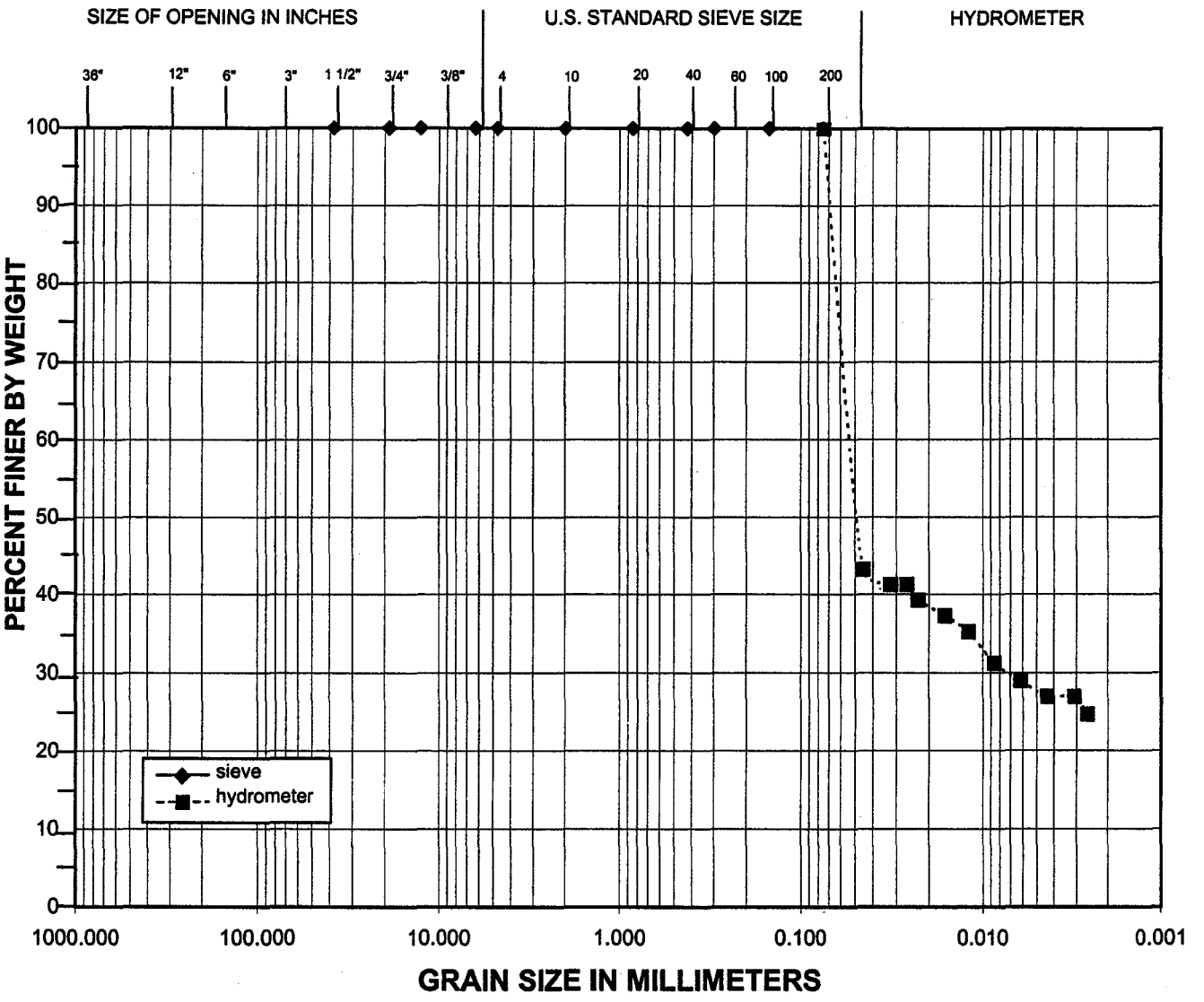


		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
B-1	S-2	5'	48	100	clayey, SILT

ZIPPER ZEMAN ASSOCIATES, INC GEOTECHNICAL AND ENVIRONMENTAL CONSULTING	PROJECT NO: J-1200 DATE OF TESTING: 11/9/01	PROJECT NAME: Oregon City Retail

GRAIN SIZE DISTRIBUTION ASTM D 422



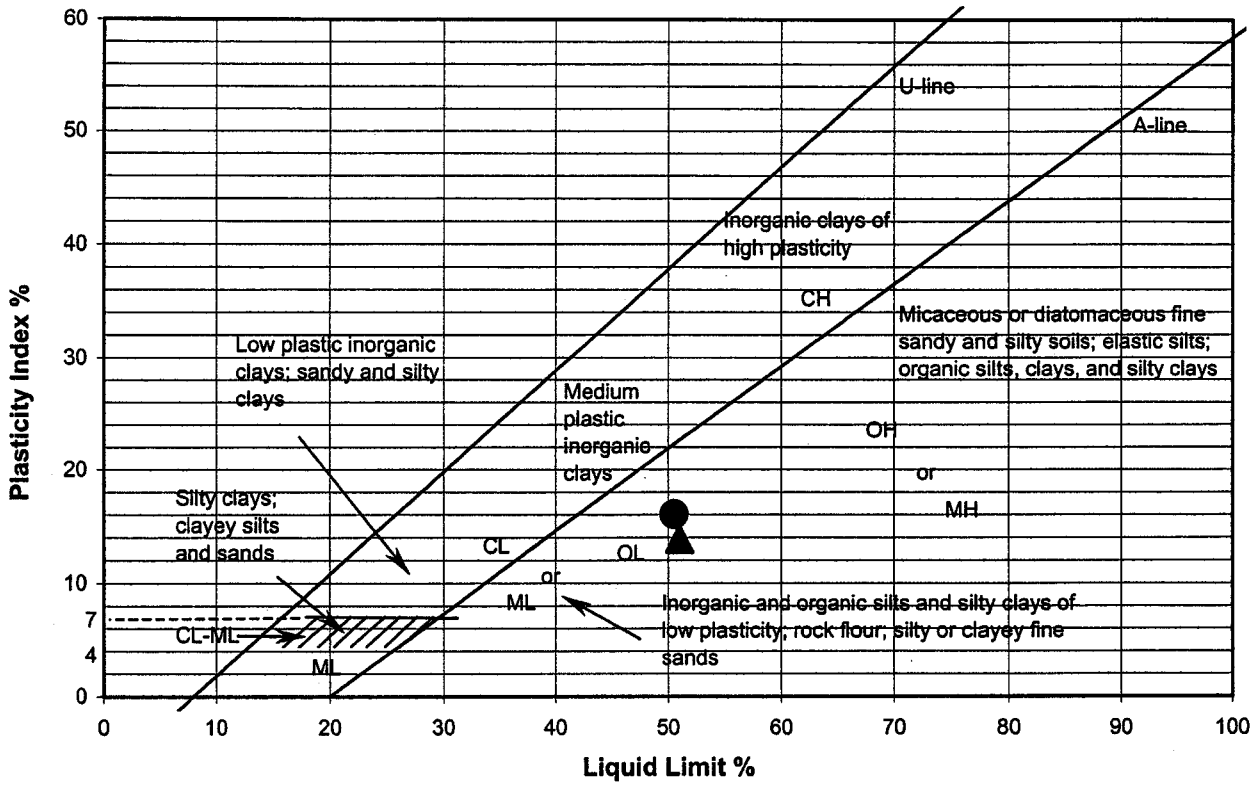
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
BOULDERS	COBBLES	GRAVEL		SAND			FINE GRAINED	

Exploration	Sample	Depth (feet)	Moisture (%)	Fines (%)	Description
TP-39	S-1	1'	46	100	SILT With some clay

ZIPPER ZEMAN ASSOCIATES, INC GEOTECHNICAL AND ENVIRONMENTAL CONSULTING	PROJECT NO: J-1200 DATE OF TESTING: 11/9/01	PROJECT NAME: Oregon City Retail

PLASTICITY CHART

ASTM D 4318



Symbol	Boring	Sample	USCS Description	Received M.C. (%)	Liquid Limit	Plastic Limit	Plasticity Index	Comments
●	B-17	S-4	ML	35	51	34	16	
▲	B-19	S-1	ML	15	51	37	14	
■								
◆								

Remarks:

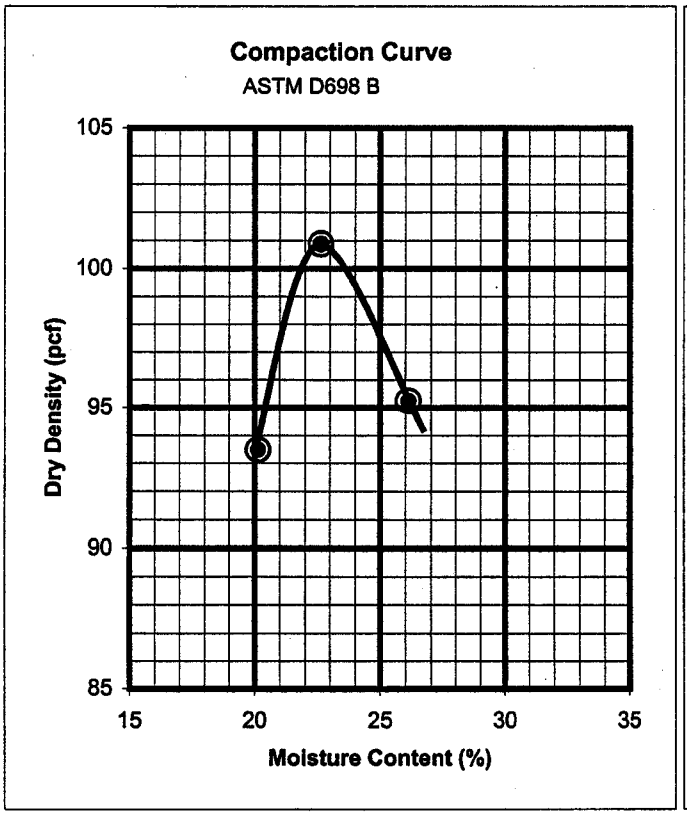
Zipper Zeman Associates, Inc. Geotechnical and Environmental Consulting	PROJECT NO: J-1200 DATE OF TESTING: 5/17/02	PROJECT NAME: Oregon City Retail

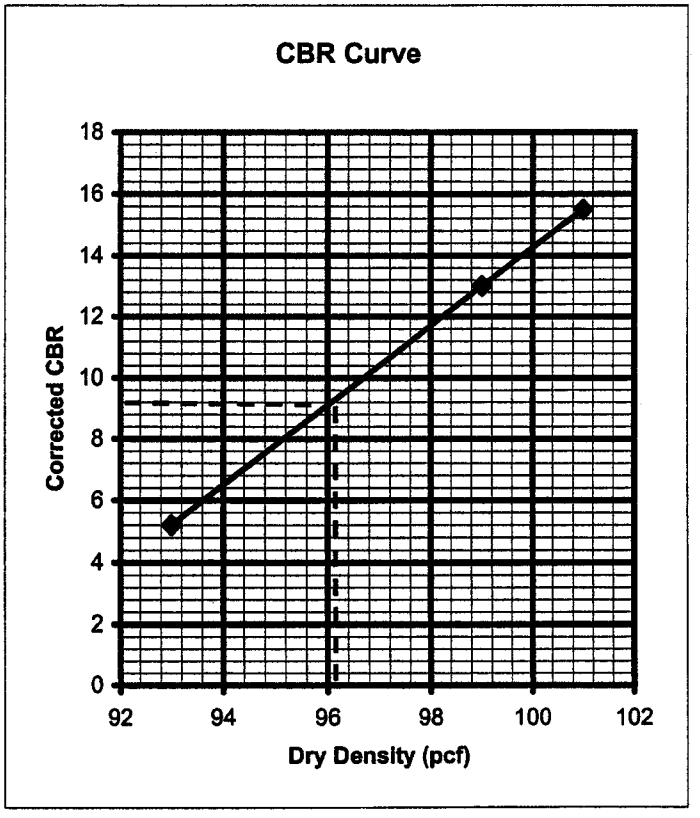
CALIFORNIA BEARING RATIO ASTM D 1883

Exploration: TP-16
Sample No.: Grab
Depth: 1.5 feet

Soil Description: SILT
Tested By: PZ/JY

	18 Blows/Lift		10 Blows/Lift		25 Blows/Lift	
Condition of Sample:	soaked		soaked		soaked	
Dry Density Before Soaking:	99	pcf	93	pcf	101	pcf
Dry Density After Soaking:	96	pcf	90	pcf	99	pcf
Moisture Content:						
Before Compaction:	20.5	%	20.5	%	20.5	%
After Compaction:	20.5	%	20.5	%	20.6	%
Top 1-in Layer After Soaking:	27.7	%	29.7	%	25.1	%
Average After Soaking:	27.5	%				
Swell:	-0.3	%	0.5	%	0.2	%
Surcharge Amount:	90.2	psf	90.2	psf	90.2	psf





Max. Dry Density = 101 pcf
Optimum Moisture = 22.5 %

CBR at 95% of Max. Dry Density = 9

ZIPPER ZEMAN ASSOCIATES, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTING	PROJECT NO: J-1200 DATE OF TESTING: 11/6/01	PROJECT NAME: Oregon City Retail

DIRECT SHEAR TEST RESULTS
ASTM D-3080

SAMPLE LOCATION	DEPTH (ft)	CLASSIFICATION	FRICTION ANGLE (degrees)	APPARENT COHESION (psf)	DRY DENSITY (pcf)	MOISTURE CONTENT (%)
B-15	2.5-3.0	(CL) reddish-brown, lean clay (remolded)	18	990	90.5	32
B-15	7.5-15.0	Reddish-brown, silty sand (remolded)	33	380	66.3	43.5

UNCONFINED COMPRESSION TEST RESULTS
ASTM D-2938

SAMPLE LOCATION	DEPTH (ft)	MOISTURE CONTENT (%)	COMPRESSIVE STRENGTH (psi)
B-2, RUN-1	19.0-19.8	3	8,800

SOIL CHEMICAL ANALYSIS RESULTS

SAMPLE LOCATION	DEPTH (ft)	pH	RESISTIVITY (ohm-cm)	SULFATES (ppm)
B-7, S-3	7	5.9	14,000	<10
TP-9, S-2	2½	5.8	11,000	10
TP-25, S-2	5½	6.1	10,000	37

ORGANIC CONTENT BY LOSS ON IGNITION AASHTO T-267

TEST PIT AND SAMPLE NUMBER	DEPTH (ft)	ORGANIC CONTENT (%)
TP-7, S-1	6	12
TP-7, S-2	24	8
TP-13, S-1	4	10
TP-40, S-1	12	9

SUPPORTING INFORMATION

Contents:

General Notes
Unified Soil Classification System
Rock Properties

Note: All attachments are one page unless noted above.

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS
Oregon City Development ■ Oregon City, OR
Terracon Project No. 82215043

Terracon GeoReport

SAMPLING	WATER LEVEL	FIELD TESTS
Rock Core Grab Sample Standard Penetration Test	**Water Initially Encountered** **Water Level After a Specified Period of Time** **Water Level After a Specified Period of Time** **Cave In Encountered** Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.	**N** Standard Penetration Test Resistance (Blows/Ft.) **(HP)** Hand Penetrometer **(T)** Torvane **(DCP)** Dynamic Cone Penetrometer **UC** Unconfined Compressive Strength **(PID)** Photo-Ionization Detector **(OVA)** Organic Vapor Analyzer

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification as noted on the soil boring logs is based Unified Soil Classification System. Where sufficient laboratory data exist to classify the soils consistent with ASTM D2487 "Classification of Soils for Engineering Purposes" this procedure is used. ASTM D2488 "Description and Identification of Soils (Visual-Manual Procedure)" is also used to classify the soils, particularly where insufficient laboratory data exist to classify the soils in accordance with ASTM D2487. In addition to USCS classification, coarse grained soils are classified on the basis of their in-place relative density, and fine-grained soils are classified on the basis of their consistency. See "Strength Terms" table below for details. The ASTM standards noted above are for reference to methodology in general. In some cases, variations to methods are applied as a result of local practice or professional judgment.

LOCATION AND ELEVATION NOTES

Exploration point locations as shown on the Exploration Plan and as noted on the soil boring logs in the form of Latitude and Longitude are approximate. See Exploration and Testing Procedures in the report for the methods used to locate the exploration points for this project. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance		CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance		
Descriptive Term (Density)	**Standard Penetration or N-Value Blows/Ft.**	**Descriptive Term (Consistency)**	**Unconfined Compressive Strength Qu, (tsf)**	**Standard Penetration or N-Value Blows/Ft.**
Very Loose	0 - 3	Very Soft	less than 0.25	0 - 1
Loose	4 - 9	Soft	0.25 to 0.50	2 - 4
Medium Dense	10 - 29	Medium Stiff	0.50 to 1.00	4 - 8
Dense	30 - 50	Stiff	1.00 to 2.00	8 - 15
Very Dense	> 50	Very Stiff	2.00 to 4.00	15 - 30
		Hard	> 4.00	> 30

RELEVANCE OF SOIL BORING LOG

The soil boring logs contained within this document are intended for application to the project as described in this document. Use of these soil boring logs for any other purpose may not be appropriate.

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse-Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	$Cu \geq 4$ and $1 \leq Cc \leq 3$ [E]		GW	Well-graded gravel [F]
			$Cu < 4$ and/or [Cc<1 or Cc>3.0] [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F, G, H]
			Fines classify as CL or CH		GC	Clayey gravel [F, G, H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$ [E]		SW	Well-graded sand [I]
			$Cu < 6$ and/or [Cc<1 or Cc>3.0] [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G, H, I]
			Fines classify as CL or CH		SC	Clayey sand [G, H, I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A"		CL	Lean clay [K, L, M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K, L, M]
		Organic:	Liquid limit - oven dried / Liquid limit - not dried	< 0.75	OL	Organic clay [K, L, M, N] / Organic silt [K, L, M, O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line		CH	Fat clay [K, L, M]
			PI plots below "A" line		MH	Elastic Silt [K, L, M]
		Organic:	Liquid limit - oven dried / Liquid limit - not dried	< 0.75	OH	Organic clay [K, L, M, P] / Organic silt [K, L, M, Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve.

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay.

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.

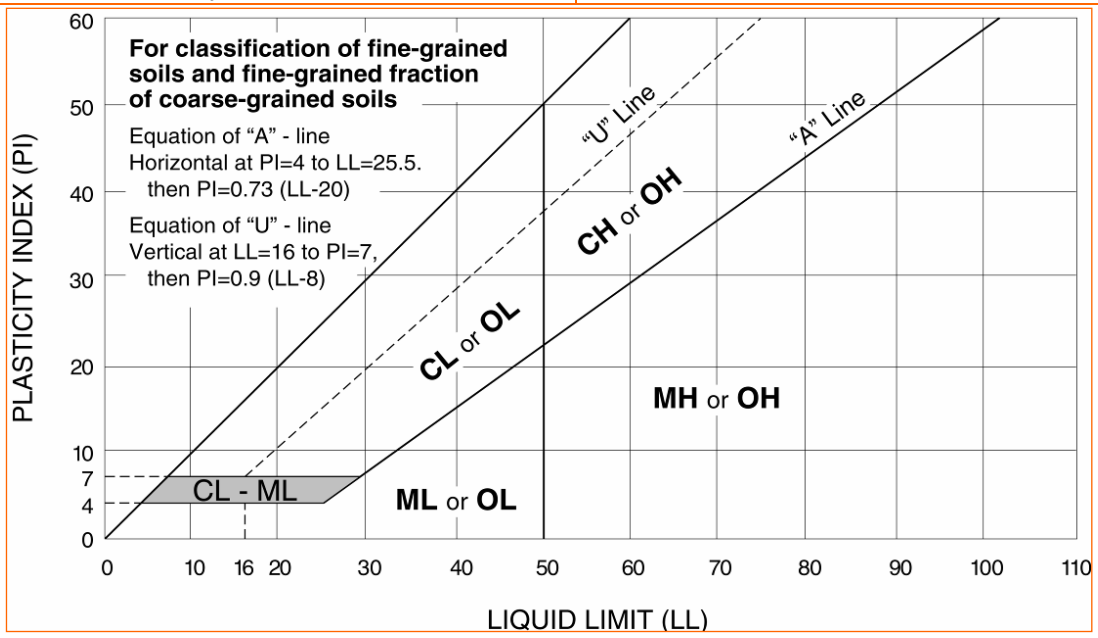
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.



WEATHERING	
Term	**Description**
Unweathered	No visible sign of rock material weathering, perhaps slight discoloration on major discontinuity surfaces.
Slightly weathered	Discoloration indicates weathering of rock material and discontinuity surfaces. All the rock material may be discolored by weathering and may be somewhat weaker externally than in its fresh condition.
Moderately weathered	Less than half of the rock material is decomposed and/or disintegrated to a soil. Fresh or discolored rock is present either as a continuous framework or as corestones.
Highly weathered	More than half of the rock material is decomposed and/or disintegrated to a soil. Fresh or discolored rock is present either as a discontinuous framework or as corestones.
Completely weathered	All rock material is decomposed and/or disintegrated to soil. The original mass structure is still largely intact.
Residual soil	All rock material is converted to soil. The mass structure and material fabric are destroyed. There is a large change in volume, but the soil has not been significantly transported.

STRENGTH OR HARDNESS		
Description	**Field Identification**	**Uniaxial Compressive Strength, psi (MPa)**
Extremely weak	Indented by thumbnail	40-150 (0.3-1)
Very weak	Crumbles under firm blows with point of geological hammer, can be peeled by a pocket knife	150-700 (1-5)
Weak rock	Can be peeled by a pocket knife with difficulty, shallow indentations made by firm blow with point of geological hammer	700-4,000 (5-30)
Medium strong	Cannot be scraped or peeled with a pocket knife, specimen can be fractured with single firm blow of geological hammer	4,000-7,000 (30-50)
Strong rock	Specimen requires more than one blow of geological hammer to fracture it	7,000-15,000 (50-100)
Very strong	Specimen requires many blows of geological hammer to fracture it	15,000-36,000 (100-250)
Extremely strong	Specimen can only be chipped with geological hammer	>36,000 (>250)

DISCONTINUITY DESCRIPTION			
Fracture Spacing (Joints, Faults, Other Fractures)		**Bedding Spacing (May Include Foliation or Banding)**	
Description	**Spacing**	**Description**	**Spacing**
Extremely close	< ¾ in (<19 mm)	**Laminated**	< ½ in (<12 mm)
Very close	¾ in – 2-1/2 in (19 - 60 mm)	**Very thin**	½ in – 2 in (12 – 50 mm)
Close	2-1/2 in – 8 in (60 – 200 mm)	**Thin**	2 in – 1 ft. (50 – 300 mm)
Moderate	8 in – 2 ft. (200 – 600 mm)	**Medium**	1 ft. – 3 ft. (300 – 900 mm)
Wide	2 ft. – 6 ft. (600 mm – 2.0 m)	**Thick**	3 ft. – 10 ft. (900 mm – 3 m)
Very Wide	6 ft. – 20 ft. (2.0 – 6 m)	**Massive**	> 10 ft. (3 m)

Discontinuity Orientation (Angle): Measure the angle of discontinuity relative to a plane perpendicular to the longitudinal axis of the core. (For most cases, the core axis is vertical; therefore, the plane perpendicular to the core axis is horizontal.) For example, a horizontal bedding plane would have a 0-degree angle.

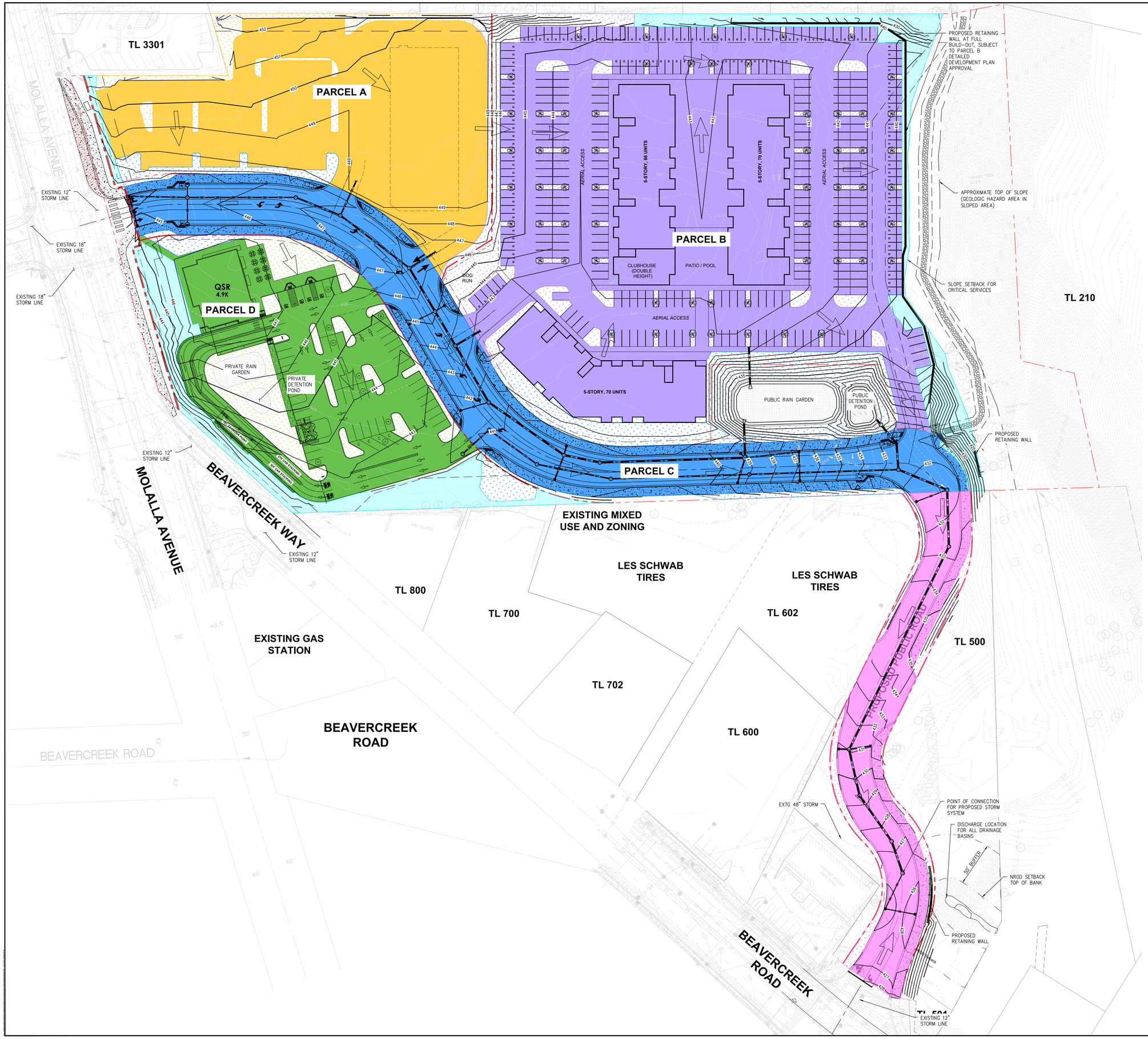
ROCK QUALITY DESIGNATION (RQD) [1]	
Description	**RQD Value (%)**
Very Poor	0 - 25
Poor	25 – 50
Fair	50 – 75
Good	75 – 90
Excellent	90 - 100

1. The combined length of all sound and intact core segments equal to or greater than 4 inches in length, expressed as a percentage of the total core run length.

Reference: U.S. Department of Transportation, Federal Highway Administration, Publication No FHWA-NHI-10-034, December 2009 Technical Manual for Design and Construction of Road Tunnels – Civil Elements

APPENDIX B

DRAINAGE BASIN MAP



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CLIENT/OWNER

CYPRESS EQUITIES

PROJECT NAME

OREGON CITY MIXED USE DETAILED DEVELOPMENT PLAN

LANGAN PROJECT NUMBER: 794-002-701

PROJECT ADDRESS

1367 MOLALLA AVENUE
OREGON CITY, OR 97045

STAMP

REVISIONS

REV	ISSUED FOR:	DATE
0	DDP SUBMITTAL	11/14/2025
1	DDP SUBMITTAL	12/09/2025
2	DDP SUBMITTAL	03/02/2026

811

SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

DRAINAGE BASIN MAP

SHEET NUMBER

DB-1.0

APPENDIX C

HYDROCAD REPORT

Summary for Pond 10P: Public Detention Pond 100 yr Overflow

Inflow Area = 8.420 ac, 88.07% Impervious, Inflow Depth > 3.66" for 100-yr 24-hr event
Inflow = 4.67 cfs @ 8.27 hrs, Volume= 2.568 af
Outflow = 4.67 cfs @ 8.28 hrs, Volume= 2.568 af, Atten= 0%, Lag= 1.1 min
Primary = 4.67 cfs @ 8.28 hrs, Volume= 2.568 af

Routing by Stor-Ind method, Time Span= 5.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 428.52' @ 8.28 hrs Surf.Area= 945 sf Storage= 1,006 cf

Plug-Flow detention time= 10.2 min calculated for 2.565 af (100% of inflow)
Center-of-Mass det. time= 10.2 min (760.1 - 749.9)

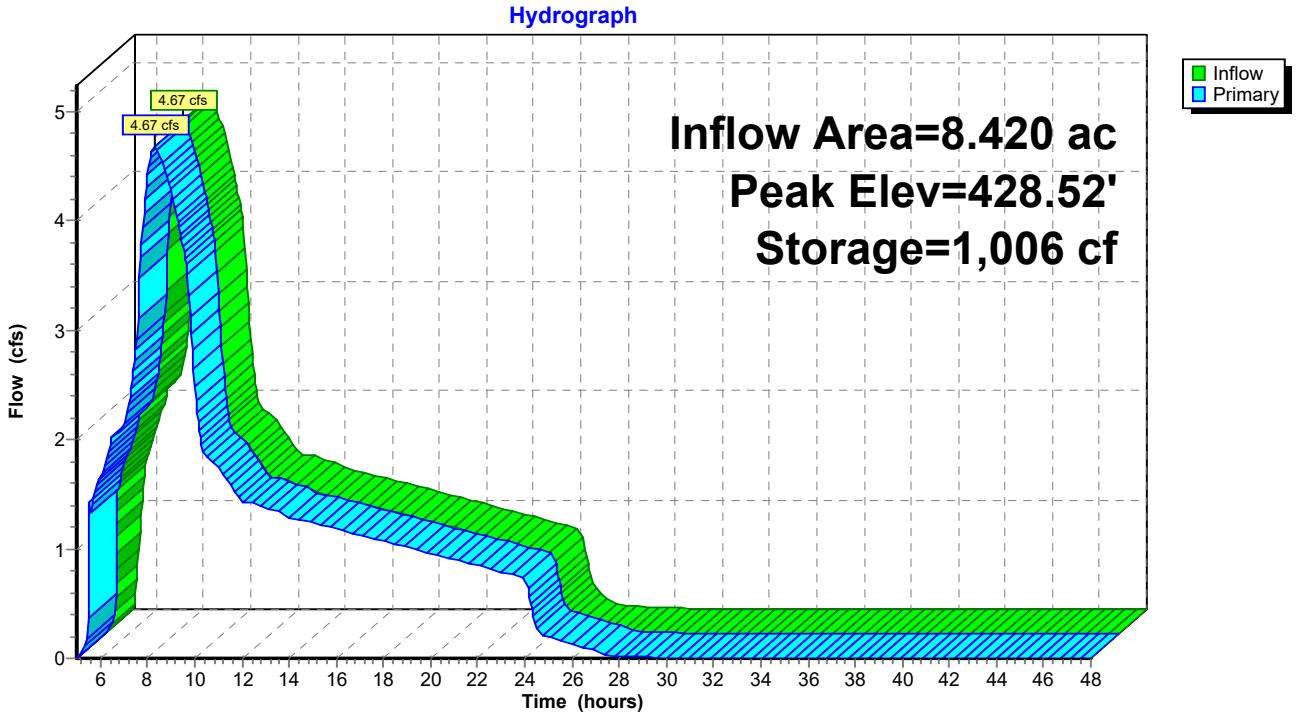
Volume	Invert	Avail.Storage	Storage Description
#1	426.25'	10,030 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
426.25	1,756	0.0	0	0
426.75	1,756	40.0	351	351
427.00	1,756	30.0	132	483
428.50	937	25.0	505	988
430.50	1,756	100.0	2,693	3,681
433.00	3,323	100.0	6,349	10,030

Device	Routing	Invert	Outlet Devices
#1	Primary	426.25'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 426.25' / 426.20' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	425.25'	**2.5" Horiz. Lower Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	427.95'	**9.0" Horiz. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	428.25'	**6.3' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=4.71 cfs @ 8.28 hrs HW=428.52' (Free Discharge)
└**1=Culvert** (Passes 4.71 cfs of 5.03 cfs potential flow)
  ├**2=Lower Orifice** (Orifice Controls 0.25 cfs @ 7.25 fps)
  ├**3=Upper Orifice** (Orifice Controls 1.60 cfs @ 3.63 fps)
  └**4=Sharp-Crested Rectangular Weir** (Weir Controls 2.85 cfs @ 1.70 fps)

Pond 10P: Public Detention Pond 100 yr Overflow



APPENDIX D

WES BMP SIZING TOOL REPORT

WES BMP Sizing Report

Project Information

Project Name	Oregon City Commercial Masterplan
Project Type	Commercial
Location	Mollala Ave and Beavercreek Rd, Oregon City
Stormwater Management Area	0
Project Applicant	Cypress Acquisitions LLC
Jurisdiction	CCSD1NCSA

Drainage Management Area

Name	Area (sq-ft)	Pre-Project Cover	Post-Project Cover	DMA Soil Type	BMP
PUP-1	6,085	Forested	LandscapeCsoil	C	Public Rain Garden
PUI-1	31,087	Forested	ConventionalConcrete	C	Public Rain Garden
PRI-2	180,369	Forested	ConventionalConcrete	C	Public Rain Garden
PRP-2	20,996	Forested	LandscapeCsoil	C	Public Rain Garden
PRI-1	72,516	Forested	ConventionalConcrete	C	Public Rain Garden
PRP-1	6,366	Forested	LandscapeCsoil	C	Public Rain Garden
PUI-2	70,148	Forested	ConventionalConcrete	C	Public Rain Garden
PUP-2	16,380	Forested	LandscapeCsoil	C	Public Rain Garden
PRI-3	52,512	Forested	ConventionalConcrete	C	Private Rain Garden
PRP-3	13,774	Forested	LandscapeCsoil	C	Private Rain Garden

LID Facility Sizing Details

LID ID	Design Criteria	BMP Type	Facility Soil Type	Minimum Area (sq-ft)	Planned Areas (sq-ft)	Orifice Diameter (in)
Public Rain Garden	WaterQuality	Rain Garden - Filtration	Lined	5,685.5	6,000.0	3.1
Private Rain Garden	WaterQuality	Rain Garden - Filtration	Lined	891.0	1,700.0	1.2

Pond Sizing Details

Pond ID	Design Criteria(1)	Facility Soil Type	Max Depth (ft)(2)	Top Area (sq-ft)	Side Slope (1:H)	Facility Vol. (cu-ft)(3)	Water Storage Vol. (cu-ft)(4)	Adequate Size?
Public Detention Pond	FCWQT	Lined	4.00	1,450.0	3	2,911.8	1,904.8	Yes
Private Detention Pond	FCWQT	Lined	4.00	700.0	3	1,027.7	743.0	Yes

1. FCWQT = Flow control and water quality treatment, WQT = Water quality treatment only

2. Depth is measured from the bottom of the facility and includes the three feet of media (drain rock, separation layer and growing media).

3. Maximum volume of the facility. Includes the volume occupied by the media at the bottom of the facility.

4. Maximum water storage volume of the facility. Includes water storage in the three feet of soil media assuming a 40 percent porosity.

Simple Pond Geometry Configuration

Pond ID: Public Detention Pond
Design: FlowControlAndTreatment

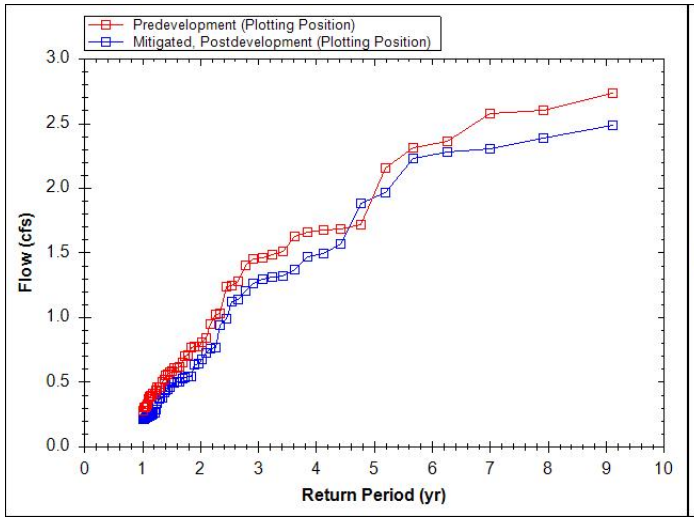
Shape Curve

Depth (ft)	Area (sq ft)
4.0	1,450.0

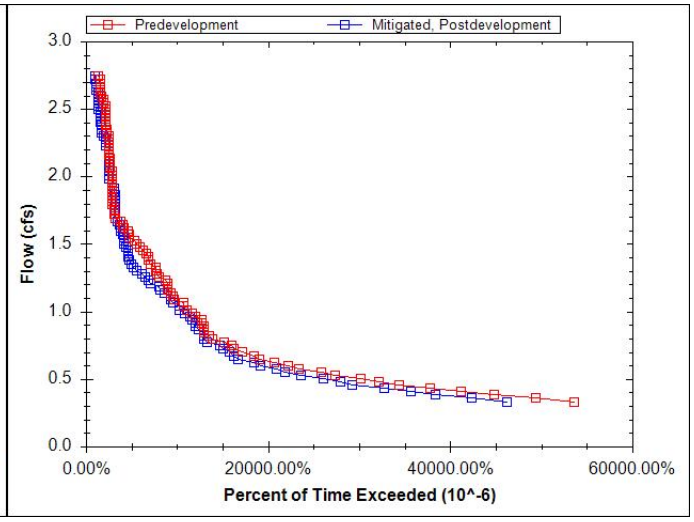
Outlet Structure Details

Lower Orifice Invert (ft)	0.0
Lower Orifice Dia (in)	2.5
Upper Orifice Invert(ft)	2.7
Upper Orifice Dia (in)	9.0
Overflow Weir Invert(ft)	3.0
Overflow Weir Length (ft)	6.3

Flow Frequency Chart



Flow Duration Chart



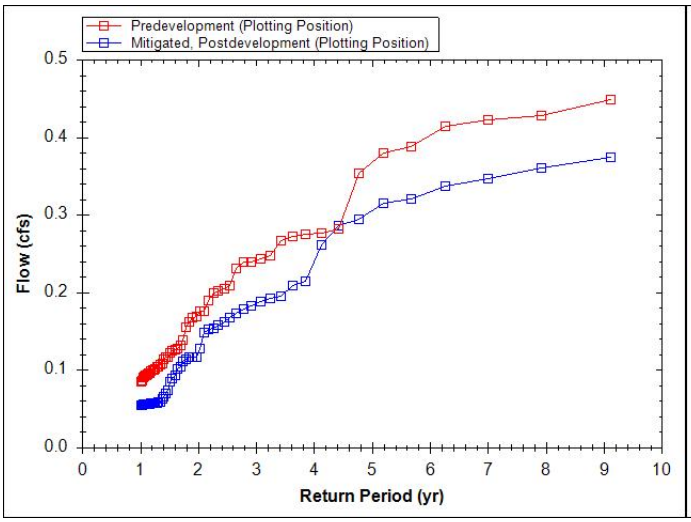
Custom Pond Geometry Configuration

Pond ID: Private Detention Pond
Design: FlowControlAndTreatment

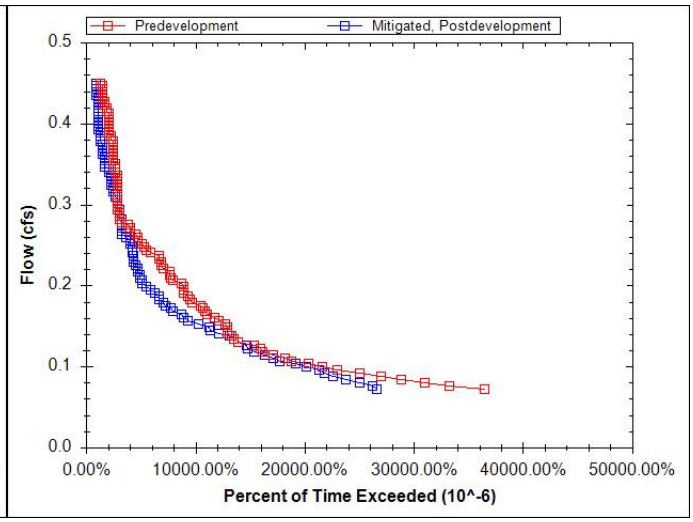
Shape Curve

Depth (ft)	Area (sq ft)	Discharge (cfs)
NaN	700.0	NaN
NaN	NaN	NaN

Flow Frequency Chart



Flow Duration Chart



APPENDIX H
Traffic Impact Analysis

Traffic Impact Analysis

OREGON CITY MIXED-USE

Prepared for:
Langan

October 2025

Prepared by:



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1.25192.00

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Introduction

This traffic impact analysis (TIA) identifies potential transportation-related impacts associated with the proposed Mixed-Use Development in Oregon City, Oregon. As necessary, mitigation measures are identified that would reduce or offset significant transportation related impacts that the project may have on the surrounding transportation system.

Project Description

The proposed project site is located at 1367 Molalla Avenue in Oregon City, as shown in the vicinity map included in Figure 1. The site is comprised of 4 parcels (3 parcels with land use development and 1 for right-of-way) in which the proposed mixed-use development is anticipated to include the following:

- Parcel A: 13,500 sf retail
- Parcel B: up to 210 multi-family apartment units
- Parcel C: No land use - right-of-way
- Parcel D: 4,915 sf fast food restaurant with drive-through

The existing site is vacant. With the development of the site, a new roadway connection would be completed between the existing signalized intersections along Molalla Avenue at the west side of the site and Beavercreek Road south of the site. The preliminary site plan is illustrated in Figure 2. The proposed project is anticipated to be fully constructed and operational by 2030.

Study Scope and Study Area

The following off-site intersections surrounding the project site were identified for analysis following coordination with City of Oregon City and Oregon Department of Transportation (ODOT) staff:

1. Molalla Ave/Pearl St
2. Molalla Ave/Holmes Ln
3. Molalla Ave/Warner Milne Rd
4. Molalla Ave/Safeway access/Future site access
5. Molalla Ave/Beavercreek Rd
6. Molalla Ave/Clairmont Way
7. Molalla Ave/ OR-213
8. Commercial Access/Beavercreek Rd/Future site access
9. OR-213/Beavercreek Rd

The analysis includes a review of existing conditions in the vicinity of the project site, including the transportation network, planned improvements, existing and future without-project AM and PM[1] peak hour traffic volumes, traffic operations, and traffic safety. Future with-project conditions are evaluated by adding site-generated traffic to future without-project volumes. Future without and with-project conditions are compared to identify the impacts the proposed project has on the surrounding transportation system.

[1] Note that review of additional time periods is included in the TIA below, but as discussed in greater detail below, the operational analysis is limited to the AM and PM peak hours.



Site Vicinity and Study Intersections

FIGURE 1

OR City Mixed-Use

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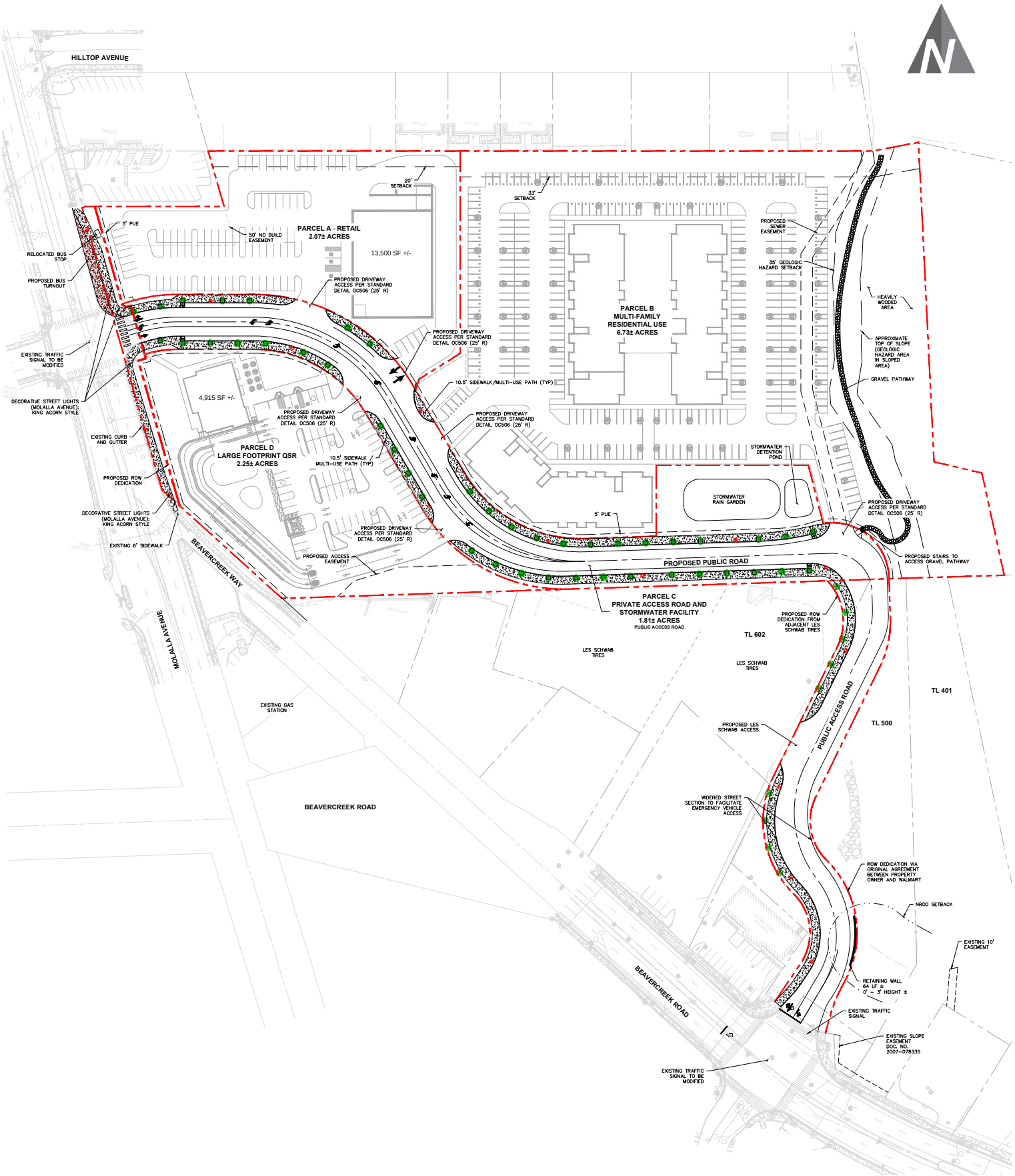

Preliminary Site Plan

OR City Mixed-Use

FIGURE
2

transpogroup

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Existing & Future Without-Project Conditions

This section describes both existing and future (2030) without-project conditions within the identified study area. Study area characteristics are provided for the transportation system, planned improvements, existing and future forecast without-project traffic volumes, traffic operations, and traffic safety.

Roadway Network

The following sections describe the existing street network within the vicinity of the proposed project and anticipated planned improvements.

Existing

The primary roadways within the study area and their characteristics near the study intersections are described below.

Molalla Avenue is a five-lane roadway functionally classified by the City of Oregon City as a minor arterial and has a speed limit of 30 mph. Molalla Avenue is a 2 to 3 lane roadway north of Warner Milne Road and south of Beavercreek Road, and five lane roadway Warner Milne Road and Beavercreek Road. Sidewalks are provided on both sides of Molalla Avenue through the entirety of the study area. Bike lanes are available on both sides north of Gales Lane, and south of the Safeway access driveway.

Beavercreek Road is a 5-lane roadway functionally classified as a minor arterial west of Molalla Avenue and a major arterial east of Molalla Avenue. Beavercreek Road has a speed limit of 35 mph in the vicinity of the project site. Beavercreek Road is a 3 to 5 lane roadway west of Molalla Avenue and a 5 to 6 lane road east of Molalla Avenue with additional urn lanes present surrounding its intersection with OR-213. Sidewalks and bicycle lanes are provided on both sides of the roadway between Molalla Avenue and OR-213.

OR-213 (Cascade Highway South) is a State Highway Route classified as a principal arterial. OR-213 is a four-lane roadway with a wide median north and south of its intersection with S Beavercreek Road, which transitions to a 6-lane roadway south of Beavercreek Road, and a 7-lane roadway north of Beavercreek Road. The speed limit along OR-213 in the study area is 55 mph. Sidewalks and bike lanes are available on the east side of OR-213 south of Beavercreek Road and wide painted shoulders are present where sidewalks are not within the study area.

Pearl Street is classified by the City of Oregon City as a major collector with 2 travel lanes. The speed limit is 25 mph. West of the intersection with Molalla Avenue, a sidewalk is present on the north side of Pearl Street. East of the intersection, sidewalks are present for approximately 230 feet.

Holmes Lane is classified as a collector west of Molalla Avenue, and continues into Hilda Street, which is a local road, east of Molalla Avenue. Holmes Lane is a 2 to 3 lane roadway with a speed limit of 25 mph. Sidewalks, bike lanes, and/or paved shoulders are present on both sides of Holmes Lane.

Warner Milne Road is classified as a minor arterial with a speed limit of 30 mph. Warner Milne Roadis a two-lane roadway with additional turn lanes provided surrounding its intersection with Molalla Avenue. Sidewalks and bicycle lanes are present along both sides of the roadway within the study area.

Clairmont Way is functionally classified by the City of Oregon City as a collector with a speed limit of 25 mph. Clairmont Way is a two-lane roadway with additional turn lanes

provided surrounding its intersection with Molalla Avenue. Sidewalks and bicycle lanes are present along both sides of the roadway within the study area.

Planned Improvements

A review of local plans was conducted to identify any changes in the study area that should be accounted for in the analysis. The local plans reviewed included the following: *City of Oregon City's Comprehensive Plan Project List (November 2022)*, *Oregon City's Transportation System Plan* (TSP), Yamhill County's *2015-2035 Transportation System Plan* (TSP)*, and Oregon Department of Transportation's (ODOT) 2024-2027 Statewide Transportation Improvement Program (STIP).* Planned improvements within the study area predominantly included maintenance and resurfacing projects; not impacting intersection capacity. This included the following projects:

- Warner Milne Road resurfacing near Molalla Avenue which was recently completed.
- Holmes Lane will be undergoing resurfacing in 2026.
- Molalla Avene will be undergoing resurfacing in 2027.
- Beavercreek Road will be undergoing microsurfacing in 2026, with more resurfacing planned for 2032.
- Water transmission pipes under Molalla Avenue will be upgraded in 2026.

In addition to the above projects, Beavercreek Road has also been undergoing safety improvements since 2023, including signal modifications and improved signage at the intersection with OR-213 which have since been completed. The Beavercreek Road/OR-213 intersection has an Alternative Mobility Target as the City's TSP identified it would not meet the state's required Oregon Highway Plan Mobility Standards by 2035. An additional project that has been identified as part of the Alternative Mobility Targets in the TSP includes project D95, the Beavercreek Road/OR-213 westbound right turn lane with northbound merge lane on OR 213. The City is collecting a pro-rata share to fund the D95 project; however, this project was not assumed in the future operational conditions.

Non-Motorized Facilities

Dedicated pedestrian and bicycle facilities are provided on roadways surrounding the project site as noted above. Sidewalks are available on both sides of Molalla Avenue, Beavercreek Road, and Holmes Lane. A sidewalk is available on the east side of OR-213 south of the intersection with Beavercreek Lane and on the north side of Pearl Street west of Molalla Avenue.

Transit Service

Transit service in the vicinity of the project site is provided by TriMet's Route 32. The closest transit stops to the site are located at the two site access intersections along Molalla Avenue and Beavercreek Road, directly adjacent to the project site. Additional transit stops served by TriMet's Route 33 are located approximately 0.25 miles west of the project site at the intersection of Beavercreek Road/Danielson Drive. Route 32 provides service 7-days per week between Milwaukie and Clackamas Community College in Oregon City with service between approximately 6:15 a.m. and 7:00 p.m. on weekdays with headways of approximately 30 minutes during peak periods. Route 33 provides service between the Oregon City Transit Center, Milwaukie and Clackamas Town Center 7-days per week between approximately 5:20 a.m. and 12:00 a.m. with peak period headways of approximately 15 minutes.

Traffic Volumes

The existing and future (2030) without-project traffic volumes forecasts are summarized in the sections below.

Existing

Existing weekday AM (7 to 9 a.m.) and PM (4 to 6 p.m.) peak period traffic counts were collected at each study intersection in September 2025.[2] The detailed traffic counts are included in Appendix A. Volumes are rounded to the nearest 5 vehicles to account for the daily fluctuations in traffic volumes. Figure 4 illustrates the existing weekday AM and PM peak hour traffic volumes at the study intersections.

In addition to the weekday peak hours, the traffic volumes throughout the week were also reviewed to confirm the time periods for analysis. Traffic volumes were collected along Molalla Avenue, north of Beavercreek Road in the project vicinity for one week in September 2025. The detailed volumes throughout the week are included in Appendix A and the volumes are illustrated in Figure 3.

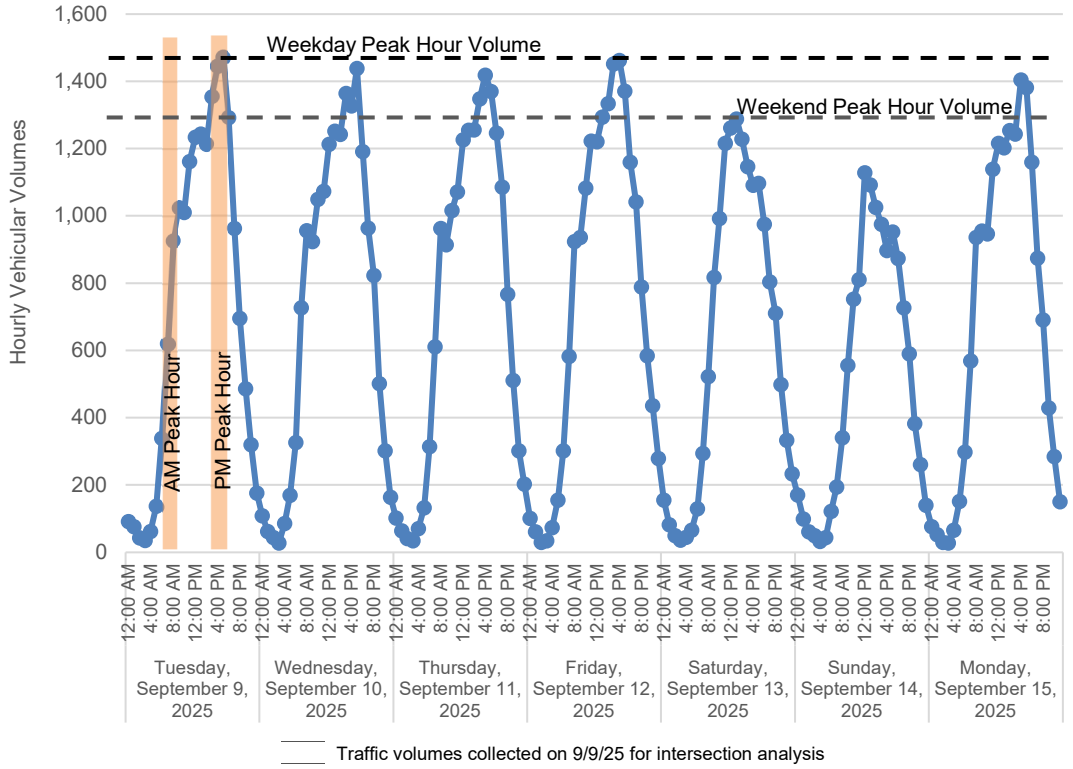
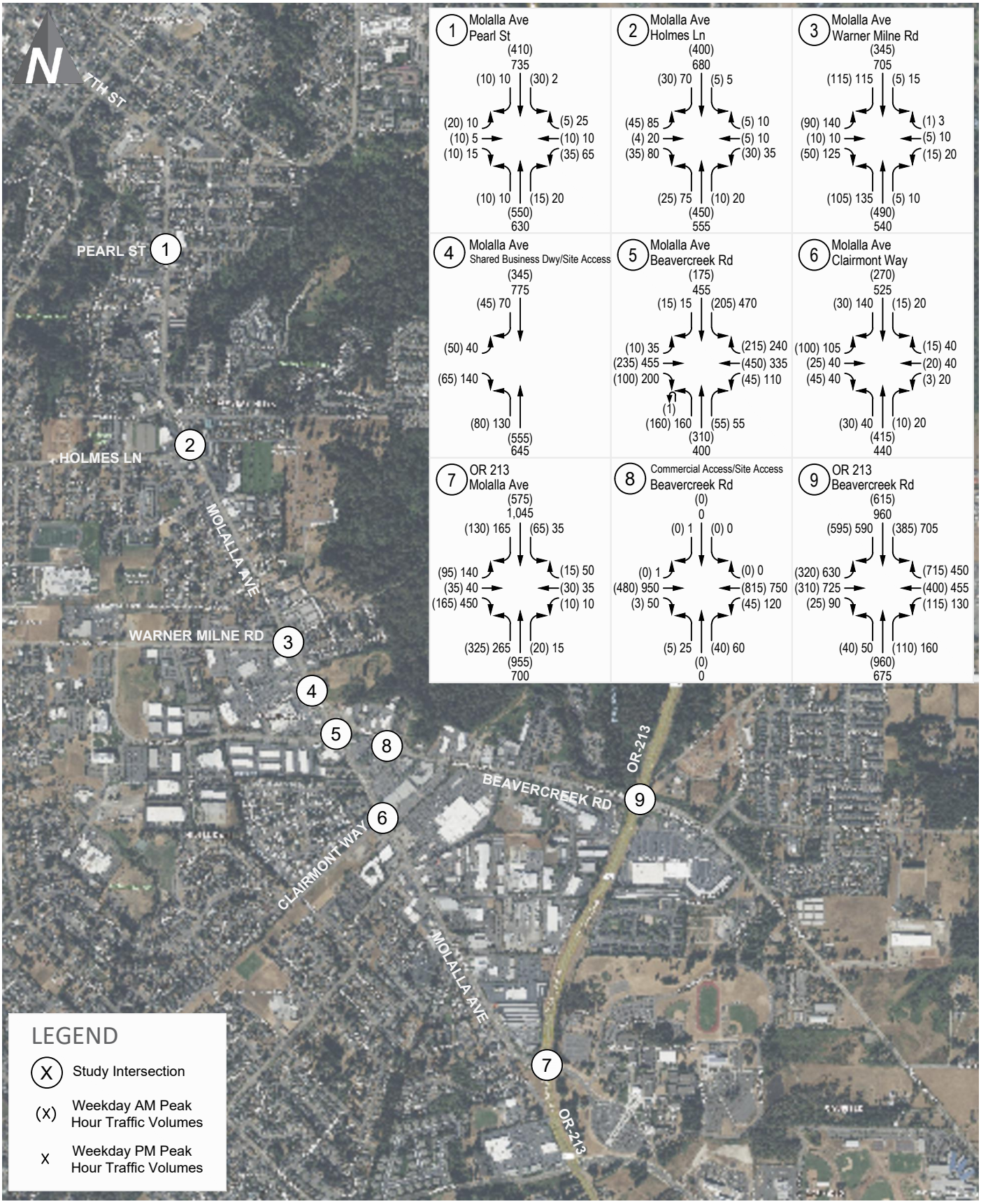


Figure 3. Existing Weekly volumes along Molalla Avenue, north of Beavercreek Road

As shown in the figure, the weekday AM and PM peak hours being studied as part of the project capture the peak traffic volumes that are occurring within the study area throughout the week. The weekend peak hourly volumes are approximately 12 percent less than the weekday peak volumes which occur during the studied PM peak hour.

[2] It was confirmed with City and ODOT staff that given the counts were conducted in September when school was in session, no seasonal adjustment to the volumes was needed.



Existing Weekday Peak Hour Traffic Volumes

FIGURE 4

OR City Mixed-Use

transpogroup

Sep 30, 2025 – 3:10pm lilyh M:\25\1.25192.00 – OR City Retail\Graphics\DWG\25192_Distribution_Graphics.dwg Layout: Existing Vols

Future Without-Project Traffic Volumes

Future (2030) without-project traffic volumes are comprised of background traffic growth and traffic from "in-process developments" in the vicinity of the project site. An annual growth rate of 2.0 percent was applied, as provided by the City. Ten in-process developments in the vicinity of the proposed project site are listed below and were included in the analysis as identified by City staff.

1. 770 Pleasant Townhomes
2. Abernethy Place
3. Canemah Road Subdivision
4. Central Point Subdivision
5. Clackamas Heights Redevelopment
6. Downtown North End Development
7. Park Place Crossing Phase 1
8. Serres Farms Master Plan
9. Thimble Creek South
10. White Lane Subdivision

The forecast future (2030) without-project weekday AM and PM peak hour traffic volumes are shown on Figure 5.

Traffic Operations

The following section summarizes the traffic operations for existing and future without-project conditions for the study intersections.

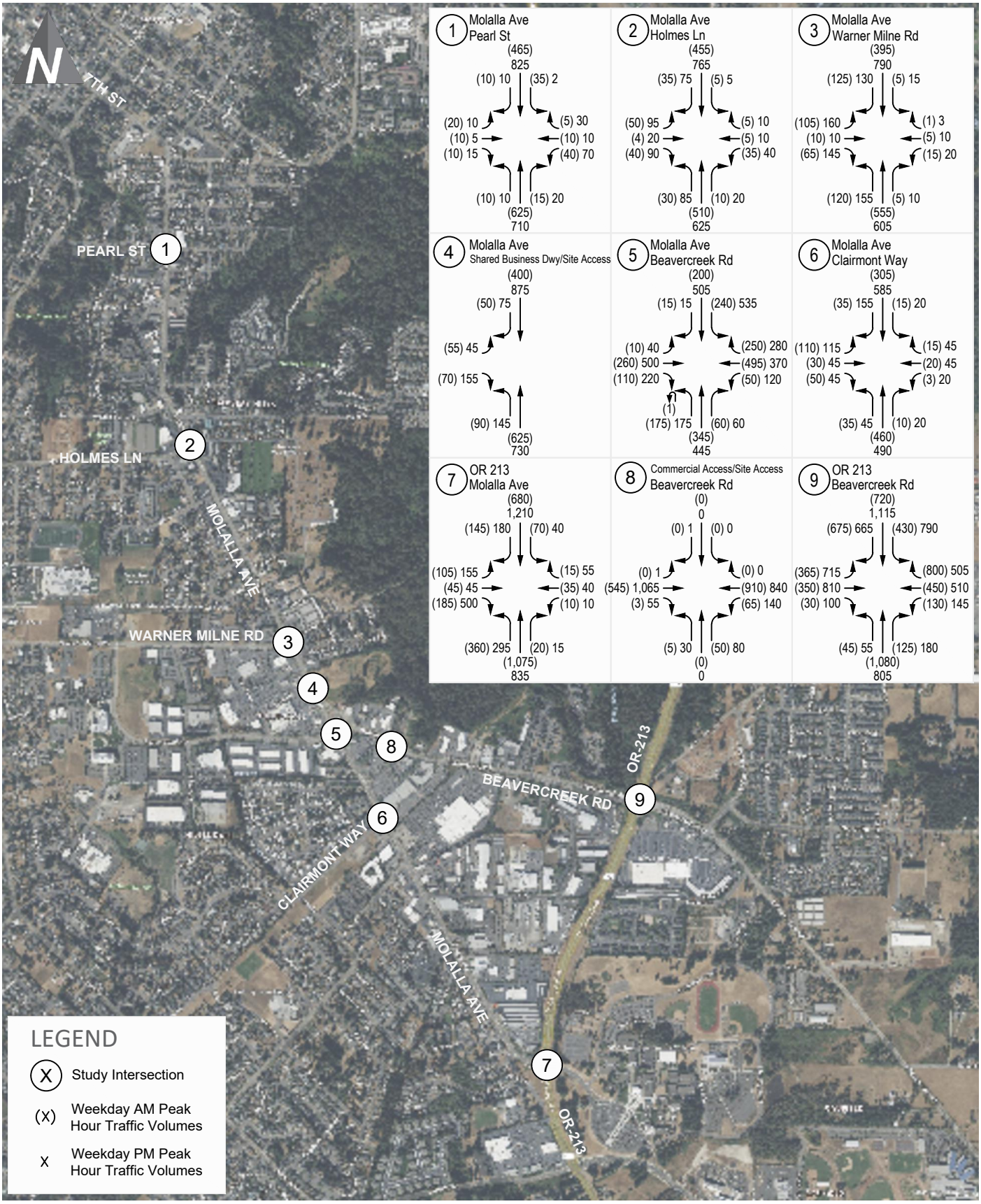
An operational analysis was conducted for the study area intersections for the weekday AM and PM peak hours. Existing and future without-project volume-to-capacity (v/c) ratios and delay were calculated at study intersections based on the methodologies contained in the *Highway Capacity Manual* 7th Edition (HCM 7). The software program *Synchro* 12 was used to evaluate intersection operations.

ODOT's targets were applied to the signalized intersections along Cascade Highway South (OR 213), while the City of Oregon City's standards were applied to the remaining study intersections along Molalla Avenue and Beavercreek Road.

The City of Oregon City's operational targets are defined in the *City of Oregon City Guidelines for Transportation Impact Analyses* (2021), Section 7.9.1 for *Intersection Level of Service Standards.* The City identified a v/c ratio of 0.99 or less for the overall intersection at signalized intersections with the exception of the intersection of OR 213/Beavercreek Road, which is noted to have a maximum v/c ratio of 1.00. ODOT operational targets are defined in the 1999 *Oregon Highway Plan* (June 2017). Within the study area, Cascade Highway South (OR 213) is functionally classified as a principal arterial route inside the Portland Metro Area's Metropolitan Planning Organization (MPO) requiring a v/c ratio of 0.99 or less for the overall intersections. The Oregon Transportation Commission amended the *Oregon Highway Plan* in November 2018 to approve an alternative mobility target at the intersection of OR 213/Beavercreek Road to align with the City of Oregon City's recommendation of a 1.0 v/c target. Note that OHP identifies that *"ODOT recognizes that there are many variables and levels of uncertainty in calculating volume-to-capacity ratios…ODOT considers calculated values for v/c ratios that are within 0.03 of the adopted target in the OHP to be considered in compliance with the target."*

Signal timing at the study intersections was provided by Clackamas County and ODOT staff. Analysis parameters such as lane channelization, traffic control type, and signal timing were maintained for future (2030) without-project conditions consistent with existing conditions.

Results for the existing and future without-project operations analyses are summarized in Table 1. Detailed operations worksheets for the existing and future without-project analysis are included in Appendix B. The overall intersection v/c for signalized intersections was calculated per ODOT's *Analysis Procedures Manual* (Version 2, July 2025) Section 13.4.4 using Synchro.



Future (2030) Without-Project Peak Hour Traffic Volumes

FIGURE 5

OR City Mixed-Use

transpogroup

Sep 30, 2025 – 3:13pm lilyh M:\25\1.25192.00 – OR City Retail\Graphics\DWG\25192_Distribution_Graphics.dwg Layout: Future Without–Project Vols

Table 1. Existing & Future Without-Project Peak Hour Intersection Operations

Intersection	Traffic Control	Existing		Future (2030) Without-Project	
		v/c[1]	Delay[2]	v/c	Delay
Weekday AM Peak Hour					
1. Molalla Ave/Pearl St	Signal	0.41	4.7	0.46	4.9
2. Molalla Ave/Holmes Ln/Hilda St	Signal	0.36	7.8	0.40	8.1
3. Molalla Ave/Warner Milne Rd	Signal	0.24	10.3	0.27	10.5
4. Molalla Ave/Shared Business Dwy (Safeway)	Signal	0.45	10.6	0.51	10.8
5. Molalla Ave/Beavercreek Rd	Signal	0.46	17.3	0.51	17.9
6. Molalla Ave/Clairmont Way	Signal	0.40	10.4	0.44	10.8
7. OR 213/Molalla Ave	Signal	0.57	27.0	0.64	28.7
8. Shared Business Dwy (South Ridge)/ Beavercreek Rd	Signal	0.65	4.4	0.72	4.8
9. OR 213/Beavercreek Rd	Signal	0.72	35.9	0.81	47.1
Weekday PM Peak Hour					
1. Molalla Ave/Pearl St	Signal	0.54	5.5	0.60	5.9
2. Molalla Ave/Holmes Ln/Hilda St	Signal	0.59	9.6	0.66	10.7
3. Molalla Ave/Warner Milne Rd	Signal	0.39	11.2	0.44	12.2
4. Molalla Ave/Shared Business Dwy (Safeway)	Signal	0.52	13.4	0.58	14.5
5. Molalla Ave/Beavercreek Rd	Signal	0.69	24.7	0.76	28.1
6. Molalla Ave/Clairmont Way	Signal	0.61	13.1	0.68	16.4
7. OR 213/Molalla Ave	Signal	0.68	33.9	0.78	36.3
8. Shared Business Dwy (South Ridge)/ Beavercreek Rd	Signal	0.59	7.6	0.67	8.5
9. OR 213/Beavercreek Rd	Signal	0.82	52.2	0.94	75.4

Note: **Bold** indicates the required V/C standard is not met.
1. Volume to capacity (v/c) ratio reported for the overall intersection at signalized intersections.
2. Average delay per vehicle in seconds reported for the overall intersection delay at signalized intersections.

Table 1 shows that under both existing and future (2030) without project conditions, the study intersections operate acceptably per the respective v/c target during both the existing AM and PM peak hours, operating with a v/c ratio of 0.94 or less.

Traffic Safety

The five most recent years of collision records (January 1, 2019, to December 31, 2023) provided by the Oregon Department of Transportation (ODOT) were reviewed to identify existing traffic safety issues at the study intersections. A summary of the total and average annual number of reported collisions as well as the observed crash rates at the study intersections are provided in 0.

Table 2. Study Intersection Collision Data Summary (2019 – 2023)

Intersection	Number of Reported Collisions					Total	Annual Average	Crash Rate per MEV
	2019	2020	2021	2022	2023			
1. Molalla Ave/Pearl St	4	2	0	2	3	11	2.20	0.39
2. Molalla Ave/Holmes Ln/Hilda St	3	2	3	3	1	12	2.40	0.40
3. Molalla Ave/Warner Milne Rd	6	3	6	2	3	20	4.00	0.60
4. Molalla Ave/Shared Business Dwy (Safeway)	4	3	3	0	0	10	2.00	0.30
5. Molalla Ave/Beavercreek Rd	13	9	5	8	10	45	9.00	0.84
6. Molalla Ave/Clairmont Way	4	2	1	4	3	14	2.80	0.52
7. OR 213/Molalla Ave	10	4	2	5	0	21	4.20	0.39
8. Shared Business Dwy (South Ridge)/ Beavercreek Rd	0	0	1	0	0	1	0.20	0.03
9. OR 213/Beavercreek Rd	29	27	23	16	33	128	25.60	1.25

Source: ODOT 2025.
Note: MEV = million entering vehicles

As shown in Table 2, the most collisions that occurred within the study area over the last five-year review period occurred along Beavercreek Road at Molalla Avenue and OR 213 with an annual average of 9 collisions per year and approximately 2 collisions per year, respectively. The most common collision types experienced at the study intersections were rear-end collisions followed by approach turn collisions, primarily resulting in property damage only and minor injury. There were five collisions over the last five-year review period at the study intersections of Molalla Avenue/Pearl Street, Molalla Avenue/Warner Milne Road and Molalla Avenue/Clairmont Way involving a pedestrian, two of which resulting in fatality at Molalla Avenue/Pearl Street and Molalla Avenue/Warner Milne Road, occurring in 2019 and 2022, respectively. Both intersections are signalized with crosswalks provided across all legs of the intersections. No other fatalities were reported within the study area. Based on the review of existing collisions in the study area, no patterns of safety concerns were identified.

The intersections of Molalla Avenue and Beavercreek Road are located along OR 213, a state highway classified as principal arterial. According to the ODOT CAR Unit Crash Rate Table II, the crash rate along the state highway system principal arterial roadways was observed to range from 1.25 in 2022 to 1.40 in 2019. The statewide 90th percentile intersection crash rates detailed in Exhibit 4-1 of ODOT's *Analysis Procedures Manual* (Version 2, October 2024) show a rate of 0.86 for urban four-legged signalized intersections. As shown in Table 2, the crash rate at OR 213/Molalla Avenue is below both the statewide observed crash rates and less than the 90th percentile crash rates. The OR 213/Beavercreek Road intersection is identified within the top 5 percent of sites in the ODOT's *Safety Priority Index System* (SPIS) sites and the crash rate during the study period exceeds the 90th percentile crash rates but is consistent with the lower of the observed crash rates along a principal arterial. As identified above, the City has been undergoing safety improvements at the OR 213/Beavercreek Road intersection since 2023 including signal modifications and improved signage at the intersection with OR-213 which have since been completed.

Project Impacts

This section of the report documents project-generated impacts within the study area. First, peak hour traffic volumes are estimated, distributed, and assigned to adjacent roadways and intersections within the study area. Next, future (2030) traffic volumes including project traffic are developed and the potential impact to traffic volumes and traffic operations are identified.

Trip Generation

Trip generation for the proposed project was calculated based on trip rates using the Institute of Transportation Engineers (ITE) *Trip Generation Manual* (11th Edition, 2021) as coordinated and approved with City and ODOT staff through scoping of the traffic analysis. ITEs Multifamily Housing (Mid-Rise) (LU #221) and Fast-Food Restaurant with Drive-Through Window (LU #934), and Supermarket (LU #850) land uses were assumed for the proposed residential, restaurant, and retail land uses, respectively[3].

The proposed project trip generation was adjusted for pass-by and internal trips. Pass-by trips reflect traffic already on streets in the vicinity of the project site that would visit the commercial components of the project while driving by the site on the way to its final destination. Based on ITE *Trip Generation Manual* (11th Edition, 2021), the pass-by rates for the supermarket and restaurant uses are 24 percent and up to 55 percent, respectively. The inclusion of internal capture was assumed consistent with the methodology per ITE's *Trip Generation Handbook* (3rd Edition, 2017); however, the overall internal capture rate for the full development was assumed not to exceed 20 percent in order to provide a conservative analysis; as coordinated with City staff.[4]

Table 3 shows the weekday vehicle trips generated by the proposed project. The detailed trip generation calculations are included in Appendix C.

Table 3. Estimated Weekday Vehicle Trip Generation

Land Use[1]	Size	Daily Trips	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Mid-Rise Apartments (LU #221)	210 du	794	18	49	67	40	26	66
Supermarket (LU #850)	13,500 sf	1,022	20	14	34	45	46	91
Pass-by (24%)		*-246*	*-4*	*-4*	*-8*	*-11*	*-11*	*-22*
Restaurant (LU #934)	4,915 sf	2,006	98	104	202	74	61	135
Pass-by (50% AM, 55% PM)		*-1,054*	*-51*	*-51*	*-102*	*-37*	*-37*	*-61*
Total Primary		**2,522**	**81**	**112**	**193**	**111**	**85**	**196**

Note: du = dwelling units, sf = square feet
1. Average trip rates from ITE *Trip Generation Manual*, 11th Edition (2021).

As shown in Table 3, the proposed project is estimated to generate 2,522 new weekday daily trips with 193 trips occurring in the AM peak hour and 196 trips occurring in the PM peak hour.

[3] Note that the supermarket land use was assumed for the retail to provide a conservative analysis as it has a higher weekday trip rates.

[4] The unadjusted internal capture was estimated to be 47 percent during the PM peak hour based on the ITE methodology. The imposed 20 percent internal capture cap is a reduction in over 50 percent in order to provide a conservative estimate of trip generation.

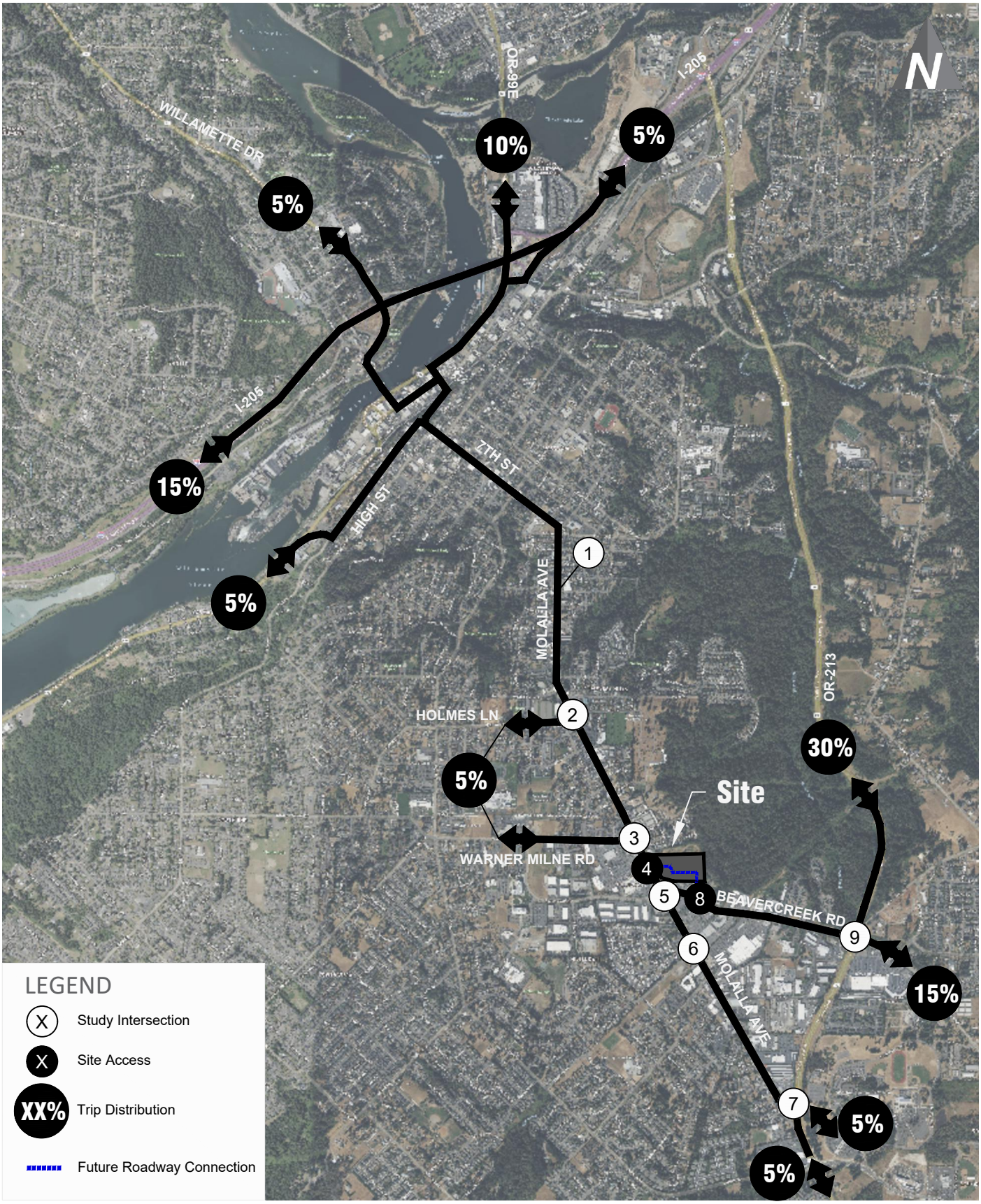
Trip Distribution and Assignment

Individual trip distribution patterns for the residential and commercial uses were estimated to and from the project site and were coordinated with City staff.

The residential trip distribution pattern was estimated based on U.S. Census Bureau's *OnTheMap* tool. *OnTheMap* is a web-based mapping and reporting application, which shows where workers are employed and where they live based on census data. The *OnTheMap* census data was translated to the number of people that live within a quarter-mile radius of the proposed project and where they work. The residential use project trip distribution for vehicle trips is shown in Figure 6.

Trip distribution patterns assumed for the commercial uses to and from the project site were generally assumed to be local and are based on the existing travel patterns in the vicinity of the project. The commercial use project trip distribution for vehicle trips is shown in Figure 7.

The weekday peak hour primary project trips were assigned to the study area based on the respective anticipated project trip distribution patterns. The commercial pass-by trips were assigned via the adjacent intersections of Molalla Avenue/Shared Business (Safeway) Driveway Shared Business (South Ridge) Driveway/Beavercreek Road. The resulting AM and PM peak hour trip assignment is illustrated in Figures 8 and 9, respectively.



Weekday Peak Hour Residential Project Trip Distribution

FIGURE 6

OR City Mixed-Use

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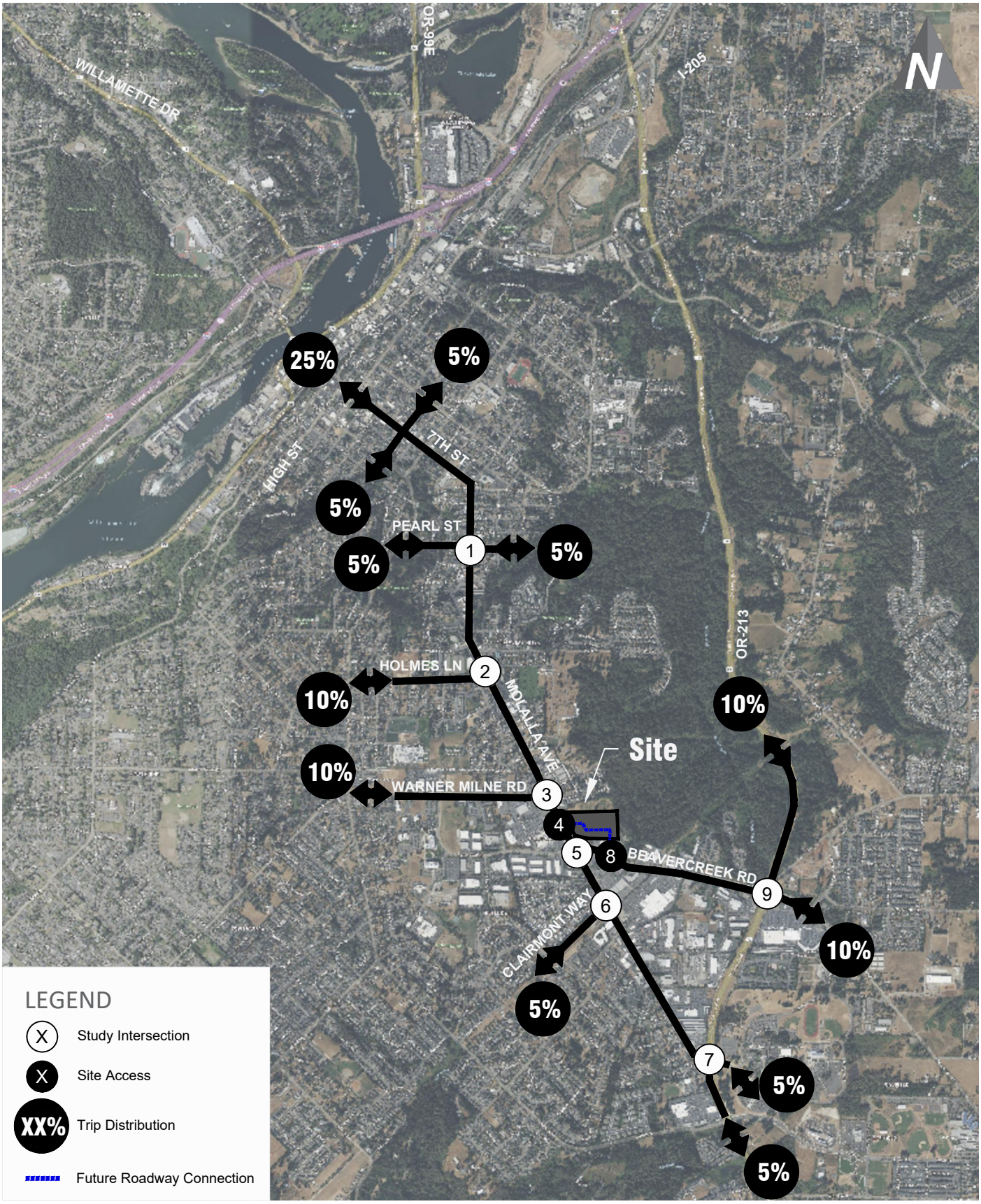

Weekday Peak Hour Commercial Project Trip Distribution

FIGURE 7

OR City Mixed-Use

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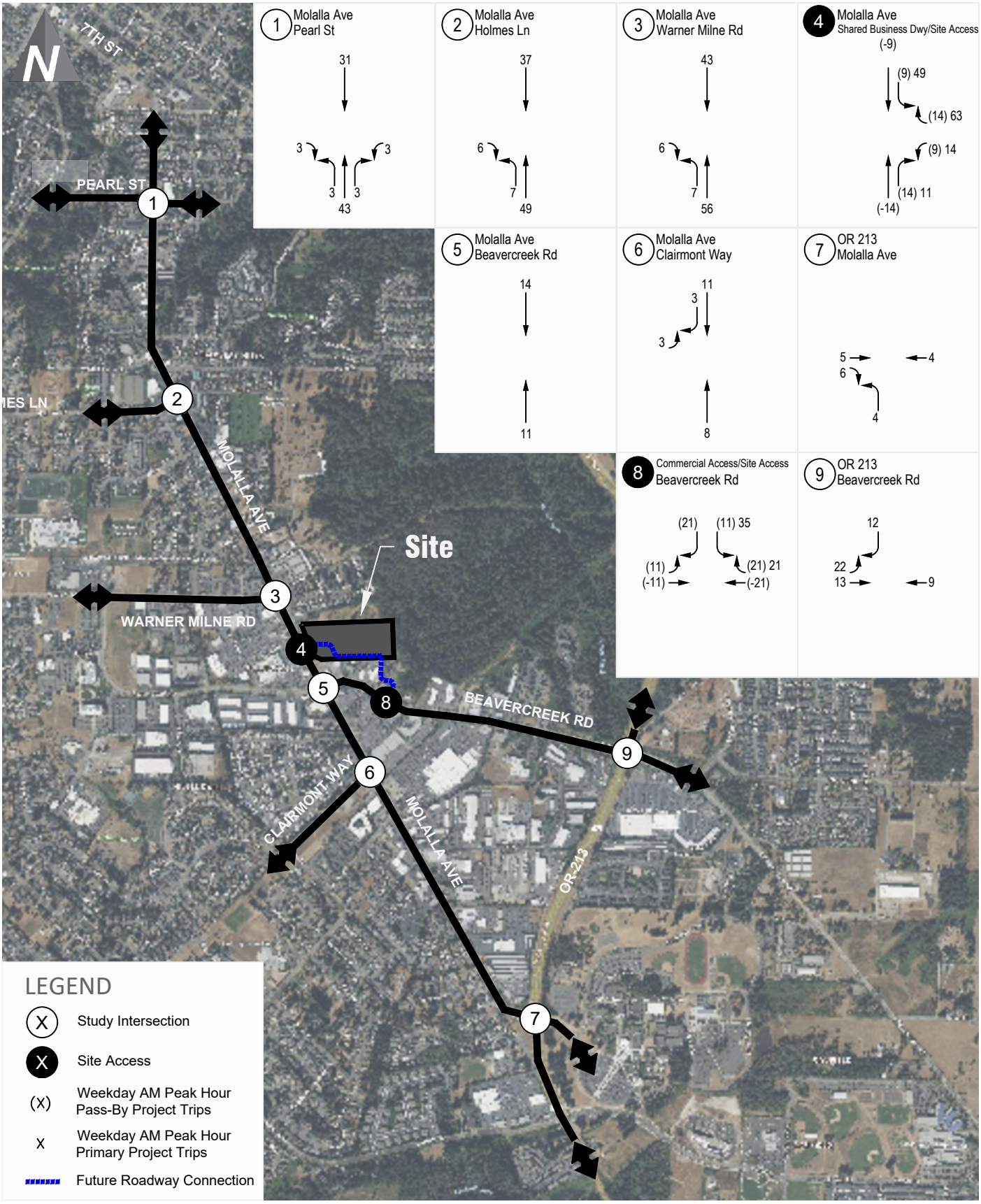

Weekday AM Peak Hour Project Trip Assignment

FIGURE 8

OR City Mixed-Use

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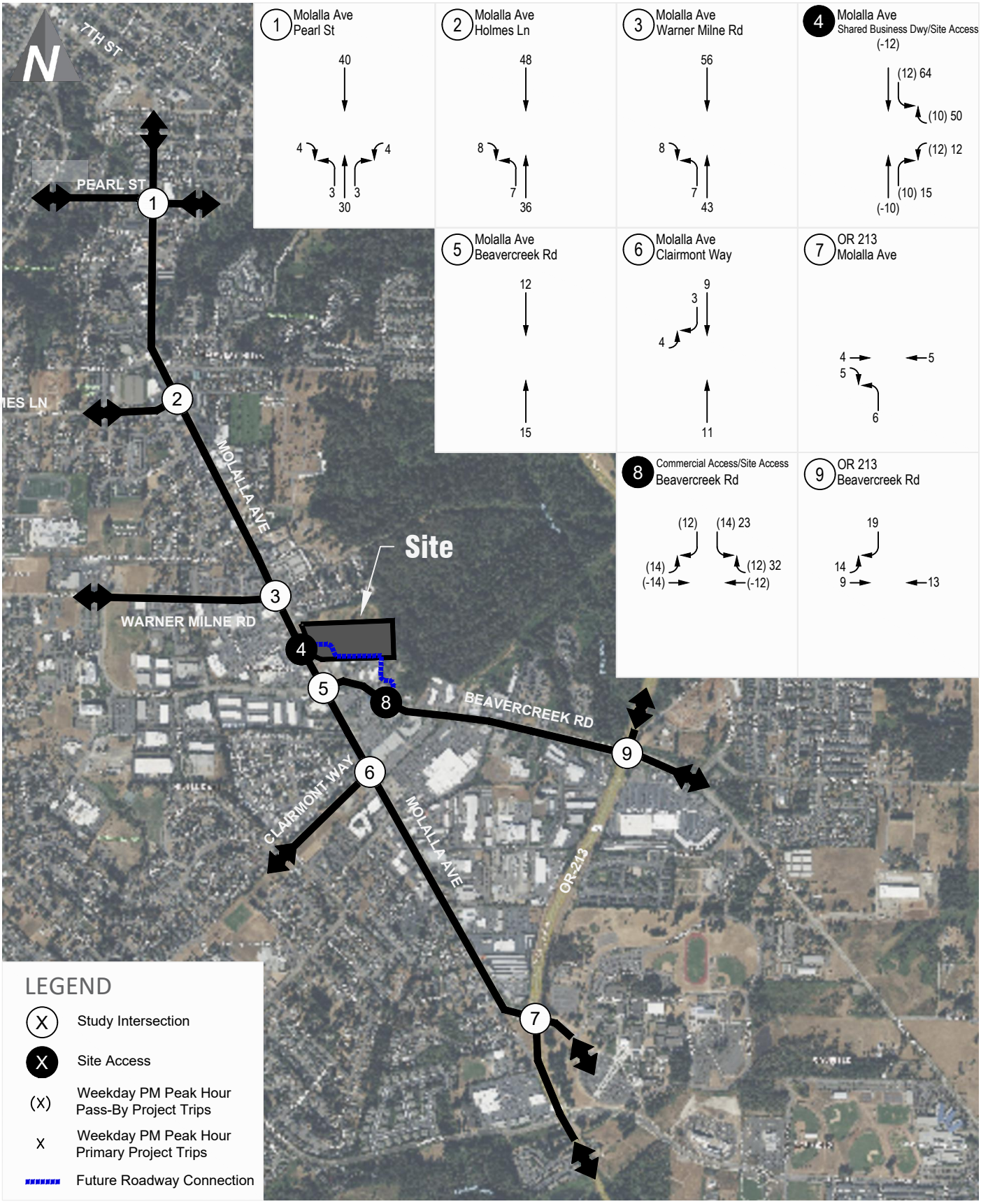

Weekday PM Peak Hour Project Trip Assignment

FIGURE 9

OR City Mixed-Use

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Future With-Project Traffic Volumes

Site-generated weekday peak hour traffic volumes were added to the future without-project traffic volumes at the study intersections. Additionally, with the new roadway connection between the existing signalized intersections along Molalla Avenue and Beavercreek Road, driveways are proposed for the project as well as a new driveway serving the existing commercial uses northeast of the Molalla Avenue/Beavercreek Road intersection. A portion of the estimated existing commercial uses were assumed to utilize the proposed driveway. The resulting future (2030) with-project peak hour traffic volumes are illustrated on Figure 10.

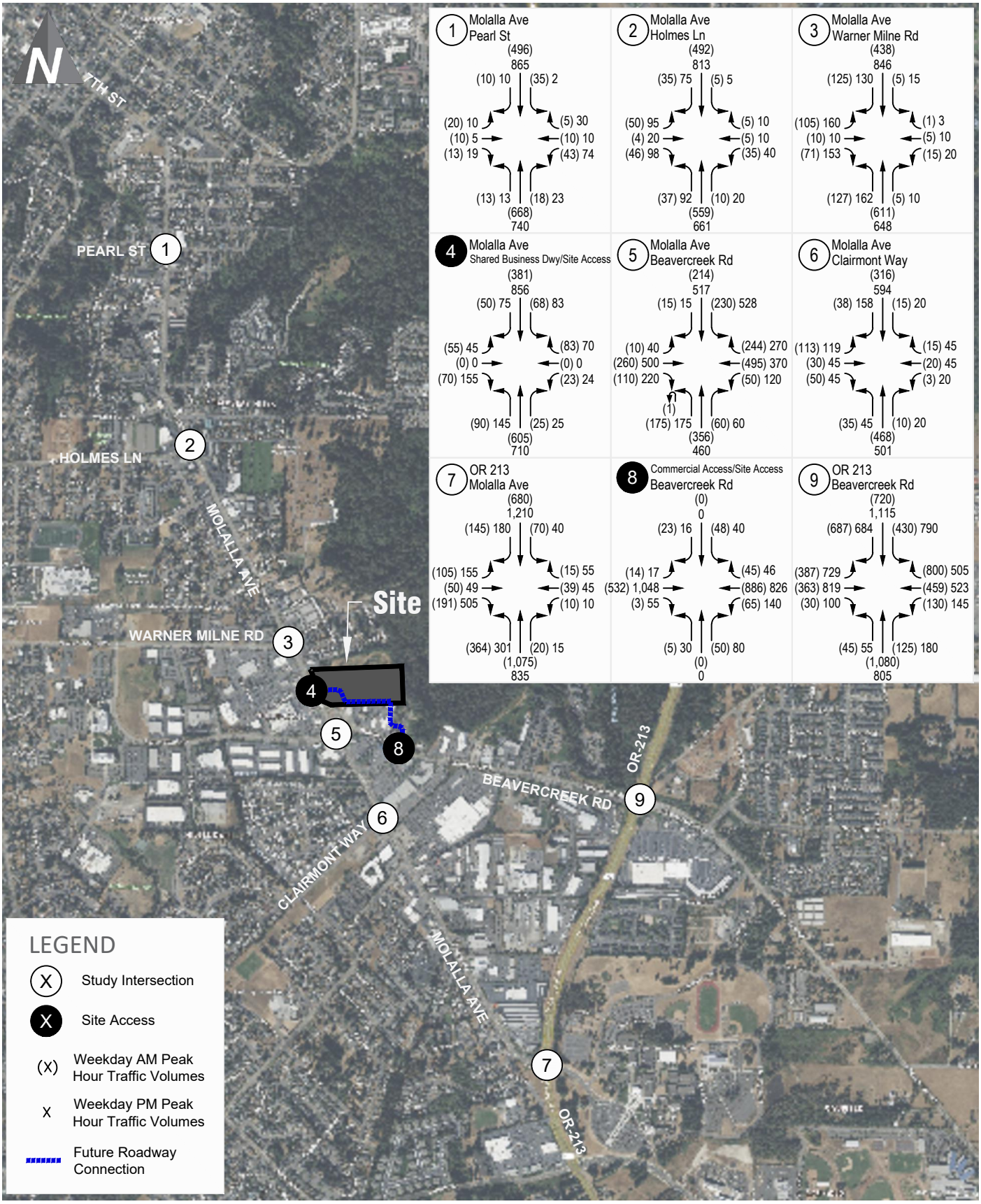
Table 4 summarizes the anticipated increase in total entering traffic at the off-site study intersections as well as the percent of future with-project traffic volumes attributable to the proposed project.

Table 4. Peak Hour Traffic Volume Impacts at Study Intersections

Intersection	Future (2030) Without-Project TEV	Project Trips TEV[1]	Shift of Existing Commercial	Future (2030) With-Project TEV	Percent Share
AM Peak Hour					
1. Molalla Ave/Pearl St	1,255	86	-	1.341	6.4%
2. Molalla Ave/Holmes Ln/Hilda St	1,184	99	-	1,283	7.7%
3. Molalla Ave/Warner Milne Rd	1,406	112	-	1,518	7.4%
4. Molalla Ave/Shared Business Dwy (Safeway)	1,290	160	0	1,450	11.0%
5. Molalla Ave/Beavercreek Rd	2,211	25	-16	2,220	1.1%
6. Molalla Ave/Clairmont Way	1,088	25	-	1,113	2.2%
7. OR 213/Molalla Ave	2,745	19	-	2,764	0.7%
8. Shared Business Dwy (South Ridge)/ Beavercreek Rd	1,578	88	5	1,671	5.3%
9. OR 213/Beavercreek Rd	5,200	56	-	5,256	1.1%
PM Peak Hour					
1. Molalla Ave/Pearl St	1,717	84	-	1,801	4.7%
2. Molalla Ave/Holmes Ln/Hilda St	1,840	99	-	1,939	5.1%
3. Molalla Ave/Warner Milne Rd	2,053	114	-	2,167	5.3%
4. Molalla Ave/Shared Business Dwy (Safeway)	2,025	163	0	2,188	7.4%
5. Molalla Ave/Beavercreek Rd	3,265	27	-17	3,275	0.8%
6. Molalla Ave/Clairmont Way	1,630	27	-	1,657	1.6%
7. OR 213/Molalla Ave	3,380	20	-	3,400	0.6%
8. Shared Business Dwy (South Ridge)/ Beavercreek Rd	2,212	81	6	2,298	3.5%
9. OR 213/Beavercreek Rd	6,395	55	-	6,450	0.9%

Note: TEV = Total Entering Vehicles
1. TEV project trips are inclusive of both primary and pass-by trips at the intersection as applicable.

As shown in Table 4, the project share in future (2030) traffic volumes is estimated to be approximately 8 percent or less during the weekday AM peak hours and approximately 5 percent or less during the weekday PM peak hours at all of the off-site study intersections. Traffic volumes may fluctuate day-to-day by 5 to 10 percent; therefore, the increase in traffic at the off-site study intersections as a result of the proposed project is less than the daily fluctuation. The project share at the intersections of Molalla Avenue/Shared Business (Safeway) Driveway and Shared Business (South Ridge) Driveway/ Beavercreek Road are higher during both the weekday AM and PM peak hours given these intersections serve all project traffic.



Future (2030) With-Project Peak Hour Traffic Volumes

FIGURE 10

OR City Mixed-Use

transpogroup

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Future With-Project Traffic Operations

Future (2030) with-project study intersection operations were evaluated during both the weekday AM and PM peak hours. The v/c ratio and delay were calculated for with-project conditions consistent with the methodology described for existing and without-project conditions. Analysis parameters such as lane channelization and signal timing were assumed to be consistent with the future without-project conditions. Table 5 compares the future (2030) without- and with-project intersection operations for the weekday AM and PM peak hours. Operational worksheets are included in Appendix B.

Note that the intersections of Molalla Avenue/Shared Business Driveway (Safeway) and Shared Business Driveway (South Ridge)/Beavercreek Road both assume the added legs to accommodate the added road connection between the intersections proposed with the project. The new leg at each of the existing traffic signals is assumed to be a three-lane section with a separate left turn lane and shared through-right turn lane. The signal timing at each intersection was assumed to be permissive for the added approaches, consistent with the current timing. Additional discussion of the added roadway segment between Molalla Avenue Beavercreek Road is provided in the site access section in the subsequent section.

Table 5. Future (2030) Without & With-Project Peak Hour Intersection Operations

Intersection	Traffic Control	Future (2030) Without-Project		Future (2030) With-Project	
		v/c[1]	Delay[2]	v/c	Delay
Weekday AM Peak Hour					
1. Molalla Ave/Pearl St	Signal	0.46	4.9	0.50	5.1
2. Molalla Ave/Holmes Ln/Hilda St	Signal	0.40	8.1	0.44	8.3
3. Molalla Ave/Warner Milne Rd	Signal	0.27	10.5	0.29	10.5
4. Molalla Ave/Shared Business Dwy (Safeway)	Signal	0.51	10.8	0.41	11.8
5. Molalla Ave/Beavercreek Rd	Signal	0.51	17.9	0.51	18.0
6. Molalla Ave/Clairmont Way	Signal	0.44	10.8	0.44	10.9
7. OR 213/Molalla Ave	Signal	0.64	28.7	0.65	28.9
8. Shared Business Dwy (South Ridge)/ Beavercreek Rd	Signal	0.72	4.8	0.40	7.3
9. OR 213/Beavercreek Rd	Signal	0.81	47.1	0.82	49.1
Weekday PM Peak Hour					
1. Molalla Ave/Pearl St	Signal	0.60	5.9	0.63	6.1
2. Molalla Ave/Holmes Ln/Hilda St	Signal	0.66	10.7	0.70	11.5
3. Molalla Ave/Warner Milne Rd	Signal	0.44	12.2	0.48	12.8
4. Molalla Ave/Shared Business Dwy (Safeway)	Signal	0.58	14.5	0.50	15.3
5. Molalla Ave/Beavercreek Rd	Signal	0.76	28.1	0.77	28.5
6. Molalla Ave/Clairmont Way	Signal	0.68	16.4	0.70	17.0
7. OR 213/Molalla Ave	Signal	0.78	36.3	0.78	36.6
8. Shared Business Dwy (South Ridge)/ Beavercreek Rd	Signal	0.67	8.5	0.55	9.3
9. OR 213/Beavercreek Rd	Signal	0.94	75.4	0.94	78.0

Note: **Bold** indicates the required V/C standard is not met.
1. Volume to capacity (v/c) ratio reported for the overall intersection at signalized intersections.
2. Average delay per vehicle in seconds reported for the overall intersection delay at signalized intersections.

As shown in Table 5, with the addition of the project traffic all of the study intersections are forecast to continue meeting the required v/c standards with a v/c ratio of 0.94 or less during the weekday AM and PM peak hour conditions. The v/c ratio is forecast to increase by 0.04 or less during both the weekday AM and PM peak hours relative to future (2030) without project conditions.

Site Access Analysis

Access to and from the site will be provided via the new roadway constructed between the existing signalized intersections of Molalla Avenue/Shared Business (Safeway) Driveway Shared Business (South Ridge) Driveway/Beavercreek Road. The proposed road section between Molalla Avenue and Beavercreek Road is illustrated in Figure 2. As shown in the figure, a three-lane section is proposed along the project frontage extending from Molalla Avenue beyond the commercial accesses which then transitions to a two lane section to Beavercreek Road.

The traffic operational review for the site focused on the following key aspects as requested by City staff which are reviewed in the sections below.

- **Modified Traffic Signals** – The operations at the modified signals was evaluated both in terms of v/c of the intersections as well as 95th percentile queues.
- **Left-turn lane warrants** – A three lane section providing a two-way left turn lane is proposed through the project's commercial driveways but then is proposed to transition to a two-lane section. A warrant review is conducted to confirm if left turn lanes are recommended at the two driveways further to the east of this section. The two known driveway locations are illustrated in Figure 2.
- **On-site queueing** – The on-site queuing associated with the proposed restaurant with drive-through.

Modified Traffic Signals

The traffic operations at the intersections of Molalla Avenue/Shared Business (Safeway) Driveway and Shared Business (South Ridge) Driveway/Beavercreek Road intersections were evaluated under future (2030) with-project conditions for the weekday AM and PM peak hours. As noted above, the new leg at each of the existing traffic signals is assumed to be a three-lane section with a separate left turn lane and shared through-right turn lane. The signal timing at each intersection was assumed to be permissive for the added approaches, consistent with the current timing. The resulting operations are summarized in Table 5 above. As shown in the table, both intersections are forecast to meet the required operational standards, operating with a v/c of 0.55 or lower during the weekday AM and PM peak hours.

The 95th percentile queues (the queues that are only exceeded 5% of the time) at the signalized access intersections along Molalla Avenue and Beavercreek Road were also evaluated using synchro, consistent with the operational analysis and are summarized in Table 6.

Table 6. Future (2030) Molalla Ave & Beavercreek Rd Intersection 95th Percentile Queues

	4. Molalla Ave/Shared Business Dwy (Safeway)					8. Shared Business Dwy (South Ridge)/ Beavercreek Rd				
		AM Peak Hour		PM Peak Hour			AM Peak Hour		PM Peak Hour	
Movement	Available Storage[2]	Without-Project	With-Project	Without-Project	With-Project	Available Storage	Without-Project	With-Project	Without-Project	With-Project
Eastbound Left-Turn	110'	25'	25'	30'	30'	115'	<25'	<25'	<25'	<25'
Eastbound through/right	110'	30'	30'	105'	110'	715'	35'	45'	160'	160'
Westbound Left-Turn	-[1]	-	<25'	-	25'	115'	<25'	<25'	25'	25'
Westbound through/right	-[1]	-	35'	-	45'	630'	<25'	65'	60'	80'
Northbound Left-Turn	100'	45'	50'	**110'**	**115'**	50'	<25'	<25'	25'	25'
Northbound through/right	530'	60'	75'	95'	105'	50'	25'	25'	40'	40'
Southbound Left-Turn	-[1]	<25'	25'	<25'	35'	-[1]	-	25'	-	25'
Southbound through/right	500'	75'	75'	225'	230'	-[1]	-	<25'	-	<25'

Note: **Bold** indicates the 95th percentile queues exceeds the available storage.
1. Intersection movement being added and/or modified with project.
2. Available queueing storage distance to the adjacent intersection. Turn lane storage assumes storage plus full width opening (not including the taper).

The 95th percentile queues of the westbound approach at the Molalla Avenue signal and the southbound approach at the Beavercreek Road signal (i.e. the approaches of the new roadway added with the project) are forecast to be 2 vehicles or less. These forecast queues will be able to be accomdoated within the provided storage at each intersection. This forecast queues correspond with the forecast weekday AM and PM peak hour volumes along the proposed roadway section with the opening of the project of approximately 300 trips (in/out) split between the 2 accesses as illustrated in Figure 10 above.

The queues of the other approaches are anticipated to have minimal change with the project relative to without project conditions (i.e. approximately 1 car length or less increase in 95th percentile queues with the project compared to without the project). Additionally, all 95th percentile queues at the two signals are forecast to be accomdoated within the available storage with the exception of the northbound left-turn queue at the Molalla Avenue signal during the PM peak hour.

The northbound left-turn 95th percentile queue at the Molalla Avenue signal is forecast to have up to 1 vehicle extending beyond the available storage under both future (2030) without-project and with-project conditions. The table shows that the 95th percentile queue is forecast to increase by 5' (less than 1 vehicle) with the project as compared to without project conditions, even though the project does not add any trips to the northbound left-turn movement. This minimal increase in 95th percentile queue is due to the actuated signal timing of the intersection, which adapts phasing time allocations to movements based on volumes of the intersection. Due to the addition of the east leg added with the project, the phase time at the actuated signal adjusts accordingly, resulting in the slight added forecast 95th percentile queue of the northbound left-turn movement. Although the 95th northbound left-turn percentile queue is forecast to exceed the storage, the average queue is forecast to be accomdoated within the available storage under both future (2030) without- and with-project conditions at approximately 60 feet or less during the PM peak hour.

Left-Turn Lane Warrants

Left-turn lane warrants have been reviewed for the proposed Les Schwab Access and the eastern residential access located on the east side of the project site along the proposed Public Access Road. Based on the City of Oregon City's Turn Lane Warrant guidelines defined in the Transportation Impact Analysis Guidelines (July 2021), Section 7.14.2, the "Engineer shall exercise professional judgement in evaluating the need for, and benefit of, providing dedicated left-turn lanes". The City provided references to consider include the AASHTO *Policy on Geometric Design of Highways and Streets* and the National Cooperative Highway Research Program (NCHRP) Report 457 *Evaluating Intersection Improvements.* The left turn warrants from both sources were evaluated assuming the future (2030) with-project weekday peak hour traffic volumes. The left-turn warrant evaluation is included in Appendix D. As shown in the appendix, no left-turn lanes are warranted at any of the site access intersections under the future (2030) weekday AM or PM peak hours.

In addition to these known driveway locations, as illustrated in Figure 2, additional access(es) are anticipated on the south side of the internal roadway in the future as identified as part of the Beavercreek Road Access Management Plan. These access points would serve the existing commercial development adjacent to Les Schwab. The exact driveway placement is unknown; however, the access would be located between the commercial and residential driveways within the proposed two-lane roadway section. The turn lane needs associated with that potential future development would be evaluated as part of that future project and if shown to be warranted, the widening to accommodate a turn lane could be provided to the south of the proposed road.

On-Site Queueing

Additionally, on-site queuing associated with the proposed restaurant with drive-through was evaluated. The drive-through queue was estimated using the Poisson queuing distribution. The

total external inbound vehicle trips (inclusive of pass-by trips) for the restaurant use were assumed to utilize the drive through for purposes of providing for a conservative queueing analysis. The average service time for a fast-food restaurant drive-through window is approximately 4 minutes based on the annual study conducted by QSR[5]. A detailed Poisson queuing worksheet is provided in Appendix E. The weekday AM and PM peak hour anticipated drive-through 95th-percentile queue lengths are estimated to be 12 vehicles or less or approximately 6 vehicles per lane. The proposed site plan illustrates each drive lane can accommodate a queue of at least 275' or 11 vehicles per lane; therefore, the queues are anticipated to be accommodated within the proposed driveway storage.

[5] *25th Anniversary Edition Drive-Thru Study (Intouch Insight and QSR).*

Mitigation Measures

Based on the operational review above for both without and with-project conditions, all off-site study intersections are forecast to continue to meet the established v/c thresholds with the addition of project generated traffic.

Based on coordination with City staff, a pro-rata share contribution is required for the TSP project #D95, Beavercreek Road/OR-213 added westbound right turn merge lane as noted above. The City has indicated the current rate is $404 per weekday PM peak hour trip. As shown in Table 4 above, the project is forecast to contribute 55 project trips to the intersection during the PM peak hour. This results in an estimated fee of $22,220 at this location as pro-rata share contribution to the planned improvement project.

Additionally, a Transportation System Development Charge (TSDC) will be required associated with the development of the project's land uses.[6] The project site is located inside the Molalla Avenue Corridor SDC Special Location Discount Area. Based on the current TSDC rates (Effective July 1, 2018), multi-family developments are required to pay a fee of $6,474 per multi-family dwelling unit constructed. Non-residential developments are required to submit a *System Development Charges Request Form* to the City to determine the fee required. The residential portion of the project proposed to construct 210 multifamily dwelling units will require a fee of $1,359,540. The TSDC associated with the non-residential uses proposed on site will be determined by the City of Oregon City following the submittal of the *System Development Charges Request Form*.

[6] Each of the pad users will pay their own fees when they proceed with their own pad development.

Findings and Recommendations

This traffic impact analysis summarizes the project traffic impacts of the proposed Oregon City Mixed-Use project located at 1367 Molalla Avenue in Oregon City. General findings and recommendations include:

- **Project Description** – The proposed project will construct a 13,500 sf retail, a 4,915 sf fast food restaurant with drive through, and up to 210 multifamily apartment units on 3 parcels in Oregon City along with a 4th parcel being used for right-of-way.

- **Trip Generation** – Accounting for internal capture of trips that will occur between the proposed uses and pass-by trips associated with the commercial uses of the project, the proposed project is estimated to generate 2,522 new primary weekday daily trips with 193 trips occurring in the AM peak hour and 196 trips occurring in the PM peak hour.

- **Traffic Operations** – With the addition of project generated traffic, all of the study intersections are forecast to continue meeting the required v/c standards with a v/c ratio of 0.94 or less during the weekday AM and PM peak hour conditions. The v/c ratio is forecast to increase by 0.04 or less during both the weekday AM and PM peak hours relative to future (2030) without project conditions.

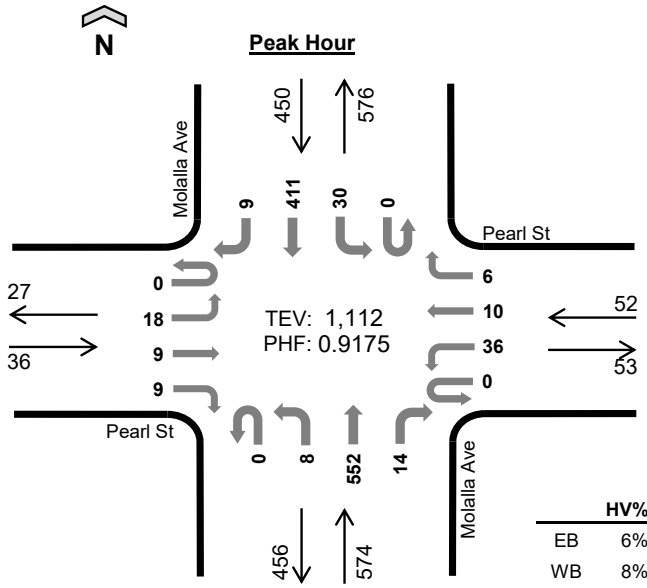
- **Site Access** – Access to and from the site will be provided via the new roadway constructed between the existing signalized intersections of Molalla Avenue/Shared Business (Safeway) Driveway Shared Business (South Ridge) Driveway/Beavercreek Road.
    - The two signalized intersections are forecast to operate acceptably.
    - The 95th percentile queues of the westbound approach at the Molalla Avenue signal and the southbound approach at the Beavercreek Road signal (i.e. the approaches of the new roadway added with the project) are forecast to be 2 vehicles or less. Additionally, the queues of the other approaches at the two signalized intersections are anticipated to have minimal change with the project relative to without project conditions (i.e. approximately 1 car length or less increase in 95th percentile queues with the project compared to without the project).
    - The proposed road section is three-lane through the commercial area and then transitions to a two-lane section further east. This proposed section was confirmed through a warrant analysis for current uses. Any future development and associated need for widening to accommodate turn lanes would be assessed and could be provided to the south of the proposed road.

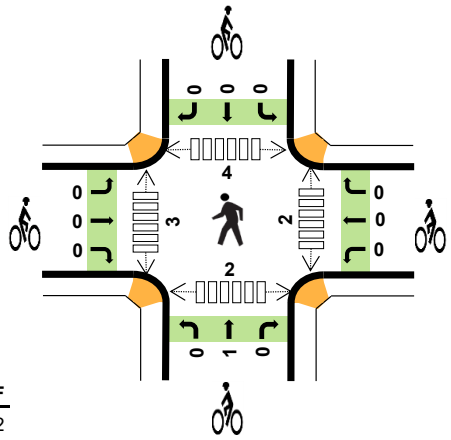
- **Mitigation** – The total TSDC associated with the land uses of the proposed project will be determined by the City of Oregon City following the submittal of the *System Development Charges Request Form*. Additionally, the project would contribute its pro-rata share at the Beavercreek Road/OR-213 intersection toward TSP project #D95, Beavercreek Road/OR-213 added westbound right turn merge lane.

Appendix A: Traffic Counts

Molalla Ave
Pearl St

Date: 9/9/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM





	HV%	PHF
EB	6%	0.82
WB	8%	0.76
NB	4%	0.91
SB	4%	0.92
TOTAL	4%	0.92

Peak Hour Count Summaries

Peak Hour Interval Start		Pearl St Eastbound				Pearl St Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:45 AM		**0**	**3**	**4**	**4**	**0**	**11**	**1**	**2**	**0**	**3**	**147**	**7**	**0**	**11**	**108**	**2**	**303**	**0**
8:00 AM		**0**	**4**	**3**	**1**	**0**	**8**	**6**	**1**	**0**	**1**	**125**	**2**	**0**	**14**	**105**	**3**	**273**	**0**
8:15 AM		**0**	**6**	**0**	**1**	**0**	**4**	**2**	**0**	**0**	**2**	**137**	**2**	**0**	**4**	**87**	**3**	**248**	**0**
8:30 AM		**0**	**5**	**2**	**3**	**0**	**13**	**1**	**3**	**0**	**2**	**143**	**3**	**0**	**1**	**111**	**1**	**288**	**1,112**
Pk Hr	All	**0**	**18**	**9**	**9**	**0**	**36**	**10**	**6**	**0**	**8**	**552**	**14**	**0**	**30**	**411**	**9**	**1,112**	
	HV	**0**	**1**	**0**	**1**	**0**	**2**	**2**	**0**	**0**	**0**	**22**	**0**	**0**	**0**	**16**	**1**	**45**	
	HV%	-	**6%**	**0%**	**11%**	-	**6%**	**20%**	**0%**	-	**0%**	**4%**	**0%**	-	**0%**	**4%**	**11%**	**4%**	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:45 AM	**1**	**1**	**5**	**4**	***11***	**0**	**0**	**0**	**0**	***0***	**1**	**1**	**0**	**2**	***4***
8:00 AM	**0**	**2**	**5**	**6**	***13***	**0**	**0**	**0**	**0**	***0***	**1**	**2**	**1**	**0**	***4***
8:15 AM	**1**	**0**	**6**	**2**	***9***	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**1**	**0**	***1***
8:30 AM	**0**	**1**	**6**	**5**	***12***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**2**	**0**	***2***
Peak Hour	**2**	**4**	**22**	**17**	***45***	**0**	**0**	**1**	**0**	***1***	**2**	**3**	**4**	**2**	***11***

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Count Summaries - All Vehicles

Interval Start	Pearl St Eastbound				Pearl St Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	7	4	2	0	4	1	0	0	1	140	2	0	0	46	2	209	0
7:15 AM	0	2	1	2	0	5	0	0	0	2	158	3	0	2	66	3	244	0
7:30 AM	0	4	7	3	0	3	0	1	0	4	161	3	0	5	79	0	270	0
7:45 AM	**0**	**3**	**4**	**4**	**0**	**11**	**1**	**2**	**0**	**3**	**147**	**7**	**0**	**11**	**108**	**2**	**303**	**1,026**
8:00 AM	**0**	**4**	**3**	**1**	**0**	**8**	**6**	**1**	**0**	**1**	**125**	**2**	**0**	**14**	**105**	**3**	**273**	**1,090**
8:15 AM	**0**	**6**	**0**	**1**	**0**	**4**	**2**	**0**	**0**	**2**	**137**	**2**	**0**	**4**	**87**	**3**	**248**	**1,094**
8:30 AM	**0**	**5**	**2**	**3**	**0**	**13**	**1**	**3**	**0**	**2**	**143**	**3**	**0**	**1**	**111**	**1**	**288**	**1,112**
8:45 AM	0	4	1	6	0	14	2	1	0	3	131	5	0	1	130	1	299	1,108
Count Total	0	35	22	22	0	62	13	8	0	18	1,142	27	0	38	732	15	2,134	
Pk Hr All	**0**	**18**	**9**	**9**	**0**	**36**	**10**	**6**	**0**	**8**	**552**	**14**	**0**	**30**	**411**	**9**	**1,112**	
Pk Hr HV	**0**	**1**	**0**	**1**	**0**	**2**	**2**	**0**	**0**	**0**	**22**	**0**	**0**	**0**	**16**	**1**	**45**	
Pk Hr HV%	**-**	**6%**	**0%**	**11%**	**-**	**6%**	**20%**	**0%**	**-**	**0%**	**4%**	**0%**	**-**	**0%**	**4%**	**11%**	**4%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	1	0	7	3	*11*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	0	0	7	2	*9*	0	0	2	1	*3*	1	0	1	0	*2*
7:30 AM	0	0	3	4	*7*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	**1**	**1**	**5**	**4**	**11**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**2**	**4**
8:00 AM	**0**	**2**	**5**	**6**	**13**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**1**	**0**	**4**
8:15 AM	**1**	**0**	**6**	**2**	**9**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**1**	**0**	**1**
8:30 AM	**0**	**1**	**6**	**5**	**12**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**
8:45 AM	1	1	6	2	*10*	0	0	0	1	*1*	0	2	0	0	*2*
Count Total	4	5	45	28	*82*	0	0	3	2	*5*	3	5	5	2	*15*
Peak Hour	**2**	**4**	**22**	**17**	***45***	**0**	**0**	**1**	**0**	***1***	**2**	**3**	**4**	**2**	**11**

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Count Summaries - Heavy Vehicles

Interval Start	Pearl St				Pearl St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	1	0	0	0	0	0	1	5	1	0	0	3	0	11	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	7	0	0	0	2	0	9	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	4	0	7	0
7:45 AM	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**4**	**0**	**11**	**38**
8:00 AM	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**6**	**0**	**13**	**40**
8:15 AM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**2**	**0**	**9**	**40**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**4**	**1**	**12**	**45**
8:45 AM	0	1	0	0	0	0	1	0	0	1	5	0	0	0	2	0	10	44
Count Total	0	2	0	2	0	2	3	0	0	2	42	1	0	0	27	1	82	
Pk Hr Heavy	**0**	**1**	**0**	**1**	**0**	**2**	**2**	**0**	**0**	**0**	**22**	**0**	**0**	**0**	**16**	**1**	**45**	

Count Summaries - Bikes

Interval Start	Pearl St				Pearl St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	3	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**1**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
Count Total	0	0	0	0	0	0	0	0	0	0	3	0	0	0	2	0	5	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	

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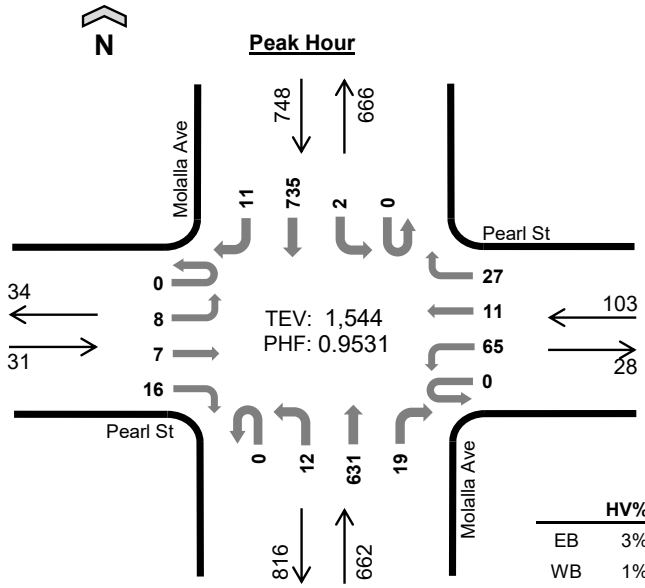
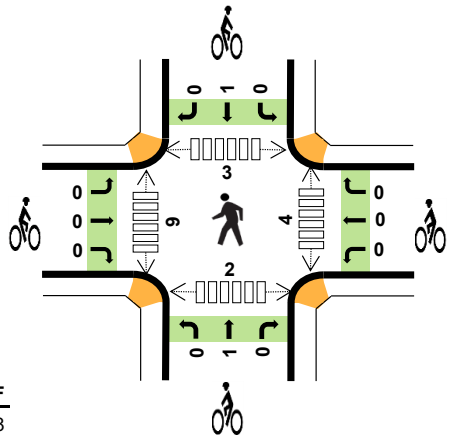
Molalla Ave
Pearl St

Date: 9/9/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM





	HV%	PHF
EB	3%	0.78
WB	1%	0.74
NB	2%	0.93
SB	1%	0.87
TOTAL	1%	0.95

Peak Hour Count Summaries

Peak Hour Interval Start		Pearl St Eastbound				Pearl St Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:30 PM		**0**	**3**	**2**	**3**	**0**	**14**	**4**	**5**	**0**	**3**	**151**	**6**	**0**	**2**	**207**	**5**	**405**	**0**
4:45 PM		**0**	**0**	**4**	**3**	**0**	**18**	**2**	**3**	**0**	**6**	**148**	**3**	**0**	**0**	**204**	**4**	**395**	**0**
5:00 PM		**0**	**1**	**1**	**4**	**0**	**16**	**5**	**14**	**0**	**2**	**170**	**6**	**0**	**0**	**166**	**0**	**385**	**0**
5:15 PM		**0**	**4**	**0**	**6**	**0**	**17**	**0**	**5**	**0**	**1**	**162**	**4**	**0**	**0**	**158**	**2**	**359**	**1,544**
Pk Hr	All	**0**	**8**	**7**	**16**	**0**	**65**	**11**	**27**	**0**	**12**	**631**	**19**	**0**	**2**	**735**	**11**	**1,544**	
	HV	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**10**	**0**	**0**	**0**	**8**	**0**	**20**	
	HV%	-	**0%**	**0%**	**6%**	-	**0%**	**9%**	**0%**	-	**0%**	**2%**	**0%**	-	**0%**	**1%**	**0%**	**1%**	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:30 PM	**0**	**1**	**3**	**1**	***5***	**0**	**0**	**1**	**0**	***1***	**1**	**3**	**0**	**2**	***6***
4:45 PM	**0**	**0**	**5**	**2**	***7***	**0**	**0**	**0**	**1**	***1***	**1**	**3**	**0**	**0**	***4***
5:00 PM	**1**	**0**	**1**	**3**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**3**	**3**	**0**	***6***
5:15 PM	**0**	**0**	**1**	**2**	***3***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**0**	**0**	***2***
Peak Hour	**1**	**1**	**10**	**8**	***20***	**0**	**0**	**1**	**1**	**2**	**4**	**9**	**3**	**2**	***18***

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Count Summaries - All Vehicles

Interval Start	Pearl St Eastbound				Pearl St Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	3	3	0	23	1	2	0	3	158	2	0	0	189	4	388	0
4:15 PM	0	0	2	6	0	17	3	2	0	1	144	1	0	0	138	5	319	0
4:30 PM	**0**	**3**	**2**	**3**	**0**	**14**	**4**	**5**	**0**	**3**	**151**	**6**	**0**	**2**	**207**	**5**	**405**	**0**
4:45 PM	**0**	**0**	**4**	**3**	**0**	**18**	**2**	**3**	**0**	**6**	**148**	**3**	**0**	**0**	**204**	**4**	**395**	**1,507**
5:00 PM	**0**	**1**	**1**	**4**	**0**	**16**	**5**	**14**	**0**	**2**	**170**	**6**	**0**	**0**	**166**	**0**	**385**	**1,504**
5:15 PM	**0**	**4**	**0**	**6**	**0**	**17**	**0**	**5**	**0**	**1**	**162**	**4**	**0**	**0**	**158**	**2**	**359**	**1,544**
5:30 PM	0	6	3	2	0	14	0	8	0	2	153	6	0	1	141	2	338	1,477
5:45 PM	0	3	0	4	0	9	2	3	0	2	126	3	0	1	149	1	303	1,385
Count Total	0	17	15	31	0	128	17	42	0	20	1,212	31	0	4	1,352	23	2,892	
Pk Hr All	**0**	**8**	**7**	**16**	**0**	**65**	**11**	**27**	**0**	**12**	**631**	**19**	**0**	**2**	**735**	**11**	**1,544**	
Pk Hr HV	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**10**	**0**	**0**	**0**	**8**	**0**	**20**	
Pk Hr HV%	**-**	**0%**	**0%**	**6%**	**-**	**0%**	**9%**	**0%**	**-**	**0%**	**2%**	**0%**	**-**	**0%**	**1%**	**0%**	**1%**	

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) E	W	N	S	Total
4:00 PM	1	0	2	3	*6*	0	0	1	0	*1*	1	1	0	0	*2*
4:15 PM	0	0	3	4	*7*	0	0	1	2	*3*	3	0	4	0	*7*
4:30 PM	**0**	**1**	**3**	**1**	**5**	**0**	**0**	**1**	**0**	**1**	**1**	**3**	**0**	**2**	**6**
4:45 PM	**0**	**0**	**5**	**2**	**7**	**0**	**0**	**0**	**1**	**1**	**1**	**3**	**0**	**0**	**4**
5:00 PM	**1**	**0**	**1**	**3**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**3**	**0**	**6**
5:15 PM	**0**	**0**	**1**	**2**	**3**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**2**
5:30 PM	1	0	0	1	*2*	0	0	1	1	*2*	2	0	1	4	*7*
5:45 PM	0	0	2	0	*2*	0	0	0	0	*0*	0	2	0	0	*2*
Count Total	3	1	17	16	*37*	0	0	4	4	*8*	10	12	8	6	*36*
Peak Hour	**1**	**1**	**10**	**8**	***20***	**0**	**0**	**1**	**1**	***2***	**4**	**9**	**3**	**2**	**18**

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Count Summaries - Heavy Vehicles

Interval Start	Pearl St				Pearl St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	1	0	0	0	0	0	0	0	2	0	0	0	3	0	6	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	1	7	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**1**	**0**	**5**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**2**	**0**	**7**	**25**
5:00 PM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**3**	**0**	**5**	**24**
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**3**	**20**
5:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	17
5:45 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	12
Count Total	0	1	1	1	0	0	1	0	0	0	17	0	0	0	15	1	37	
Pk Hr Heavy	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**10**	**0**	**0**	**0**	**8**	**0**	**20**	

Count Summaries - Bikes

Interval Start	Pearl St				Pearl St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	3	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**6**
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
5:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2	3
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Count Total	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	0	8	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**2**	

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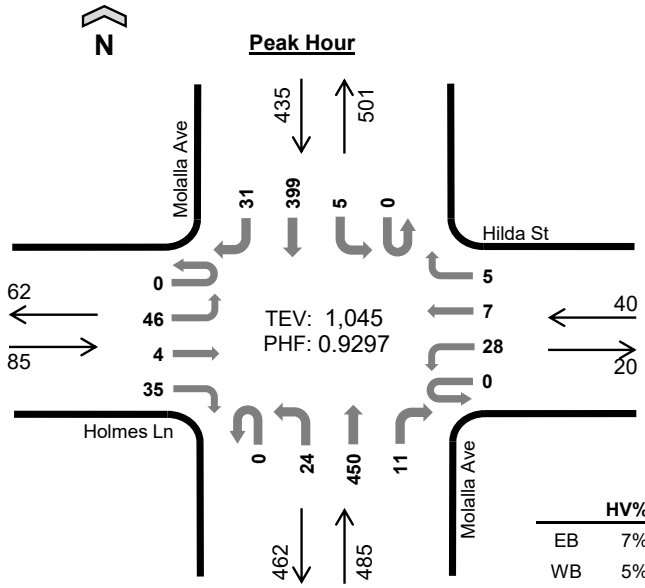
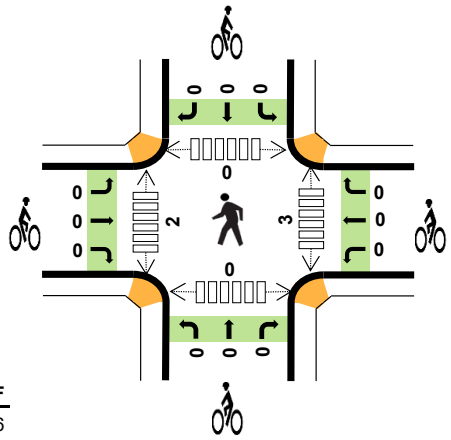
Molalla Ave
Holmes Ln

Date: 9/9/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 8:00 AM to 9:00 AM





	HV%	PHF
EB	7%	0.76
WB	5%	0.63
NB	4%	0.90
SB	4%	0.81
TOTAL	4%	0.93

Peak Hour Count Summaries

Peak Hour Interval Start		Holmes Ln Eastbound				Hilda St Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
8:00 AM		0	8	0	9	0	6	2	2	0	6	102	3	0	3	97	10	248	0
8:15 AM		0	10	2	7	0	12	3	1	0	5	115	2	0	0	77	5	239	0
8:30 AM		0	19	0	9	0	5	1	1	0	10	122	2	0	2	98	8	277	0
8:45 AM		0	9	2	10	0	5	1	1	0	3	111	4	0	0	127	8	281	1,045
Pk Hr	All	0	46	4	35	0	28	7	5	0	24	450	11	0	5	399	31	1,045	
	HV	0	3	0	3	0	2	0	0	0	3	16	0	0	0	12	4	43	
	HV%	-	7%	0%	9%	-	7%	0%	0%	-	13%	4%	0%	-	0%	3%	13%	4%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
8:00 AM	3	2	3	7	*15*	0	0	0	0	*0*	0	1	0	0	*1*
8:15 AM	2	0	6	2	*10*	0	0	0	0	*0*	1	0	0	0	*1*
8:30 AM	1	0	7	3	*11*	0	0	0	0	*0*	1	1	0	0	*2*
8:45 AM	0	0	3	4	*7*	0	0	0	0	*0*	1	0	0	0	*1*
Peak Hour	6	2	19	16	*43*	0	0	0	0	*0*	3	2	0	0	*5*

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Count Summaries - All Vehicles

Interval Start	Holmes Ln				Hilda St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	10	0	9	0	2	0	3	0	2	92	3	0	0	31	4	156	0
7:15 AM	0	16	0	3	0	2	3	7	0	2	107	1	0	1	65	4	211	0
7:30 AM	0	15	2	4	0	7	3	2	0	2	118	2	0	1	76	4	236	0
7:45 AM	0	23	5	7	0	9	1	3	0	3	106	2	0	2	99	2	262	865
8:00 AM	**0**	**8**	**0**	**9**	**0**	**6**	**2**	**2**	**0**	**6**	**102**	**3**	**0**	**3**	**97**	**10**	**248**	**957**
8:15 AM	**0**	**10**	**2**	**7**	**0**	**12**	**3**	**1**	**0**	**5**	**115**	**2**	**0**	**0**	**77**	**5**	**239**	**985**
8:30 AM	**0**	**19**	**0**	**9**	**0**	**5**	**1**	**1**	**0**	**10**	**122**	**2**	**0**	**2**	**98**	**8**	**277**	**1,026**
8:45 AM	**0**	**9**	**2**	**10**	**0**	**5**	**1**	**1**	**0**	**3**	**111**	**4**	**0**	**0**	**127**	**8**	**281**	**1,045**
Count Total	0	110	11	58	0	48	14	20	0	33	873	19	0	9	670	45	1,910	
Pk Hr All	**0**	**46**	**4**	**35**	**0**	**28**	**7**	**5**	**0**	**24**	**450**	**11**	**0**	**5**	**399**	**31**	**1,045**	
Pk Hr HV	**0**	**3**	**0**	**3**	**0**	**2**	**0**	**0**	**0**	**3**	**16**	**0**	**0**	**0**	**12**	**4**	**43**	
Pk Hr HV%	**-**	**7%**	**0%**	**9%**	**-**	**7%**	**0%**	**0%**	**-**	**13%**	**4%**	**0%**	**-**	**0%**	**3%**	**13%**	**4%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	5	0	3	2	*10*	0	0	0	0	*0*	1	1	0	0	*2*
7:15 AM	1	0	7	1	*9*	0	0	0	1	*1*	0	1	0	1	*2*
7:30 AM	0	0	2	2	*4*	0	0	0	0	*0*	1	0	0	0	*1*
7:45 AM	1	1	6	3	*11*	0	0	0	0	*0*	1	0	0	0	*1*
8:00 AM	**3**	**2**	**3**	**7**	**15**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**
8:15 AM	**2**	**0**	**6**	**2**	**10**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**
8:30 AM	**1**	**0**	**7**	**3**	**11**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**2**
8:45 AM	**0**	**0**	**3**	**4**	**7**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**
Count Total	13	3	37	24	*77*	0	0	0	1	*1*	6	4	0	1	*11*
Peak Hour	**6**	**2**	**19**	**16**	***43***	**0**	**0**	**0**	**0**	***0***	**3**	**2**	**0**	**0**	**5**

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Count Summaries - Heavy Vehicles

Interval Start	Holmes Ln				Hilda St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	1	0	4	0	0	0	0	0	1	2	0	0	0	2	0	10	0
7:15 AM	0	0	0	1	0	0	0	0	0	0	7	0	0	0	1	0	9	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	4	0
7:45 AM	0	0	0	1	0	1	0	0	0	2	4	0	0	0	3	0	11	34
8:00 AM	**0**	**1**	**0**	**2**	**0**	**2**	**0**	**0**	**0**	**1**	**2**	**0**	**0**	**0**	**6**	**1**	**15**	**39**
8:15 AM	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**2**	**0**	**10**	**40**
8:30 AM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**2**	**5**	**0**	**0**	**0**	**1**	**2**	**11**	**47**
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**3**	**1**	**7**	**43**
Count Total	0	4	0	9	0	3	0	0	0	6	31	0	0	0	20	4	77	
Pk Hr Heavy	**0**	**3**	**0**	**3**	**0**	**2**	**0**	**0**	**0**	**3**	**16**	**0**	**0**	**0**	**12**	**4**	**43**	

Count Summaries - Bikes

Interval Start	Holmes Ln				Hilda St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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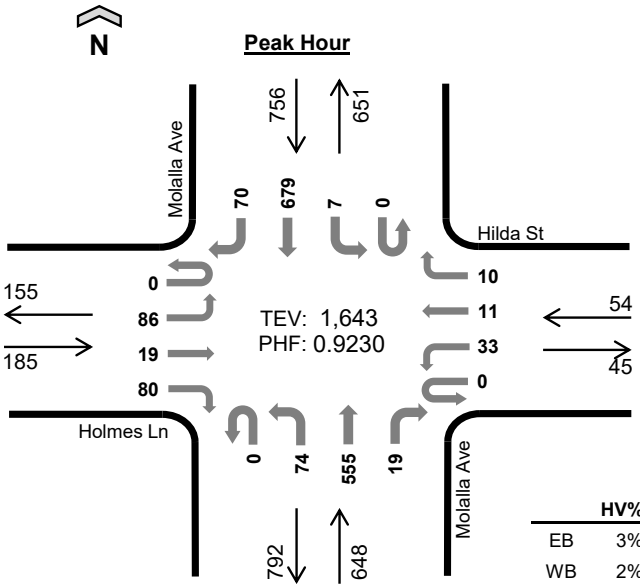
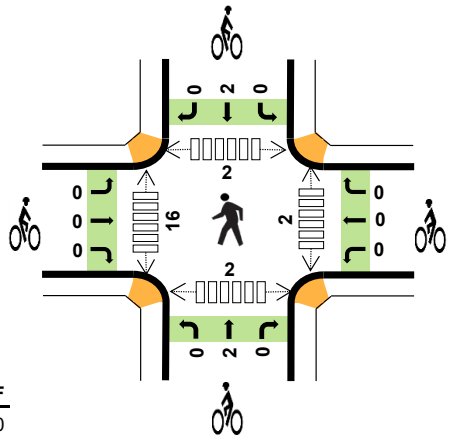
Molalla Ave
Holmes Ln

Date: 9/9/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM





	HV%	PHF
EB	3%	0.70
WB	2%	0.84
NB	2%	0.90
SB	1%	0.94
TOTAL	2%	0.92

Peak Hour Count Summaries

Peak Hour Interval Start		Holmes Ln Eastbound				Hilda St Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		**0**	**29**	**4**	**33**	**0**	**10**	**3**	**3**	**0**	**14**	**142**	**5**	**0**	**3**	**178**	**21**	**445**	**0**
4:15 PM		**0**	**20**	**5**	**18**	**0**	**11**	**2**	**3**	**0**	**24**	**126**	**7**	**0**	**2**	**144**	**9**	**371**	**0**
4:30 PM		**0**	**15**	**7**	**16**	**0**	**4**	**4**	**1**	**0**	**22**	**156**	**3**	**0**	**0**	**182**	**19**	**429**	**0**
4:45 PM		**0**	**22**	**3**	**13**	**0**	**8**	**2**	**3**	**0**	**14**	**131**	**4**	**0**	**2**	**175**	**21**	**398**	**1,643**
Pk Hr	All	**0**	**86**	**19**	**80**	**0**	**33**	**11**	**10**	**0**	**74**	**555**	**19**	**0**	**7**	**679**	**70**	**1,643**	
	HV	**0**	**2**	**0**	**3**	**0**	**1**	**0**	**0**	**0**	**3**	**10**	**0**	**0**	**0**	**8**	**3**	**30**	
	HV%	-	**2%**	**0%**	**4%**	-	**3%**	**0%**	**0%**	-	**4%**	**2%**	**0%**	-	**0%**	**1%**	**4%**	**2%**	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) E	W	N	S	Total
4:00 PM	**0**	**1**	**2**	**7**	***10***	**0**	**0**	**1**	**0**	***1***	**0**	**4**	**0**	**1**	***5***
4:15 PM	**1**	**0**	**2**	**1**	***4***	**0**	**0**	**1**	**1**	***2***	**1**	**2**	**0**	**1**	***4***
4:30 PM	**2**	**0**	**5**	**2**	***9***	**0**	**0**	**0**	**1**	***1***	**0**	**7**	**0**	**0**	***7***
4:45 PM	**2**	**0**	**4**	**1**	***7***	**0**	**0**	**0**	**0**	***0***	**1**	**3**	**2**	**0**	***6***
Peak Hour	**5**	**1**	**13**	**11**	***30***	**0**	**0**	**2**	**2**	***4***	**2**	**16**	**2**	**2**	***22***

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Count Summaries - All Vehicles

Interval Start	Holmes Ln				Hilda St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**29**	**4**	**33**	**0**	**10**	**3**	**3**	**0**	**14**	**142**	**5**	**0**	**3**	**178**	**21**	**445**	0
4:15 PM	**0**	**20**	**5**	**18**	**0**	**11**	**2**	**3**	**0**	**24**	**126**	**7**	**0**	**2**	**144**	**9**	**371**	**0**
4:30 PM	**0**	**15**	**7**	**16**	**0**	**4**	**4**	**1**	**0**	**22**	**156**	**3**	**0**	**0**	**182**	**19**	**429**	**0**
4:45 PM	**0**	**22**	**3**	**13**	**0**	**8**	**2**	**3**	**0**	**14**	**131**	**4**	**0**	**2**	**175**	**21**	**398**	**1,643**
5:00 PM	0	17	3	8	0	10	3	4	0	16	145	5	0	0	163	19	393	1,591
5:15 PM	0	19	2	19	0	7	1	4	0	16	139	8	0	2	128	20	365	1,585
5:30 PM	0	13	3	18	0	8	1	0	0	17	132	6	0	2	129	17	346	1,502
5:45 PM	0	13	1	13	0	6	4	2	0	20	128	4	0	1	125	17	334	1,438
Count Total	0	148	28	138	0	64	20	20	0	143	1,099	42	0	12	1,224	143	3,081	
Pk Hr All	**0**	**86**	**19**	**80**	**0**	**33**	**11**	**10**	**0**	**74**	**555**	**19**	**0**	**7**	**679**	**70**	**1,643**	
Pk Hr HV	**0**	**2**	**0**	**3**	**0**	**1**	**0**	**0**	**0**	**3**	**10**	**0**	**0**	**0**	**8**	**3**	**30**	
Pk Hr HV%	**-**	**2%**	**0%**	**4%**	**-**	**3%**	**0%**	**0%**	**-**	**4%**	**2%**	**0%**	**-**	**0%**	**1%**	**4%**	**2%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	**0**	**1**	**2**	**7**	**10**	**0**	**0**	**1**	**0**	**1**	**0**	**4**	**0**	**1**	**5**
4:15 PM	**1**	**0**	**2**	**1**	**4**	**0**	**0**	**1**	**1**	**2**	**1**	**2**	**0**	**1**	**4**
4:30 PM	**2**	**0**	**5**	**2**	**9**	**0**	**0**	**0**	**1**	**1**	**0**	**7**	**0**	**0**	**7**
4:45 PM	**2**	**0**	**4**	**1**	**7**	**0**	**0**	**0**	**0**	**0**	**1**	**3**	**2**	**0**	**6**
5:00 PM	0	0	1	1	*2*	0	0	0	1	*1*	1	0	1	0	*2*
5:15 PM	0	0	0	3	*3*	0	0	0	0	*0*	0	2	0	1	*3*
5:30 PM	0	0	0	0	*0*	0	0	1	1	*2*	3	2	0	0	*5*
5:45 PM	0	0	1	1	*2*	0	0	0	0	*0*	3	1	1	1	*6*
Count Total	5	1	15	16	*37*	0	0	3	4	*7*	9	21	4	4	*38*
Peak Hour	**5**	**1**	**13**	**11**	***30***	**0**	**0**	**2**	**2**	***4***	**2**	**16**	**2**	**2**	**22**

Kyle Campbell
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Count Summaries - Heavy Vehicles

Interval Start	Holmes Ln				Hilda St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**5**	**2**	**10**	0
4:15 PM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**4**	**0**
4:30 PM	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**1**	**4**	**0**	**0**	**0**	**1**	**1**	**9**	**0**
4:45 PM	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**1**	**0**	**7**	**30**
5:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2	22
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	3	21
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
5:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2	7
Count Total	0	2	0	3	0	1	0	0	0	3	12	0	0	0	12	4	37	
Pk Hr Heavy	**0**	**2**	**0**	**3**	**0**	**1**	**0**	**0**	**0**	**3**	**10**	**0**	**0**	**0**	**8**	**3**	**30**	

Count Summaries - Bikes

Interval Start	Holmes Ln				Hilda St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**2**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	4
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2	3
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Count Total	0	0	0	0	0	0	0	0	0	0	3	0	0	0	4	0	7	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**2**	**0**	**4**	

Kyle Campbell
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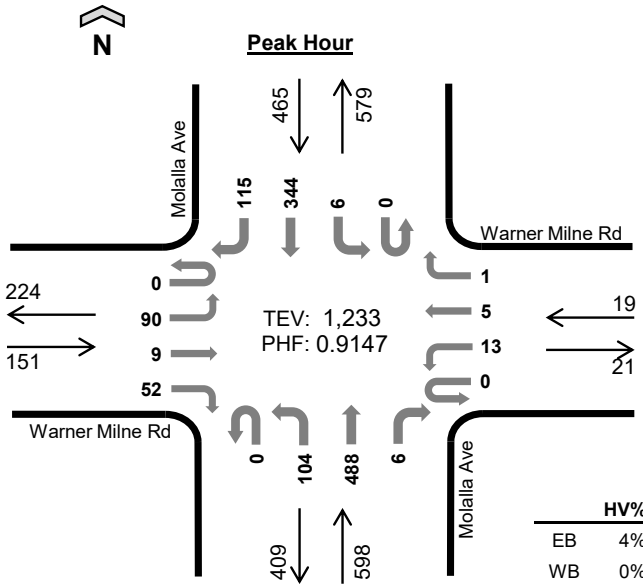
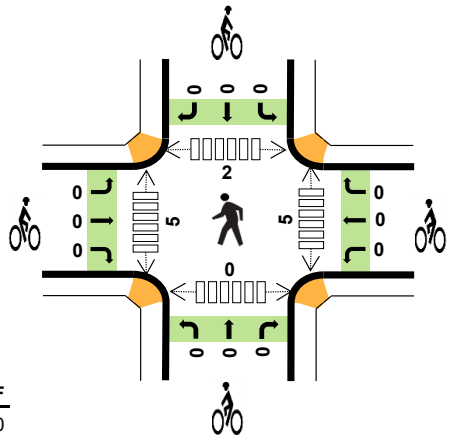
Molalla Ave
Warner Milne Rd

Date: 9/9/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 8:00 AM to 9:00 AM





	HV%	PHF
EB	4%	0.80
WB	0%	0.79
NB	5%	0.94
SB	4%	0.87
TOTAL	4%	0.91

Peak Hour Count Summaries

Peak Hour Interval Start		Warner Milne Rd Eastbound				Warner Milne Rd Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
8:00 AM		0	19	2	16	0	4	0	0	0	21	110	1	0	1	82	28	284	0
8:15 AM		0	17	3	7	0	2	2	1	0	25	123	2	0	1	72	34	289	0
8:30 AM		0	25	2	20	0	2	2	0	0	24	134	1	0	3	85	25	323	0
8:45 AM		0	29	2	9	0	5	1	0	0	34	121	2	0	1	105	28	337	1,233
Pk Hr	All	0	90	9	52	0	13	5	1	0	104	488	6	0	6	344	115	1,233	
	HV	0	2	0	4	0	0	0	0	0	1	25	1	0	0	17	3	53	
	HV%	-	2%	0%	8%	-	0%	0%	0%	-	1%	5%	17%	-	0%	5%	3%	4%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
8:00 AM	3	0	7	9	*19*	0	0	0	0	*0*	0	1	0	0	*1*
8:15 AM	2	0	7	2	*11*	0	0	0	0	*0*	1	1	0	0	*2*
8:30 AM	0	0	6	3	*9*	0	0	0	0	*0*	1	2	0	0	*3*
8:45 AM	1	0	7	6	*14*	0	0	0	0	*0*	3	1	2	0	*6*
Peak Hour	6	0	27	20	*53*	0	0	0	0	*0*	5	5	2	0	*12*

Kyle Campbell
(425) 213-7345

Count Summaries - All Vehicles

Interval Start	Warner Milne Rd				Warner Milne Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	22	2	4	0	1	2	2	0	14	81	1	0	1	32	13	175	0
7:15 AM	0	29	0	15	0	3	0	1	0	15	89	0	0	0	51	19	222	0
7:30 AM	0	14	1	10	0	6	0	0	0	22	113	0	0	0	67	14	247	0
7:45 AM	0	21	2	19	0	5	0	1	0	29	103	1	0	0	75	25	281	925
8:00 AM	**0**	**19**	**2**	**16**	**0**	**4**	**0**	**0**	**0**	**21**	**110**	**1**	**0**	**1**	**82**	**28**	**284**	**1,034**
8:15 AM	**0**	**17**	**3**	**7**	**0**	**2**	**2**	**1**	**0**	**25**	**123**	**2**	**0**	**1**	**72**	**34**	**289**	**1,101**
8:30 AM	**0**	**25**	**2**	**20**	**0**	**2**	**2**	**0**	**0**	**24**	**134**	**1**	**0**	**3**	**85**	**25**	**323**	**1,177**
8:45 AM	**0**	**29**	**2**	**9**	**0**	**5**	**1**	**0**	**0**	**34**	**121**	**2**	**0**	**1**	**105**	**28**	**337**	**1,233**
Count Total	0	176	14	100	0	28	7	5	0	184	874	8	0	7	569	186	2,158	
Pk Hr All	**0**	**90**	**9**	**52**	**0**	**13**	**5**	**1**	**0**	**104**	**488**	**6**	**0**	**6**	**344**	**115**	**1,233**	
Pk Hr HV	**0**	**2**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**1**	**25**	**1**	**0**	**0**	**17**	**3**	**53**	
Pk Hr HV%	**-**	**2%**	**0%**	**8%**	**-**	**0%**	**0%**	**0%**	**-**	**1%**	**5%**	**17%**	**-**	**0%**	**5%**	**3%**	**4%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	0	0	4	6	*10*	1	0	0	0	*1*	2	1	1	1	*5*
7:15 AM	2	0	5	3	*10*	0	0	0	0	*0*	0	2	0	1	*3*
7:30 AM	1	0	5	3	*9*	0	0	0	1	*1*	0	0	0	1	*1*
7:45 AM	1	0	1	3	*5*	0	0	0	0	*0*	0	0	0	0	*0*
8:00 AM	**3**	**0**	**7**	**9**	**19**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**
8:15 AM	**2**	**0**	**7**	**2**	**11**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**2**
8:30 AM	**0**	**0**	**6**	**3**	**9**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**0**	**0**	**3**
8:45 AM	**1**	**0**	**7**	**6**	**14**	**0**	**0**	**0**	**0**	**0**	**3**	**1**	**2**	**0**	**6**
Count Total	10	0	42	35	*87*	1	0	0	1	*2*	7	8	3	3	*21*
Peak Hour	**6**	**0**	**27**	**20**	***53***	**0**	**0**	**0**	**0**	***0***	**5**	**5**	**2**	**0**	**12**

Kyle Campbell
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Count Summaries - Heavy Vehicles

Interval Start	Warner Milne Rd				Warner Milne Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	3	1	0	0	6	0	10	0
7:15 AM	0	1	0	1	0	0	0	0	0	0	5	0	0	0	3	0	10	0
7:30 AM	0	0	0	1	0	0	0	0	0	0	5	0	0	0	3	0	9	0
7:45 AM	0	1	0	0	0	0	0	0	0	0	0	1	0	0	3	0	5	34
8:00 AM	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**1**	**6**	**0**	**0**	**0**	**7**	**2**	**19**	**43**
8:15 AM	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**2**	**0**	**11**	**44**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**1**	**0**	**0**	**3**	**0**	**9**	**44**
8:45 AM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**5**	**1**	**14**	**53**
Count Total	0	4	0	6	0	0	0	0	0	1	38	3	0	0	32	3	87	
Pk Hr Heavy	**0**	**2**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**1**	**25**	**1**	**0**	**0**	**17**	**3**	**53**	

Count Summaries - Bikes

Interval Start	Warner Milne Rd				Warner Milne Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	2	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

Kyle Campbell
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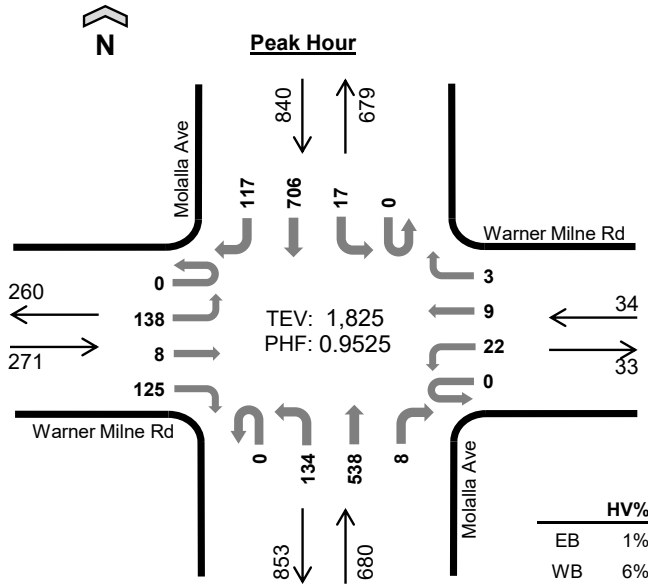
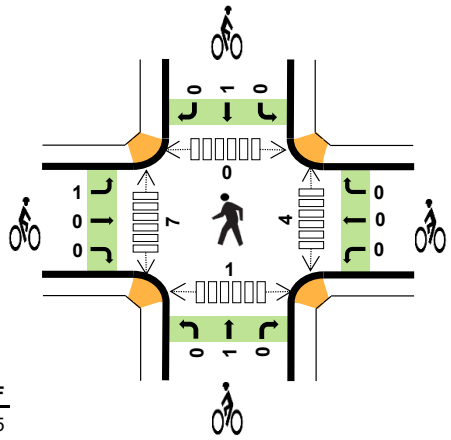
Molalla Ave
Warner Milne Rd

Date: 9/9/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM





	HV%	PHF
EB	1%	0.95
WB	6%	0.85
NB	2%	0.89
SB	2%	0.88
TOTAL	2%	0.95

Peak Hour Count Summaries

Peak Hour Interval Start		Warner Milne Rd Eastbound				Warner Milne Rd Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		**0**	**36**	**1**	**34**	**0**	**9**	**1**	**0**	**0**	**27**	**132**	**0**	**0**	**3**	**203**	**33**	**479**	**0**
4:15 PM		**0**	**38**	**0**	**24**	**0**	**6**	**2**	**2**	**0**	**36**	**118**	**5**	**0**	**3**	**164**	**32**	**430**	**0**
4:30 PM		**0**	**33**	**3**	**32**	**0**	**2**	**4**	**1**	**0**	**41**	**149**	**2**	**0**	**5**	**159**	**32**	**463**	**0**
4:45 PM		**0**	**31**	**4**	**35**	**0**	**5**	**2**	**0**	**0**	**30**	**139**	**1**	**0**	**6**	**180**	**20**	**453**	**1,825**
Pk Hr	All	**0**	**138**	**8**	**125**	**0**	**22**	**9**	**3**	**0**	**134**	**538**	**8**	**0**	**17**	**706**	**117**	**1,825**	
	HV	**0**	**2**	**1**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**12**	**1**	**0**	**0**	**16**	**0**	**35**	
	HV%	-	**1%**	**13%**	**1%**	-	**9%**	**0%**	**0%**	-	**0%**	**2%**	**13%**	-	**0%**	**2%**	**0%**	**2%**	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	**1**	**1**	**3**	**8**	***13***	**0**	**0**	**1**	**0**	***1***	**1**	**4**	**0**	**1**	***6***
4:15 PM	**2**	**0**	**3**	**4**	***9***	**0**	**0**	**0**	**1**	***1***	**3**	**3**	**0**	**0**	***6***
4:30 PM	**0**	**0**	**3**	**3**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
4:45 PM	**1**	**1**	**4**	**1**	***7***	**1**	**0**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***
Peak Hour	**4**	**2**	**13**	**16**	***35***	**1**	**0**	**1**	**1**	***3***	**4**	**7**	**0**	**1**	***12***

Kyle Campbell
(425) 213-7345

Count Summaries - All Vehicles

Interval Start	Warner Milne Rd Eastbound				Warner Milne Rd Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**36**	**1**	**34**	**0**	**9**	**1**	**0**	**0**	**27**	**132**	**0**	**0**	**3**	**203**	**33**	**479**	0
4:15 PM	**0**	**38**	**0**	**24**	**0**	**6**	**2**	**2**	**0**	**36**	**118**	**5**	**0**	**3**	**164**	**32**	**430**	**0**
4:30 PM	**0**	**33**	**3**	**32**	**0**	**2**	**4**	**1**	**0**	**41**	**149**	**2**	**0**	**5**	**159**	**32**	**463**	**0**
4:45 PM	**0**	**31**	**4**	**35**	**0**	**5**	**2**	**0**	**0**	**30**	**139**	**1**	**0**	**6**	**180**	**20**	**453**	**1,825**
5:00 PM	0	36	1	45	0	9	0	1	0	31	116	1	0	4	165	33	442	1,788
5:15 PM	0	32	2	19	0	4	5	2	0	18	128	5	0	1	135	28	379	1,737
5:30 PM	0	33	1	31	0	9	4	2	0	34	110	2	0	1	137	16	380	1,654
5:45 PM	0	31	1	36	0	4	4	2	0	35	119	6	0	5	135	23	401	1,602
Count Total	0	270	13	256	0	48	22	10	0	252	1,011	22	0	28	1,278	217	3,427	
Pk Hr All	**0**	**138**	**8**	**125**	**0**	**22**	**9**	**3**	**0**	**134**	**538**	**8**	**0**	**17**	**706**	**117**	**1,825**	
Pk Hr HV	**0**	**2**	**1**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**12**	**1**	**0**	**0**	**16**	**0**	**35**	
Pk Hr HV%	**-**	**1%**	**13%**	**1%**	**-**	**9%**	**0%**	**0%**	**-**	**0%**	**2%**	**13%**	**-**	**0%**	**2%**	**0%**	**2%**	

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) E	W	N	S	Total
4:00 PM	**1**	**1**	**3**	**8**	**13**	**0**	**0**	**1**	**0**	**1**	**1**	**4**	**0**	**1**	**6**
4:15 PM	**2**	**0**	**3**	**4**	**9**	**0**	**0**	**0**	**1**	**1**	**3**	**3**	**0**	**0**	**6**
4:30 PM	**0**	**0**	**3**	**3**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:45 PM	**1**	**1**	**4**	**1**	**7**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**
5:00 PM	0	0	0	1	*1*	0	0	0	1	*1*	0	1	2	3	*6*
5:15 PM	0	0	0	2	*2*	0	0	0	0	*0*	0	2	0	4	*6*
5:30 PM	0	0	0	0	*0*	0	1	0	0	*1*	1	0	2	1	*4*
5:45 PM	1	0	1	1	*3*	0	0	0	1	*1*	6	1	0	4	*11*
Count Total	5	2	14	20	*41*	1	1	1	3	*6*	11	11	4	13	*39*
Peak Hour	**4**	**2**	**13**	**16**	***35***	**1**	**0**	**1**	**1**	***3***	**4**	**7**	**0**	**1**	**12**

Kyle Campbell
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Count Summaries - Heavy Vehicles

Interval Start	Warner Milne Rd				Warner Milne Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**8**	**0**	**13**	0
4:15 PM	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**0**	**4**	**0**	**9**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**3**	**0**	**6**	**0**
4:45 PM	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**1**	**0**	**7**	**35**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	23
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	16
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
5:45 PM	0	0	0	1	0	0	0	0	0	0	1	0	0	0	1	0	3	6
Count Total	0	2	1	2	0	2	0	0	0	0	13	1	0	0	20	0	41	
Pk Hr Heavy	**0**	**2**	**1**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**12**	**1**	**0**	**0**	**16**	**0**	**35**	

Count Summaries - Bikes

Interval Start	Warner Milne Rd				Warner Milne Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:45 PM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**3**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	3
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3
Count Total	0	1	0	0	0	0	0	1	0	0	1	0	0	0	2	1	6	
Pk Hr Bike	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**3**	

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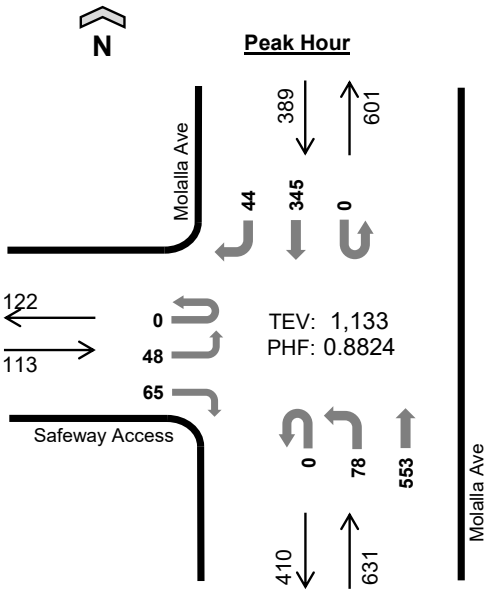
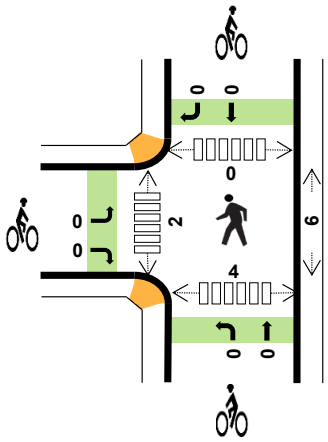
Molalla Ave
Safeway Access

Date: 9/9/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 8:00 AM to 9:00 AM





	HV%	PHF
EB	1%	0.71
WB	--	--
NB	3%	0.91
SB	4%	0.79
TOTAL	4%	0.88

Peak Hour Count Summaries

Peak Hour Interval Start		Safeway Access				n/a				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
8:00 AM		0	11	0	16	0	0	0	0	0	17	126	0	0	0	87	9	266	0
8:15 AM		0	10	0	11	0	0	0	0	0	21	141	0	0	0	66	12	261	0
8:30 AM		0	20	0	20	0	0	0	0	0	15	138	0	0	0	83	9	285	0
8:45 AM		0	7	0	18	0	0	0	0	0	25	148	0	0	0	109	14	321	1,133
Pk Hr	All	0	48	0	65	0	0	0	0	0	78	553	0	0	0	345	44	1,133	
	HV	0	0	0	1	0	0	0	0	0	0	22	0	0	0	16	1	40	
	HV%	-	0%	-	2%	-	-	-	-	-	0%	4%	-	-	-	5%	2%	4%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
8:00 AM	1	0	4	8	*13*	0	0	0	0	*0*	0	0	0	0	*0*
8:15 AM	0	0	6	2	*8*	0	0	0	0	*0*	1	1	0	2	*4*
8:30 AM	0	0	5	2	*7*	0	0	0	0	*0*	3	1	0	2	*6*
8:45 AM	0	0	7	5	*12*	0	0	0	0	*0*	2	0	0	0	*2*
Peak Hour	1	0	22	17	*40*	0	0	0	0	*0*	6	2	0	4	*12*

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Count Summaries - All Vehicles

Interval Start	Safeway Access				n/a				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	8	0	6	0	0	0	0	0	8	88	0	0	0	29	5	144	0
7:15 AM	0	1	0	14	0	0	0	0	0	9	107	0	0	0	68	3	202	0
7:30 AM	0	9	0	17	0	0	0	0	0	20	127	0	0	0	79	7	259	0
7:45 AM	0	7	0	17	0	0	0	0	0	12	124	0	0	0	90	9	259	864
8:00 AM	**0**	**11**	**0**	**16**	**0**	**0**	**0**	**0**	**0**	**17**	**126**	**0**	**0**	**0**	**87**	**9**	**266**	**986**
8:15 AM	**0**	**10**	**0**	**11**	**0**	**0**	**0**	**0**	**0**	**21**	**141**	**0**	**0**	**0**	**66**	**12**	**261**	**1,045**
8:30 AM	**0**	**20**	**0**	**20**	**0**	**0**	**0**	**0**	**0**	**15**	**138**	**0**	**0**	**0**	**83**	**9**	**285**	**1,071**
8:45 AM	**0**	**7**	**0**	**18**	**0**	**0**	**0**	**0**	**0**	**25**	**148**	**0**	**0**	**0**	**109**	**14**	**321**	**1,133**
Count Total	0	73	0	119	0	0	0	0	0	127	999	0	0	0	611	68	1,997	
Pk Hr All	**0**	**48**	**0**	**65**	**0**	**0**	**0**	**0**	**0**	**78**	**553**	**0**	**0**	**0**	**345**	**44**	**1,133**	
Pk Hr HV	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**22**	**0**	**0**	**0**	**16**	**1**	**40**	
Pk Hr HV%	**-**	**0%**	**-**	**2%**	**-**	**-**	**-**	**-**	**-**	**0%**	**4%**	**-**	**-**	**-**	**5%**	**2%**	**4%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	0	0	4	6	*10*	0	0	0	0	*0*	1	0	2	0	*3*
7:15 AM	1	0	8	2	*11*	0	0	0	0	*0*	0	0	2	2	*4*
7:30 AM	1	0	6	4	*11*	0	0	0	0	*0*	0	0	2	0	*2*
7:45 AM	1	0	2	2	*5*	0	0	0	1	*1*	0	0	0	0	*0*
8:00 AM	**1**	**0**	**4**	**8**	**13**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	**0**	**0**	**6**	**2**	**8**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**2**	**4**
8:30 AM	**0**	**0**	**5**	**2**	**7**	**0**	**0**	**0**	**0**	**0**	**3**	**1**	**0**	**2**	**6**
8:45 AM	**0**	**0**	**7**	**5**	**12**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**2**
Count Total	4	0	42	31	*77*	0	0	0	1	*1*	7	2	6	6	*21*
Peak Hour	**1**	**0**	**22**	**17**	***40***	**0**	**0**	**0**	**0**	***0***	**6**	**2**	**0**	**4**	**12**

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Count Summaries - Heavy Vehicles

Interval Start	Safeway Access				n/a				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	6	0	10	0
7:15 AM	0	0	0	1	0	0	0	0	0	0	8	0	0	0	2	0	11	0
7:30 AM	0	0	0	1	0	0	0	0	0	0	6	0	0	0	3	1	11	0
7:45 AM	0	0	0	1	0	0	0	0	0	1	1	0	0	0	2	0	5	37
8:00 AM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**7**	**1**	**13**	**40**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**2**	**0**	**8**	**37**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**2**	**0**	**7**	**33**
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**5**	**0**	**12**	**40**
Count Total	0	0	0	4	0	0	0	0	0	1	41	0	0	0	29	2	77	
Pk Hr Heavy	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**22**	**0**	**0**	**0**	**16**	**1**	**40**	

Count Summaries - Bikes

Interval Start	Safeway Access				n/a				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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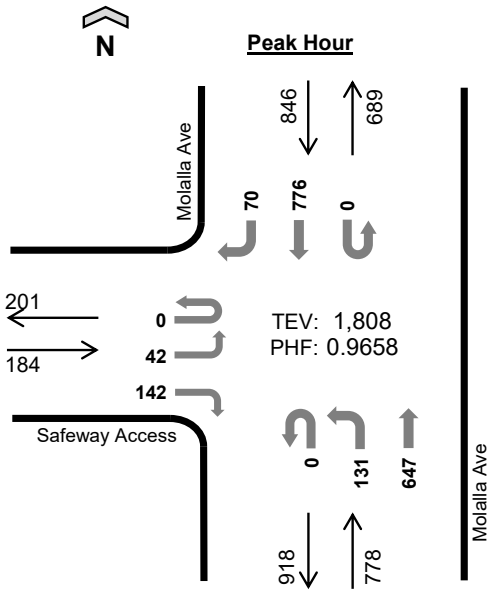
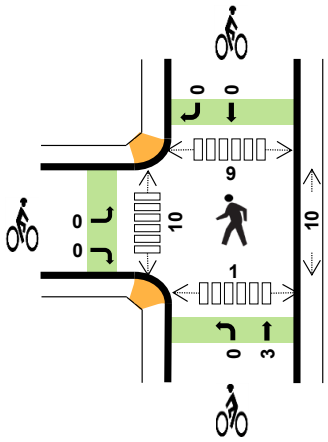
Molalla Ave
Safeway Access

Date: 9/9/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM





	HV%	PHF
EB	0%	0.79
WB	--	--
NB	1%	0.89
SB	2%	0.90
TOTAL	1%	0.97

Peak Hour Count Summaries

Peak Hour Interval Start		Safeway Access Eastbound				n/a Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	11	0	27	0	0	0	0	0	28	148	0	0	0	213	21	448	0
4:15 PM		0	13	0	42	0	0	0	0	0	37	155	0	0	0	187	12	446	0
4:30 PM		0	3	0	30	0	0	0	0	0	29	189	0	0	0	177	18	446	0
4:45 PM		0	15	0	43	0	0	0	0	0	37	155	0	0	0	199	19	468	1,808
Pk Hr	All	0	42	0	142	0	0	0	0	0	131	647	0	0	0	776	70	1,808	
	HV	0	0	0	0	0	0	0	0	0	0	11	0	0	0	15	0	26	
	HV%	-	0%	-	0%	-	-	-	-	-	0%	2%	-	-	-	2%	0%	1%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) E	W	N	S	Total
4:00 PM	0	0	2	8	*10*	0	0	3	0	*3*	2	1	0	0	*3*
4:15 PM	0	0	1	3	*4*	0	0	0	0	*0*	4	1	2	0	*7*
4:30 PM	0	0	4	3	*7*	0	0	0	0	*0*	1	5	2	1	*9*
4:45 PM	0	0	4	1	*5*	0	0	0	0	*0*	3	3	5	0	*11*
Peak Hour	0	0	11	15	*26*	0	0	3	0	*3*	10	10	9	1	*30*

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Count Summaries - All Vehicles

Interval Start	Safeway Access				n/a				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**11**	**0**	**27**	**0**	**0**	**0**	**0**	**0**	**28**	**148**	**0**	**0**	**0**	**213**	**21**	**448**	0
4:15 PM	**0**	**13**	**0**	**42**	**0**	**0**	**0**	**0**	**0**	**37**	**155**	**0**	**0**	**0**	**187**	**12**	**446**	**0**
4:30 PM	**0**	**3**	**0**	**30**	**0**	**0**	**0**	**0**	**0**	**29**	**189**	**0**	**0**	**0**	**177**	**18**	**446**	**0**
4:45 PM	**0**	**15**	**0**	**43**	**0**	**0**	**0**	**0**	**0**	**37**	**155**	**0**	**0**	**0**	**199**	**19**	**468**	**1,808**
5:00 PM	0	13	0	23	0	0	0	0	0	35	141	0	0	0	211	18	441	1,801
5:15 PM	0	21	0	32	0	0	0	0	0	34	145	0	0	0	150	14	396	1,751
5:30 PM	0	7	0	34	0	0	0	0	0	29	148	0	0	0	169	16	403	1,708
5:45 PM	0	15	0	28	0	0	0	0	0	29	155	0	0	0	153	18	398	1,638
Count Total	0	98	0	259	0	0	0	0	0	258	1,236	0	0	0	1,459	136	3,446	
Pk Hr All	**0**	**42**	**0**	**142**	**0**	**0**	**0**	**0**	**0**	**131**	**647**	**0**	**0**	**0**	**776**	**70**	**1,808**	
Pk Hr HV	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**11**	**0**	**0**	**0**	**15**	**0**	**26**	
Pk Hr HV%	**-**	**0%**	**-**	**0%**	**-**	**-**	**-**	**-**	**-**	**0%**	**2%**	**-**	**-**	**-**	**2%**	**0%**	**1%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	**0**	**0**	**2**	**8**	**10**	**0**	**0**	**3**	**0**	**3**	**2**	**1**	**0**	**0**	**3**
4:15 PM	**0**	**0**	**1**	**3**	**4**	**0**	**0**	**0**	**0**	**0**	**4**	**1**	**2**	**0**	**7**
4:30 PM	**0**	**0**	**4**	**3**	**7**	**0**	**0**	**0**	**0**	**0**	**1**	**5**	**2**	**1**	**9**
4:45 PM	**0**	**0**	**4**	**1**	**5**	**0**	**0**	**0**	**0**	**0**	**3**	**3**	**5**	**0**	**11**
5:00 PM	0	0	0	3	*3*	0	0	0	0	*0*	0	7	0	0	*7*
5:15 PM	1	0	0	2	*3*	0	0	1	0	*1*	1	0	0	0	*1*
5:30 PM	0	0	0	0	*0*	0	0	0	0	*0*	3	0	3	1	*7*
5:45 PM	0	0	1	2	*3*	0	0	0	0	*0*	5	1	3	1	*10*
Count Total	1	0	12	22	*35*	0	0	4	0	*4*	19	18	15	3	*55*
Peak Hour	**0**	**0**	**11**	**15**	***26***	**0**	**0**	**3**	**0**	***3***	**10**	**10**	**9**	**1**	**30**

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Count Summaries - Heavy Vehicles

Interval Start	Safeway Access				n/a				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**8**	**0**	**10**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**3**	**0**	**4**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**3**	**0**	**7**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**1**	**0**	**5**	**26**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	19
5:15 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	3	18
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
5:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	3	9
Count Total	0	0	0	1	0	0	0	0	0	0	12	0	0	0	22	0	35	
Pk Hr Heavy	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**11**	**0**	**0**	**0**	**15**	**0**	**26**	

Count Summaries - Bikes

Interval Start	Safeway Access				n/a				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**3**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	4	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**3**	

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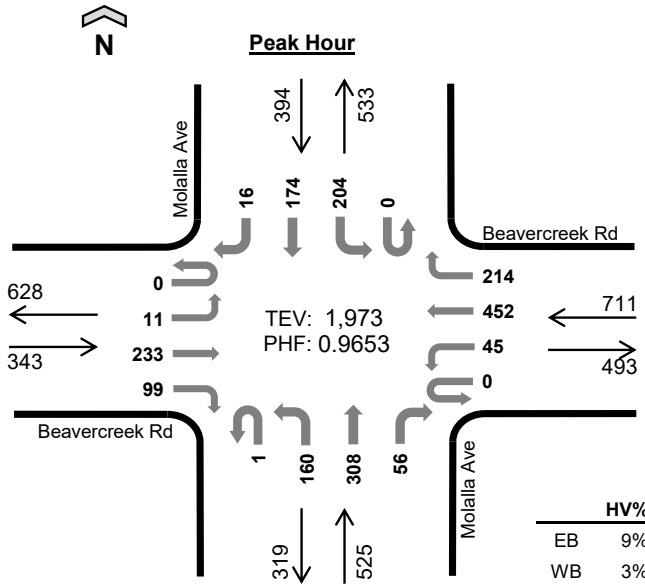
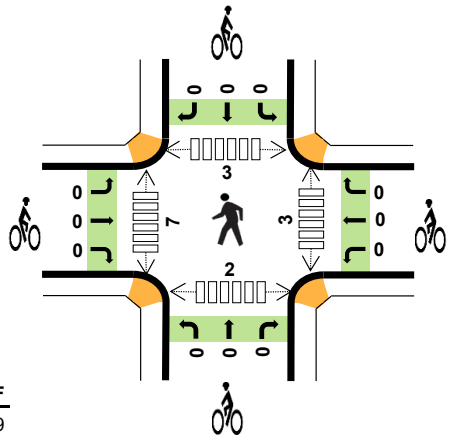
Molalla Ave
Beavercreek Rd

Date: 9/9/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM





	HV%	PHF
EB	9%	0.89
WB	3%	0.94
NB	3%	0.97
SB	4%	0.90
TOTAL	4%	0.97

Peak Hour Count Summaries

Peak Hour Interval Start		Beavercreek Rd Eastbound				Beavercreek Rd Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:45 AM		0	2	60	21	0	10	123	57	0	36	69	22	0	56	48	5	509	0
8:00 AM		0	2	63	31	0	19	122	42	0	40	79	16	0	57	37	3	511	0
8:15 AM		0	4	56	21	0	9	105	56	1	40	83	8	0	38	40	5	466	0
8:30 AM		0	3	54	26	0	7	102	59	0	44	77	10	0	53	49	3	487	1,973
Pk Hr	All	0	11	233	99	0	45	452	214	1	160	308	56	0	204	174	16	1,973	
	HV	0	0	25	6	0	5	13	6	0	6	5	4	0	11	4	0	85	
	HV%	-	0%	11%	6%	-	11%	3%	3%	0%	4%	2%	7%	-	5%	2%	0%	4%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:45 AM	8	6	2	4	*20*	0	0	0	0	*0*	0	2	0	0	*2*
8:00 AM	14	3	6	6	*29*	0	0	0	0	*0*	0	2	0	1	*3*
8:15 AM	5	6	4	2	*17*	0	0	0	0	*0*	3	3	1	1	*8*
8:30 AM	4	9	3	3	*19*	0	0	0	0	*0*	0	0	2	0	*2*
Peak Hour	31	24	15	15	*85*	0	0	0	0	*0*	3	7	3	2	*15*

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Count Summaries - All Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	10	48	25	0	9	100	28	0	20	54	14	0	21	21	2	352	0
7:15 AM	0	5	49	22	0	9	109	47	0	26	61	12	0	37	41	1	419	0
7:30 AM	0	7	64	20	0	6	93	72	0	42	57	15	0	41	48	5	470	0
7:45 AM	**0**	**2**	**60**	**21**	**0**	**10**	**123**	**57**	**0**	**36**	**69**	**22**	**0**	**56**	**48**	**5**	**509**	**1,750**
8:00 AM	**0**	**2**	**63**	**31**	**0**	**19**	**122**	**42**	**0**	**40**	**79**	**16**	**0**	**57**	**37**	**3**	**511**	**1,909**
8:15 AM	**0**	**4**	**56**	**21**	**0**	**9**	**105**	**56**	**1**	**40**	**83**	**8**	**0**	**38**	**40**	**5**	**466**	**1,956**
8:30 AM	**0**	**3**	**54**	**26**	**0**	**7**	**102**	**59**	**0**	**44**	**77**	**10**	**0**	**53**	**49**	**3**	**487**	**1,973**
8:45 AM	0	2	41	25	0	12	106	75	0	44	49	15	0	60	66	5	500	1,964
Count Total	0	35	435	191	0	81	860	436	1	292	529	112	0	363	350	29	3,714	
Pk Hr All	**0**	**11**	**233**	**99**	**0**	**45**	**452**	**214**	**1**	**160**	**308**	**56**	**0**	**204**	**174**	**16**	**1,973**	
Pk Hr HV	**0**	**0**	**25**	**6**	**0**	**5**	**13**	**6**	**0**	**6**	**5**	**4**	**0**	**11**	**4**	**0**	**85**	
Pk Hr HV%	**-**	**0%**	**11%**	**6%**	**-**	**11%**	**3%**	**3%**	**0%**	**4%**	**2%**	**7%**	**-**	**5%**	**2%**	**0%**	**4%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	4	4	7	6	*21*	0	0	0	0	*0*	1	4	1	2	*8*
7:15 AM	3	7	3	3	*16*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	12	3	4	3	*22*	0	0	0	0	*0*	0	1	0	0	*1*
7:45 AM	**8**	**6**	**2**	**4**	**20**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**2**
8:00 AM	**14**	**3**	**6**	**6**	**29**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**3**
8:15 AM	**5**	**6**	**4**	**2**	**17**	**0**	**0**	**0**	**0**	**0**	**3**	**3**	**1**	**1**	**8**
8:30 AM	**4**	**9**	**3**	**3**	**19**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**
8:45 AM	1	4	5	5	*15*	0	0	0	0	*0*	0	5	1	0	*6*
Count Total	51	42	34	32	*159*	0	0	0	0	*0*	4	17	5	4	*30*
Peak Hour	**31**	**24**	**15**	**15**	***85***	**0**	**0**	**0**	**0**	***0***	**3**	**7**	**3**	**2**	**15**

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Count Summaries - Heavy Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	3	1	0	3	1	0	0	3	3	1	0	3	1	2	21	0
7:15 AM	0	1	2	0	0	2	3	2	0	1	0	2	0	1	2	0	16	0
7:30 AM	0	1	9	2	0	0	2	1	0	3	1	0	0	1	2	0	22	0
7:45 AM	**0**	**0**	**8**	**0**	**0**	**3**	**2**	**1**	**0**	**0**	**0**	**2**	**0**	**4**	**0**	**0**	**20**	**79**
8:00 AM	**0**	**0**	**11**	**3**	**0**	**0**	**2**	**1**	**0**	**2**	**2**	**2**	**0**	**5**	**1**	**0**	**29**	**87**
8:15 AM	**0**	**0**	**3**	**2**	**0**	**1**	**4**	**1**	**0**	**3**	**1**	**0**	**0**	**2**	**0**	**0**	**17**	**88**
8:30 AM	**0**	**0**	**3**	**1**	**0**	**1**	**5**	**3**	**0**	**1**	**2**	**0**	**0**	**0**	**3**	**0**	**19**	**85**
8:45 AM	0	0	1	0	0	1	0	3	0	3	2	0	0	2	3	0	15	80
Count Total	0	2	40	9	0	11	19	12	0	16	11	7	0	18	12	2	159	
Pk Hr Heavy	**0**	**0**	**25**	**6**	**0**	**5**	**13**	**6**	**0**	**6**	**5**	**4**	**0**	**11**	**4**	**0**	**85**	

Count Summaries - Bikes

Interval Start	Beavercreek Rd				Beavercreek Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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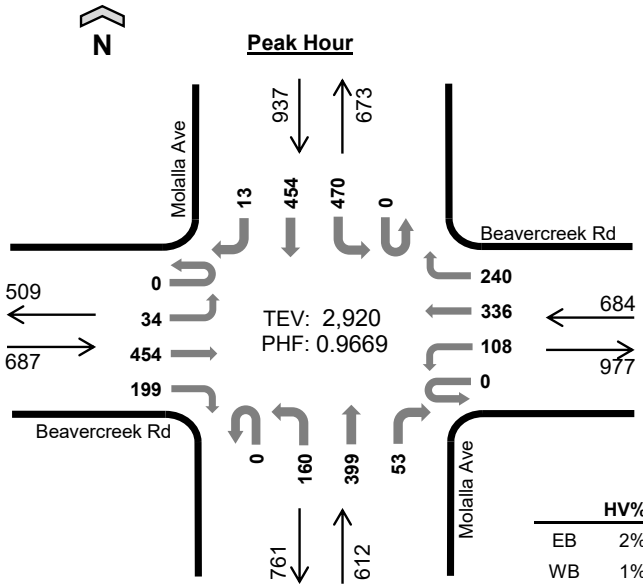
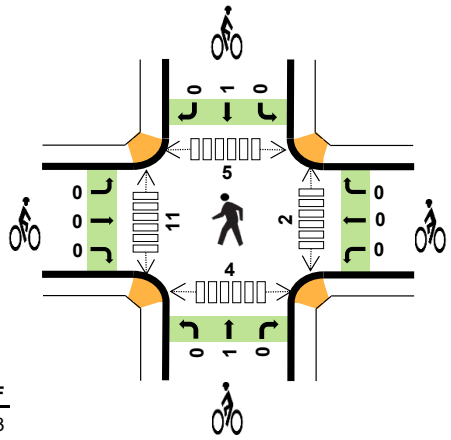
Molalla Ave
Beavercreek Rd

Date: 9/9/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:15 PM to 5:15 PM





	HV%	PHF
EB	2%	0.73
WB	1%	0.98
NB	2%	0.86
SB	1%	0.90
TOTAL	2%	0.97

Peak Hour Count Summaries

Peak Hour Interval Start		Beavercreek Rd Eastbound				Beavercreek Rd Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:15 PM		0	7	87	44	0	26	79	62	0	38	97	13	0	110	128	7	698	0
4:30 PM		0	10	113	46	0	22	97	55	0	42	123	13	0	102	108	2	733	0
4:45 PM		0	9	96	41	0	30	72	68	0	45	100	13	0	138	121	1	734	0
5:00 PM		0	8	158	68	0	30	88	55	0	35	79	14	0	120	97	3	755	2,920
Pk Hr	All	0	34	454	199	0	108	336	240	0	160	399	53	0	470	454	13	2,920	
	HV	0	1	7	7	0	1	5	4	0	8	2	0	0	5	8	0	48	
	HV%	-	3%	2%	4%	-	1%	1%	2%	-	5%	1%	0%	-	1%	2%	0%	2%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:15 PM	5	3	2	5	*15*	0	0	1	1	*2*	1	1	1	0	*3*
4:30 PM	2	5	3	4	*14*	0	0	0	0	*0*	0	2	1	0	*3*
4:45 PM	7	0	4	2	*13*	0	0	0	0	*0*	1	2	1	0	*4*
5:00 PM	1	2	1	2	*6*	0	0	0	0	*0*	0	6	2	4	*12*
Peak Hour	15	10	10	13	*48*	0	0	1	1	2	2	11	5	4	*22*

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Count Summaries - All Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	13	114	52	0	24	73	60	0	43	85	21	0	122	113	1	721	0
4:15 PM	**0**	**7**	**87**	**44**	**0**	**26**	**79**	**62**	**0**	**38**	**97**	**13**	**0**	**110**	**128**	**7**	**698**	**0**
4:30 PM	**0**	**10**	**113**	**46**	**0**	**22**	**97**	**55**	**0**	**42**	**123**	**13**	**0**	**102**	**108**	**2**	**733**	**0**
4:45 PM	**0**	**9**	**96**	**41**	**0**	**30**	**72**	**68**	**0**	**45**	**100**	**13**	**0**	**138**	**121**	**1**	**734**	**2,886**
5:00 PM	**0**	**8**	**158**	**68**	**0**	**30**	**88**	**55**	**0**	**35**	**79**	**14**	**0**	**120**	**97**	**3**	**755**	**2,920**
5:15 PM	0	5	104	33	0	30	60	69	0	37	86	25	0	100	104	3	656	2,878
5:30 PM	0	5	139	56	0	20	85	67	0	36	85	18	0	99	96	1	707	2,852
5:45 PM	0	5	72	28	0	26	72	68	0	37	90	15	0	100	100	3	616	2,734
Count Total	0	62	883	368	0	208	626	504	0	313	745	132	0	891	867	21	5,620	
Pk Hr All	**0**	**34**	**454**	**199**	**0**	**108**	**336**	**240**	**0**	**160**	**399**	**53**	**0**	**470**	**454**	**13**	**2,920**	
Pk Hr HV	**0**	**1**	**7**	**7**	**0**	**1**	**5**	**4**	**0**	**8**	**2**	**0**	**0**	**5**	**8**	**0**	**48**	
Pk Hr HV%	**-**	**3%**	**2%**	**4%**	**-**	**1%**	**1%**	**2%**	**-**	**5%**	**1%**	**0%**	**-**	**1%**	**2%**	**0%**	**2%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	6	7	3	9	*25*	0	0	0	0	*0*	2	4	2	2	*10*
4:15 PM	**5**	**3**	**2**	**5**	**15**	**0**	**0**	**1**	**1**	**2**	**1**	**1**	**1**	**0**	**3**
4:30 PM	**2**	**5**	**3**	**4**	**14**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**3**
4:45 PM	**7**	**0**	**4**	**2**	**13**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**1**	**0**	**4**
5:00 PM	**1**	**2**	**1**	**2**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**2**	**4**	**12**
5:15 PM	1	2	2	2	*7*	0	0	1	0	*1*	1	5	0	1	*7*
5:30 PM	2	2	1	1	*6*	0	0	0	0	*0*	1	4	0	1	*6*
5:45 PM	1	2	1	1	*5*	0	0	0	0	*0*	5	4	1	3	*13*
Count Total	25	23	17	26	*91*	0	0	2	1	*3*	11	28	8	11	*58*
Peak Hour	**15**	**10**	**10**	**13**	***48***	**0**	**0**	**1**	**1**	**2**	**2**	**11**	**5**	**4**	**22**

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Count Summaries - Heavy Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	2	4	0	1	6	0	0	3	0	0	0	4	5	0	25	0
4:15 PM	**0**	**0**	**5**	**0**	**0**	**1**	**1**	**1**	**0**	**2**	**0**	**0**	**0**	**3**	**2**	**0**	**15**	**0**
4:30 PM	**0**	**0**	**0**	**2**	**0**	**0**	**2**	**3**	**0**	**3**	**0**	**0**	**0**	**1**	**3**	**0**	**14**	**0**
4:45 PM	**0**	**1**	**2**	**4**	**0**	**0**	**0**	**0**	**0**	**2**	**2**	**0**	**0**	**1**	**1**	**0**	**13**	**67**
5:00 PM	**0**	**0**	**0**	**1**	**0**	**0**	**2**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**2**	**0**	**6**	**48**
5:15 PM	0	0	0	1	0	0	2	0	0	1	0	1	0	1	1	0	7	40
5:30 PM	0	0	1	1	0	1	1	0	0	1	0	0	0	1	0	0	6	32
5:45 PM	0	0	0	1	0	1	1	0	0	1	0	0	0	1	0	0	5	24
Count Total	0	1	10	14	0	4	15	4	0	14	2	1	0	12	14	0	91	
Pk Hr Heavy	**0**	**1**	**7**	**7**	**0**	**1**	**5**	**4**	**0**	**8**	**2**	**0**	**0**	**5**	**8**	**0**	**48**	

Count Summaries - Bikes

Interval Start	Beavercreek Rd				Beavercreek Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**2**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	3	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**2**	

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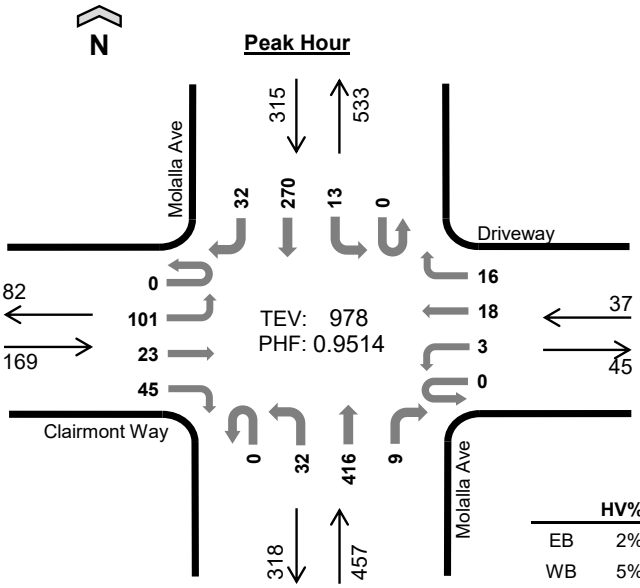
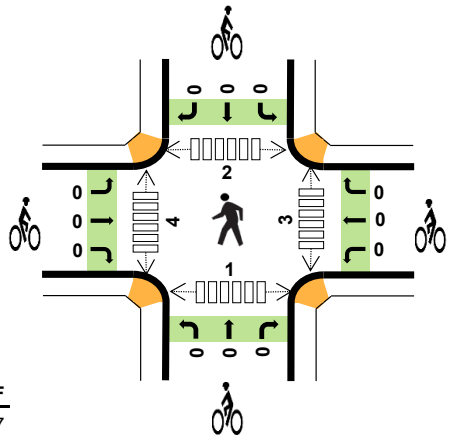
Molalla Ave
Clairmont Way

Date: 9/9/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 8:00 AM to 9:00 AM





	HV%	PHF
EB	2%	0.77
WB	5%	0.58
NB	4%	0.94
SB	5%	0.87
TOTAL	4%	0.95

Peak Hour Count Summaries

Peak Hour Interval Start		Clairmont Way (Eastbound)				Driveway (Westbound)				Molalla Ave (Northbound)				Molalla Ave (Southbound)				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
8:00 AM		0	29	9	17	0	1	3	1	0	5	93	2	0	2	70	12	244	0
8:15 AM		0	21	7	12	0	1	8	7	0	9	105	4	0	3	58	8	243	0
8:30 AM		0	26	4	7	0	1	3	4	0	9	108	1	0	4	63	4	234	0
8:45 AM		0	25	3	9	0	0	4	4	0	9	110	2	0	4	79	8	257	978
Pk Hr	All	0	101	23	45	0	3	18	16	0	32	416	9	0	13	270	32	978	
	HV	0	2	0	1	0	0	0	2	0	3	16	0	0	1	13	1	39	
	HV%	-	2%	0%	2%	-	0%	0%	13%	-	9%	4%	0%	-	8%	5%	3%	4%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
8:00 AM	2	0	6	4	*12*	0	0	0	0	*0*	0	1	0	0	*1*
8:15 AM	0	1	4	2	*7*	0	0	0	0	*0*	2	0	1	0	*3*
8:30 AM	0	1	3	6	*10*	0	0	0	0	*0*	0	0	1	0	*1*
8:45 AM	1	0	6	3	*10*	0	0	0	0	*0*	1	3	0	1	*5*
Peak Hour	3	2	19	15	*39*	0	0	0	0	*0*	3	4	2	1	*10*

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Count Summaries - All Vehicles

Interval Start	Clairmont Way				Driveway				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	30	2	6	0	0	1	2	0	4	58	0	0	0	48	1	152	0
7:15 AM	0	34	7	5	0	1	0	1	0	2	58	1	0	0	47	11	167	0
7:30 AM	0	31	11	11	0	1	4	3	0	4	77	1	0	1	61	12	217	0
7:45 AM	0	44	11	16	0	0	2	0	0	2	95	1	0	1	58	12	242	778
8:00 AM	**0**	**29**	**9**	**17**	**0**	**1**	**3**	**1**	**0**	**5**	**93**	**2**	**0**	**2**	**70**	**12**	**244**	**870**
8:15 AM	**0**	**21**	**7**	**12**	**0**	**1**	**8**	**7**	**0**	**9**	**105**	**4**	**0**	**3**	**58**	**8**	**243**	**946**
8:30 AM	**0**	**26**	**4**	**7**	**0**	**1**	**3**	**4**	**0**	**9**	**108**	**1**	**0**	**4**	**63**	**4**	**234**	**963**
8:45 AM	**0**	**25**	**3**	**9**	**0**	**0**	**4**	**4**	**0**	**9**	**110**	**2**	**0**	**4**	**79**	**8**	**257**	**978**
Count Total	0	240	54	83	0	5	25	22	0	44	704	12	0	15	484	68	1,756	
Pk Hr All	**0**	**101**	**23**	**45**	**0**	**3**	**18**	**16**	**0**	**32**	**416**	**9**	**0**	**13**	**270**	**32**	**978**	
Pk Hr HV	**0**	**2**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**3**	**16**	**0**	**0**	**1**	**13**	**1**	**39**	
Pk Hr HV%	**-**	**2%**	**0%**	**2%**	**-**	**0%**	**0%**	**13%**	**-**	**9%**	**4%**	**0%**	**-**	**8%**	**5%**	**3%**	**4%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	3	0	9	2	*14*	0	0	0	0	*0*	1	1	2	0	*4*
7:15 AM	2	0	2	0	*4*	0	0	0	0	*0*	2	1	2	0	*5*
7:30 AM	1	0	5	5	*11*	0	0	0	0	*0*	1	1	4	1	*7*
7:45 AM	1	0	0	4	*5*	0	0	0	0	*0*	0	2	0	1	*3*
8:00 AM	**2**	**0**	**6**	**4**	**12**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**
8:15 AM	**0**	**1**	**4**	**2**	**7**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**0**	**3**
8:30 AM	**0**	**1**	**3**	**6**	**10**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**
8:45 AM	**1**	**0**	**6**	**3**	**10**	**0**	**0**	**0**	**0**	**0**	**1**	**3**	**0**	**1**	**5**
Count Total	10	2	35	26	*73*	0	0	0	0	*0*	7	9	10	3	*29*
Peak Hour	**3**	**2**	**19**	**15**	***39***	**0**	**0**	**0**	**0**	***0***	**3**	**4**	**2**	**1**	**10**

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Count Summaries - Heavy Vehicles

Interval Start	Clairmont Way				Driveway				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	2	0	1	0	0	0	0	0	3	6	0	0	0	2	0	14	0
7:15 AM	0	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	4	0
7:30 AM	0	0	0	1	0	0	0	0	0	0	5	0	0	1	3	1	11	0
7:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	3	1	5	34
8:00 AM	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**4**	**0**	**12**	**32**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**3**	**0**	**0**	**0**	**2**	**0**	**7**	**35**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**3**	**0**	**0**	**0**	**5**	**1**	**10**	**34**
8:45 AM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**4**	**0**	**0**	**1**	**2**	**0**	**10**	**39**
Count Total	0	7	0	3	0	0	0	2	0	6	29	0	0	2	21	3	73	
Pk Hr Heavy	**0**	**2**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**3**	**16**	**0**	**0**	**1**	**13**	**1**	**39**	

Count Summaries - Bikes

Interval Start	Clairmont Way				Driveway				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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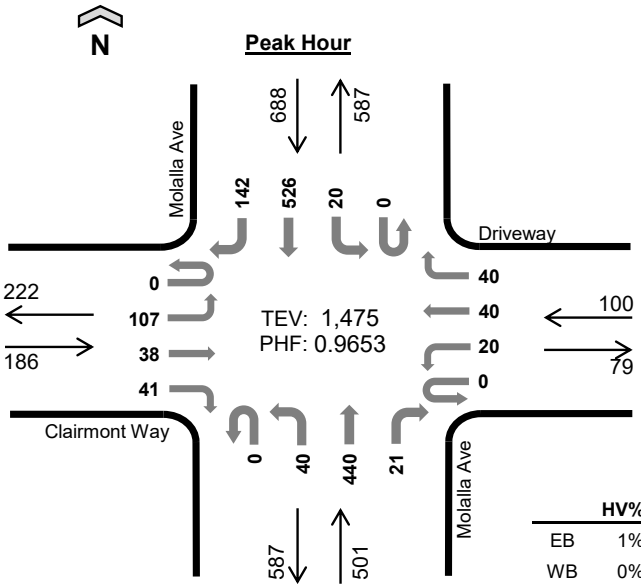
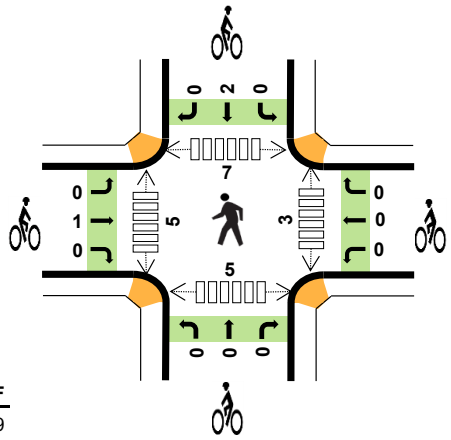
Molalla Ave
Clairmont Way

Date: 9/9/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM





	HV%	PHF
EB	1%	0.79
WB	0%	0.89
NB	3%	0.86
SB	3%	0.93
TOTAL	3%	0.97

Peak Hour Count Summaries

Peak Hour Interval Start		Clairmont Way Eastbound				Driveway Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		**0**	**29**	**4**	**4**	**0**	**6**	**10**	**12**	**0**	**9**	**120**	**8**	**0**	**8**	**131**	**41**	**382**	**0**
4:15 PM		**0**	**19**	**5**	**15**	**0**	**4**	**11**	**9**	**0**	**11**	**88**	**2**	**0**	**3**	**140**	**41**	**348**	**0**
4:30 PM		**0**	**29**	**13**	**9**	**0**	**3**	**8**	**11**	**0**	**13**	**126**	**6**	**0**	**6**	**117**	**30**	**371**	**0**
4:45 PM		**0**	**30**	**16**	**13**	**0**	**7**	**11**	**8**	**0**	**7**	**106**	**5**	**0**	**3**	**138**	**30**	**374**	**1,475**
Pk Hr	All	**0**	**107**	**38**	**41**	**0**	**20**	**40**	**40**	**0**	**40**	**440**	**21**	**0**	**20**	**526**	**142**	**1,475**	
	HV	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**12**	**0**	**0**	**1**	**18**	**5**	**38**	
	HV%	**-**	**0%**	**0%**	**2%**	**-**	**0%**	**0%**	**0%**	**-**	**3%**	**3%**	**0%**	**-**	**5%**	**3%**	**4%**	**3%**	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) E	W	N	S	Total
4:00 PM	**0**	**0**	**3**	**8**	***11***	**0**	**0**	**0**	**0**	***0***	**1**	**2**	**5**	**0**	***8***
4:15 PM	**1**	**0**	**3**	**4**	***8***	**0**	**0**	**0**	**1**	***1***	**0**	**0**	**1**	**3**	***4***
4:30 PM	**0**	**0**	**4**	**6**	***10***	**0**	**0**	**0**	**1**	***1***	**1**	**2**	**0**	**1**	***4***
4:45 PM	**0**	**0**	**3**	**6**	***9***	**1**	**0**	**0**	**0**	***1***	**1**	**1**	**1**	**1**	***4***
Peak Hour	**1**	**0**	**13**	**24**	***38***	**1**	**0**	**0**	**2**	***3***	**3**	**5**	**7**	**5**	***20***

Kyle Campbell
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Count Summaries - All Vehicles

Interval Start	Clairmont Way				Driveway				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**29**	**4**	**4**	**0**	**6**	**10**	**12**	**0**	**9**	**120**	**8**	**0**	**8**	**131**	**41**	**382**	0
4:15 PM	**0**	**19**	**5**	**15**	**0**	**4**	**11**	**9**	**0**	**11**	**88**	**2**	**0**	**3**	**140**	**41**	**348**	**0**
4:30 PM	**0**	**29**	**13**	**9**	**0**	**3**	**8**	**11**	**0**	**13**	**126**	**6**	**0**	**6**	**117**	**30**	**371**	**0**
4:45 PM	**0**	**30**	**16**	**13**	**0**	**7**	**11**	**8**	**0**	**7**	**106**	**5**	**0**	**3**	**138**	**30**	**374**	**1,475**
5:00 PM	0	22	9	11	0	3	17	7	0	15	105	4	0	2	140	38	373	1,466
5:15 PM	0	23	9	11	0	6	6	10	0	7	83	2	0	5	120	43	325	1,443
5:30 PM	0	26	7	14	0	2	10	8	0	14	97	4	0	2	108	32	324	1,396
5:45 PM	0	23	7	13	0	5	16	9	0	14	94	3	0	3	106	44	337	1,359
Count Total	0	201	70	90	0	36	89	74	0	90	819	34	0	32	1,000	299	2,834	
Pk Hr All	**0**	**107**	**38**	**41**	**0**	**20**	**40**	**40**	**0**	**40**	**440**	**21**	**0**	**20**	**526**	**142**	**1,475**	
Pk Hr HV	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**12**	**0**	**0**	**1**	**18**	**5**	**38**	
Pk Hr HV%	**-**	**0%**	**0%**	**2%**	**-**	**0%**	**0%**	**0%**	**-**	**3%**	**3%**	**0%**	**-**	**5%**	**3%**	**4%**	**3%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	**0**	**0**	**3**	**8**	**11**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**5**	**0**	**8**
4:15 PM	**1**	**0**	**3**	**4**	**8**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**1**	**3**	**4**
4:30 PM	**0**	**0**	**4**	**6**	**10**	**0**	**0**	**0**	**1**	**1**	**1**	**2**	**0**	**1**	**4**
4:45 PM	**0**	**0**	**3**	**6**	**9**	**1**	**0**	**0**	**0**	**1**	**1**	**1**	**1**	**1**	**4**
5:00 PM	0	0	1	3	*4*	0	0	0	0	*0*	5	1	5	1	*12*
5:15 PM	0	0	1	2	*3*	0	0	0	0	*0*	1	1	0	0	*2*
5:30 PM	1	0	1	2	*4*	0	0	0	0	*0*	2	1	5	1	*9*
5:45 PM	1	0	1	1	*3*	0	0	0	0	*0*	4	1	0	1	*6*
Count Total	3	0	17	32	*52*	1	0	0	2	*3*	15	9	17	8	*49*
Peak Hour	**1**	**0**	**13**	**24**	***38***	**1**	**0**	**0**	**2**	***3***	**3**	**5**	**7**	**5**	**20**

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Count Summaries - Heavy Vehicles

Interval Start	Clairmont Way				Driveway				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**1**	**6**	**1**	**11**	0
4:15 PM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**0**	**0**	**0**	**2**	**2**	**8**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**5**	**1**	**10**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**5**	**1**	**9**	**38**
5:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0	4	31
5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	3	26
5:30 PM	0	0	0	1	0	0	0	0	0	0	1	0	0	0	2	0	4	20
5:45 PM	0	0	0	1	0	0	0	0	0	0	1	0	0	0	1	0	3	14
Count Total	0	0	0	3	0	0	0	0	0	1	16	0	0	1	26	5	52	
Pk Hr Heavy	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**12**	**0**	**0**	**1**	**18**	**5**	**38**	

Count Summaries - Bikes

Interval Start	Clairmont Way				Driveway				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**
4:45 PM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**3**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	3	
Pk Hr Bike	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**3**	

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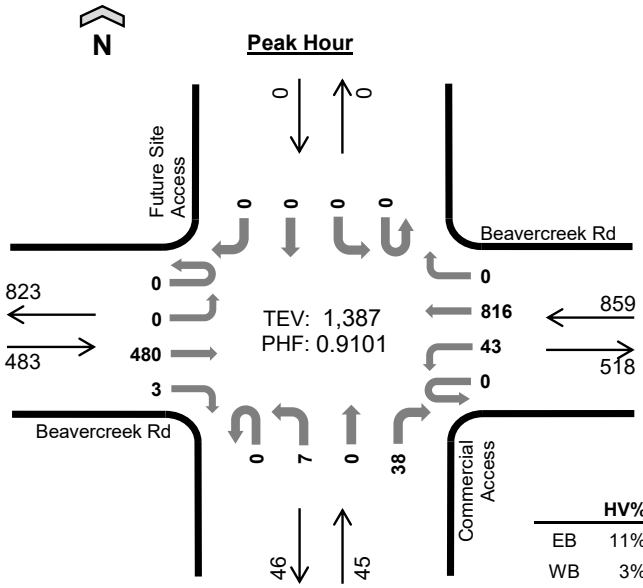
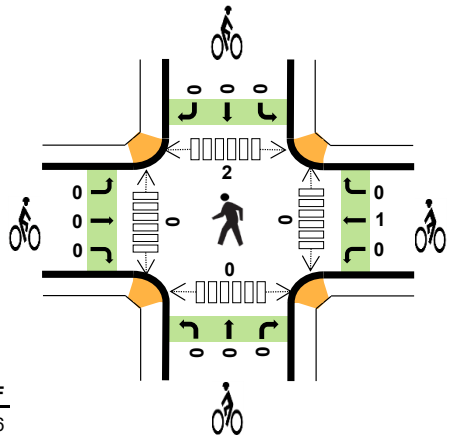
Commercial Access
Beavercreek Rd

Date: 9/9/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM





	HV%	PHF
EB	11%	0.86
WB	3%	0.94
NB	0%	0.70
SB	--	--
TOTAL	6%	0.91

Peak Hour Count Summaries

Peak Hour Interval Start		Beavercreek Rd Eastbound				Beavercreek Rd Westbound				Commercial Access Northbound				Future Site Access Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:30 AM		0	0	111	1	0	12	203	0	0	3	0	8	0	0	0	0	338	0
7:45 AM		0	0	130	1	0	12	197	0	0	1	0	15	0	0	0	0	356	0
8:00 AM		0	0	140	0	0	12	217	0	0	2	0	10	0	0	0	0	381	0
8:15 AM		0	0	99	1	0	7	199	0	0	1	0	5	0	0	0	0	312	1,387
Pk Hr	All	0	0	480	3	0	43	816	0	0	7	0	38	0	0	0	0	1,387	
	HV	0	0	52	0	0	0	27	0	0	0	0	0	0	0	0	0	79	
	HV%	-	-	11%	0%	-	0%	3%	-	-	0%	-	0%	-	-	-	-	6%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:30 AM	9	8	0	0	*17*	0	1	0	0	*1*	0	0	0	0	*0*
7:45 AM	15	5	0	0	*20*	0	0	0	0	*0*	0	0	0	0	*0*
8:00 AM	22	5	0	0	*27*	0	0	0	0	*0*	0	0	0	0	*0*
8:15 AM	6	9	0	0	*15*	0	0	0	0	*0*	0	0	2	0	*2*
Peak Hour	52	27	0	0	*79*	0	1	0	0	*1*	0	0	2	0	*2*

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Count Summaries - All Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				Commercial Access				Future Site Access				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	86	0	0	8	148	0	0	2	0	5	0	0	0	0	249	0
7:15 AM	0	0	101	0	0	7	179	0	0	0	0	3	0	0	0	0	290	0
7:30 AM	**0**	**0**	**111**	**1**	**0**	**12**	**203**	**0**	**0**	**3**	**0**	**8**	**0**	**0**	**0**	**0**	**338**	**0**
7:45 AM	**0**	**0**	**130**	**1**	**0**	**12**	**197**	**0**	**0**	**1**	**0**	**15**	**0**	**0**	**0**	**0**	**356**	**1,233**
8:00 AM	**0**	**0**	**140**	**0**	**0**	**12**	**217**	**0**	**0**	**2**	**0**	**10**	**0**	**0**	**0**	**0**	**381**	**1,365**
8:15 AM	**0**	**0**	**99**	**1**	**0**	**7**	**199**	**0**	**0**	**1**	**0**	**5**	**0**	**0**	**0**	**0**	**312**	**1,387**
8:30 AM	0	0	115	2	0	8	187	0	0	1	0	3	0	0	0	0	316	1,365
8:45 AM	0	0	107	4	0	16	210	0	0	2	0	7	0	0	0	0	346	1,355
Count Total	0	0	889	9	0	82	1,540	0	0	12	0	56	0	0	0	0	2,588	
Pk Hr All	**0**	**0**	**480**	**3**	**0**	**43**	**816**	**0**	**0**	**7**	**0**	**38**	**0**	**0**	**0**	**0**	**1,387**	
Pk Hr HV	**0**	**0**	**52**	**0**	**0**	**0**	**27**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**79**	
Pk Hr HV%	**-**	**-**	**11%**	**0%**	**-**	**0%**	**3%**	**-**	**-**	**0%**	**-**	**0%**	**-**	**-**	**-**	**-**	**6%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	7	6	0	0	*13*	0	0	0	0	*0*	0	0	2	1	*3*
7:15 AM	5	7	0	0	*12*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	**9**	**8**	**0**	**0**	**17**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**
7:45 AM	**15**	**5**	**0**	**0**	**20**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:00 AM	**22**	**5**	**0**	**0**	**27**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	**6**	**9**	**0**	**0**	**15**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**
8:30 AM	3	9	0	0	*12*	0	2	0	0	*2*	0	0	1	0	*1*
8:45 AM	3	7	0	0	*10*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	70	56	0	0	*126*	0	3	0	0	*3*	0	0	5	1	*6*
Peak Hour	**52**	**27**	**0**	**0**	***79***	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**2**	**0**	**2**

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Count Summaries - Heavy Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				Commercial Access				Future Site Access				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	7	0	0	0	6	0	0	0	0	0	0	0	0	0	13	0
7:15 AM	0	0	5	0	0	0	7	0	0	0	0	0	0	0	0	0	12	0
7:30 AM	**0**	**0**	**9**	**0**	**0**	**0**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**17**	**0**
7:45 AM	**0**	**0**	**15**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**20**	**62**
8:00 AM	**0**	**0**	**22**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**27**	**76**
8:15 AM	**0**	**0**	**6**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**15**	**79**
8:30 AM	0	0	3	0	0	0	9	0	0	0	0	0	0	0	0	0	12	74
8:45 AM	0	0	3	0	0	0	7	0	0	0	0	0	0	0	0	0	10	64
Count Total	0	0	70	0	0	0	56	0	0	0	0	0	0	0	0	0	126	
Pk Hr Heavy	**0**	**0**	**52**	**0**	**0**	**0**	**27**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**79**	

Count Summaries - Bikes

Interval Start	Beavercreek Rd				Beavercreek Rd				Commercial Access				Future Site Access				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:30 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	2
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Count Total	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	

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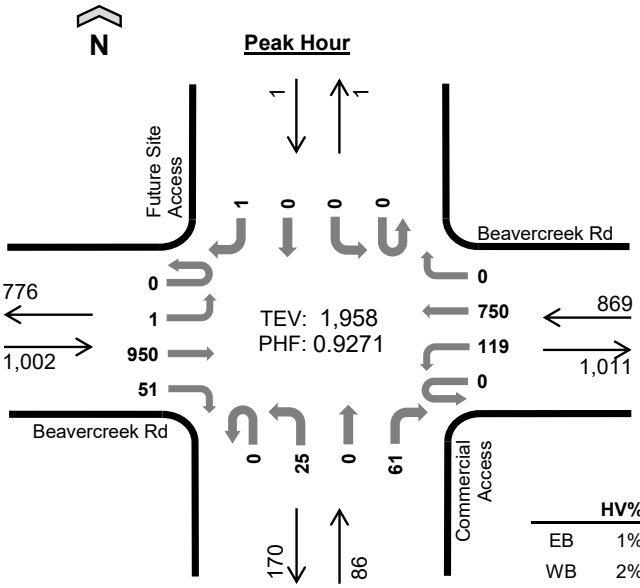
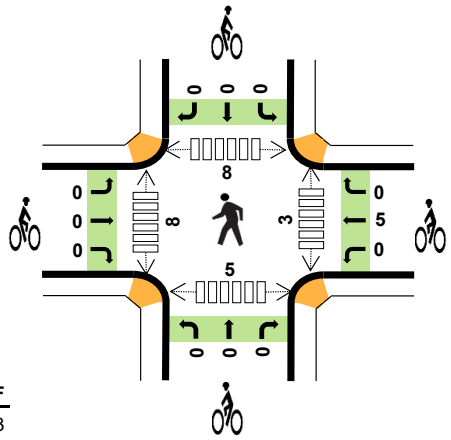
Commercial Access
Beavercreek Rd

Date: 9/9/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:15 PM to 5:15 PM





	HV%	PHF
EB	1%	0.83
WB	2%	0.97
NB	0%	0.65
SB	0%	0.25
TOTAL	1%	0.93

Peak Hour Count Summaries

Peak Hour Interval Start		Beavercreek Rd Eastbound				Beavercreek Rd Westbound				Commercial Access Northbound				Future Site Access Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:15 PM		0	0	202	13	0	27	196	0	0	7	0	26	0	0	0	0	471	0
4:30 PM		0	1	220	12	0	40	182	0	0	6	0	1	0	0	0	0	462	0
4:45 PM		0	0	238	14	0	26	191	0	0	8	0	19	0	0	0	1	497	0
5:00 PM		0	0	290	12	0	26	181	0	0	4	0	15	0	0	0	0	528	1,958
Pk Hr	All	0	1	950	51	0	119	750	0	0	25	0	61	0	0	0	1	1,958	
	HV	0	0	12	0	0	2	13	0	0	0	0	0	0	0	0	0	27	
	HV%	-	0%	1%	0%	-	2%	2%	-	-	0%	-	0%	-	-	-	0%	1%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:15 PM	9	4	0	0	*13*	0	1	0	0	*1*	2	4	3	0	*9*
4:30 PM	1	4	0	0	*5*	0	0	0	0	*0*	0	2	3	0	*5*
4:45 PM	2	3	0	0	*5*	0	2	0	0	*2*	1	2	1	0	*4*
5:00 PM	0	4	0	0	*4*	0	2	0	0	*2*	0	0	1	5	*6*
Peak Hour	12	15	0	0	*27*	0	5	0	0	*5*	3	8	8	5	*24*

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Count Summaries - All Vehicles

Interval Start	Beavercreek Rd Eastbound				Beavercreek Rd Westbound				Commercial Access Northbound				Future Site Access Southbound				15-min Total	Rolling Hour Total
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	1	230	10	0	32	170	0	0	7	0	23	0	0	0	1	474	0
4:15 PM	**0**	**0**	**202**	**13**	**0**	**27**	**196**	**0**	**0**	**7**	**0**	**26**	**0**	**0**	**0**	**0**	**471**	**0**
4:30 PM	**0**	**1**	**220**	**12**	**0**	**40**	**182**	**0**	**0**	**6**	**0**	**1**	**0**	**0**	**0**	**0**	**462**	**0**
4:45 PM	**0**	**0**	**238**	**14**	**0**	**26**	**191**	**0**	**0**	**8**	**0**	**19**	**0**	**0**	**0**	**1**	**497**	**1,904**
5:00 PM	**0**	**0**	**290**	**12**	**0**	**26**	**181**	**0**	**0**	**4**	**0**	**15**	**0**	**0**	**0**	**0**	**528**	**1,958**
5:15 PM	0	0	228	10	0	26	167	0	0	9	0	11	0	0	0	0	451	1,938
5:30 PM	0	0	240	13	0	16	184	0	0	7	0	14	0	0	0	0	474	1,950
5:45 PM	0	0	190	12	0	27	185	0	0	5	0	9	0	0	0	0	428	1,881
Count Total	0	2	1,838	96	0	220	1,456	0	0	53	0	118	0	0	0	2	3,785	
Pk Hr All	**0**	**1**	**950**	**51**	**0**	**119**	**750**	**0**	**0**	**25**	**0**	**61**	**0**	**0**	**0**	**1**	**1,958**	
Pk Hr HV	**0**	**0**	**12**	**0**	**0**	**2**	**13**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**27**	
Pk Hr HV%	**-**	**0%**	**1%**	**0%**	**-**	**2%**	**2%**	**-**	**-**	**0%**	**-**	**0%**	**-**	**-**	**-**	**0%**	**1%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	4	7	1	0	*12*	0	3	0	0	*3*	0	0	2	0	*2*
4:15 PM	**9**	**4**	**0**	**0**	**13**	**0**	**1**	**0**	**0**	**1**	**2**	**4**	**3**	**0**	**9**
4:30 PM	**1**	**4**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**3**	**0**	**5**
4:45 PM	**2**	**3**	**0**	**0**	**5**	**0**	**2**	**0**	**0**	**2**	**1**	**2**	**1**	**0**	**4**
5:00 PM	**0**	**4**	**0**	**0**	**4**	**0**	**2**	**0**	**0**	**2**	**0**	**0**	**1**	**5**	**6**
5:15 PM	2	3	0	0	*5*	0	0	0	0	*0*	1	0	1	0	*2*
5:30 PM	2	2	0	0	*4*	0	1	0	0	*1*	0	0	0	0	*0*
5:45 PM	2	2	0	0	*4*	0	0	0	0	*0*	0	1	2	0	*3*
Count Total	22	29	1	0	*52*	0	9	0	0	*9*	4	9	13	5	*31*
Peak Hour	**12**	**15**	**0**	**0**	***27***	**0**	**5**	**0**	**0**	***5***	**3**	**8**	**8**	**5**	**24**

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Count Summaries - Heavy Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				Commercial Access				Future Site Access				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	4	0	0	0	7	0	0	0	0	1	0	0	0	0	12	0
4:15 PM	**0**	**0**	**9**	**0**	**0**	**1**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**13**	**0**
4:30 PM	**0**	**0**	**1**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**
4:45 PM	**0**	**0**	**2**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**35**
5:00 PM	**0**	**0**	**0**	**0**	**0**	**1**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**27**
5:15 PM	0	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	5	19
5:30 PM	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	4	18
5:45 PM	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	4	17
Count Total	0	0	22	0	0	2	27	0	0	0	0	1	0	0	0	0	52	
Pk Hr Heavy	**0**	**0**	**12**	**0**	**0**	**2**	**13**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**27**	

Count Summaries - Bikes

Interval Start	Beavercreek Rd				Beavercreek Rd				Commercial Access				Future Site Access				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**6**
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**5**
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
5:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	5
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Count Total	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	9	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	

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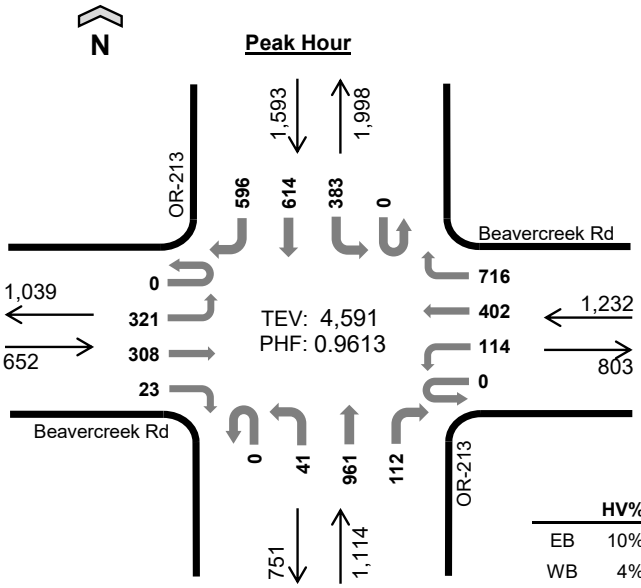
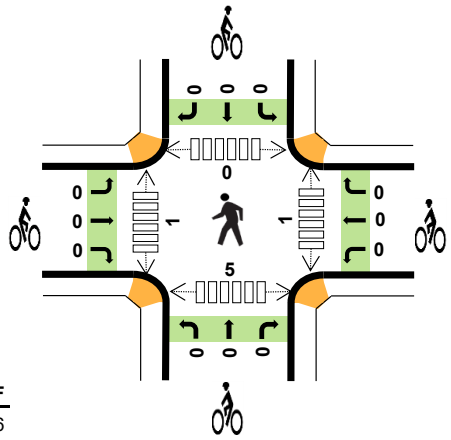
OR-213
Beavercreek Rd

Date: 9/9/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM



	HV%	PHF
EB	10%	0.76
WB	4%	0.88
NB	6%	0.90
SB	5%	0.88
TOTAL	6%	0.96



Peak Hour Count Summaries

Peak Hour Interval Start		Beavercreek Rd Eastbound				Beavercreek Rd Westbound				OR-213 Northbound				OR-213 Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:30 AM		0	88	54	3	0	22	116	180	0	8	282	20	0	80	122	126	1,101	0
7:45 AM		0	87	81	8	0	39	108	203	0	7	224	14	0	86	164	160	1,181	0
8:00 AM		0	86	125	3	0	30	82	164	0	10	199	42	0	122	170	161	1,194	0
8:15 AM		0	60	48	9	0	23	96	169	0	16	256	36	0	95	158	149	1,115	4,591
Pk Hr	All	0	321	308	23	0	114	402	716	0	41	961	112	0	383	614	596	4,591	
	HV	0	39	26	1	0	4	11	34	0	1	58	11	0	14	48	21	268	
	HV%	-	12%	8%	4%	-	4%	3%	5%	-	2%	6%	10%	-	4%	8%	4%	6%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:30 AM	18	14	18	16	*66*	0	0	0	0	*0*	0	1	0	0	*1*
7:45 AM	14	10	18	15	*57*	0	0	0	0	*0*	1	0	0	1	*2*
8:00 AM	26	9	18	28	*81*	0	0	0	0	*0*	0	0	0	2	*2*
8:15 AM	8	16	16	24	*64*	0	0	0	0	*0*	0	0	0	2	*2*
Peak Hour	66	49	70	83	*268*	0	0	0	0	*0*	1	1	0	5	*7*

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Count Summaries - All Vehicles

Interval Start	Beavercreek Rd Eastbound				Beavercreek Rd Westbound				OR-213 Northbound				OR-213 Southbound				15-min Total	Rolling Hour Total
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	65	36	1	0	17	72	192	0	11	284	24	0	72	112	105	991	0
7:15 AM	0	81	51	3	0	22	93	207	0	3	249	16	0	93	115	132	1,065	0
7:30 AM	**0**	**88**	**54**	**3**	**0**	**22**	**116**	**180**	**0**	**8**	**282**	**20**	**0**	**80**	**122**	**126**	**1,101**	**0**
7:45 AM	**0**	**87**	**81**	**8**	**0**	**39**	**108**	**203**	**0**	**7**	**224**	**14**	**0**	**86**	**164**	**160**	**1,181**	**4,338**
8:00 AM	**0**	**86**	**125**	**3**	**0**	**30**	**82**	**164**	**0**	**10**	**199**	**42**	**0**	**122**	**170**	**161**	**1,194**	**4,541**
8:15 AM	**0**	**60**	**48**	**9**	**0**	**23**	**96**	**169**	**0**	**16**	**256**	**36**	**0**	**95**	**158**	**149**	**1,115**	**4,591**
8:30 AM	0	83	68	11	0	29	109	168	0	8	221	29	0	82	124	146	1,078	4,568
8:45 AM	0	80	78	15	0	24	118	148	1	15	176	31	0	92	135	142	1,055	4,442
Count Total	0	630	541	53	0	206	794	1,431	1	78	1,891	212	0	722	1,100	1,121	8,780	
Pk Hr All	**0**	**321**	**308**	**23**	**0**	**114**	**402**	**716**	**0**	**41**	**961**	**112**	**0**	**383**	**614**	**596**	**4,591**	
Pk Hr HV	**0**	**39**	**26**	**1**	**0**	**4**	**11**	**34**	**0**	**1**	**58**	**11**	**0**	**14**	**48**	**21**	**268**	
Pk Hr HV%	**-**	**12%**	**8%**	**4%**	**-**	**4%**	**3%**	**5%**	**-**	**2%**	**6%**	**10%**	**-**	**4%**	**8%**	**4%**	**6%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	6	13	18	14	*51*	0	1	0	0	*1*	0	0	0	1	*1*
7:15 AM	9	11	15	18	*53*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	**18**	**14**	**18**	**16**	**66**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**
7:45 AM	**14**	**10**	**18**	**15**	**57**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**2**
8:00 AM	**26**	**9**	**18**	**28**	**81**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**2**
8:15 AM	**8**	**16**	**16**	**24**	**64**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**2**
8:30 AM	12	14	29	23	*78*	0	0	0	0	*0*	0	0	0	0	*0*
8:45 AM	10	8	14	29	*61*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	103	95	146	167	*511*	0	1	0	0	*1*	1	1	0	6	*8*
Peak Hour	**66**	**49**	**70**	**83**	***268***	**0**	**0**	**0**	**0**	***0***	**1**	**1**	**0**	**5**	**7**

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Count Summaries - Heavy Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	3	3	0	0	1	4	8	0	0	16	2	0	0	12	2	51	0
7:15 AM	0	7	1	1	0	0	5	6	0	0	14	1	0	3	11	4	53	0
7:30 AM	**0**	**15**	**3**	**0**	**0**	**0**	**4**	**10**	**0**	**0**	**17**	**1**	**0**	**1**	**9**	**6**	**66**	**0**
7:45 AM	**0**	**10**	**4**	**0**	**0**	**2**	**1**	**7**	**0**	**0**	**16**	**2**	**0**	**2**	**11**	**2**	**57**	**227**
8:00 AM	**0**	**8**	**18**	**0**	**0**	**2**	**1**	**6**	**0**	**1**	**12**	**5**	**0**	**10**	**12**	**6**	**81**	**257**
8:15 AM	**0**	**6**	**1**	**1**	**0**	**0**	**5**	**11**	**0**	**0**	**13**	**3**	**0**	**1**	**16**	**7**	**64**	**268**
8:30 AM	0	11	1	0	0	2	6	6	0	0	26	3	0	8	12	3	78	280
8:45 AM	0	8	2	0	0	1	3	4	0	2	10	2	0	8	17	4	61	284
Count Total	0	68	33	2	0	8	29	58	0	3	124	19	0	33	100	34	511	
Pk Hr Heavy	**0**	**39**	**26**	**1**	**0**	**4**	**11**	**34**	**0**	**1**	**58**	**11**	**0**	**14**	**48**	**21**	**268**	

Count Summaries - Bikes

Interval Start	Beavercreek Rd				Beavercreek Rd				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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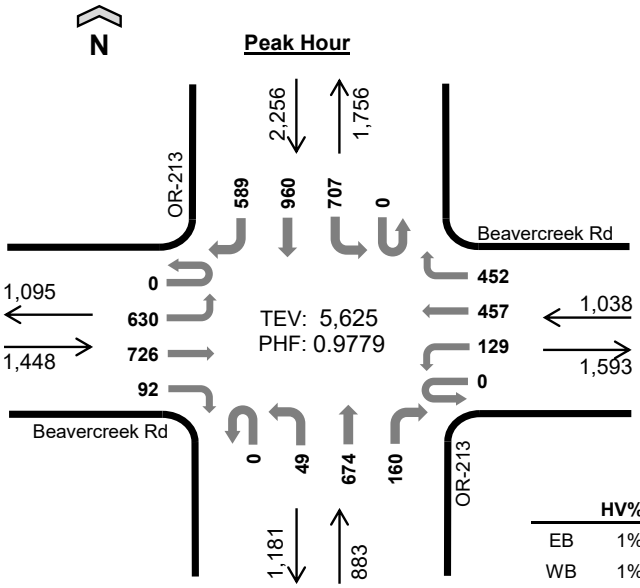
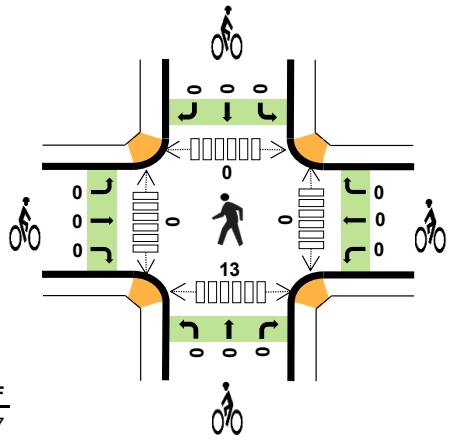
OR-213
Beavercreek Rd

Date: 9/9/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM





	HV%	PHF
EB	1%	0.87
WB	1%	0.83
NB	3%	0.93
SB	2%	0.97
TOTAL	2%	0.98

Peak Hour Count Summaries

Peak Hour Interval Start		Beavercreek Rd Eastbound				Beavercreek Rd Westbound				OR-213 Northbound				OR-213 Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:30 PM		0	156	174	27	0	48	148	115	0	10	151	34	0	173	242	148	1,426	0
4:45 PM		0	139	168	22	0	28	100	125	0	17	146	49	0	195	233	152	1,374	0
5:00 PM		0	142	182	20	0	22	118	118	0	14	181	43	0	162	241	144	1,387	0
5:15 PM		0	193	202	23	0	31	91	94	0	8	196	34	0	177	244	145	1,438	5,625
Pk Hr	All	0	630	726	92	0	129	457	452	0	49	674	160	0	707	960	589	5,625	
	HV	0	6	8	0	0	0	4	5	0	1	26	2	0	25	24	7	108	
	HV%	-	1%	1%	0%	-	0%	1%	1%	-	2%	4%	1%	-	4%	3%	1%	2%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:30 PM	8	2	7	19	*36*	0	0	0	0	*0*	0	0	0	3	*3*
4:45 PM	2	2	13	10	*27*	0	0	0	0	*0*	0	0	0	4	*4*
5:00 PM	0	1	5	17	*23*	0	0	0	0	*0*	0	0	0	5	*5*
5:15 PM	4	4	4	10	*22*	0	0	0	0	*0*	0	0	0	1	*1*
Peak Hour	14	9	29	56	*108*	0	0	0	0	*0*	0	0	0	13	*13*

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Count Summaries - All Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	189	134	14	0	31	107	110	0	14	182	35	0	162	231	159	1,368	0
4:15 PM	0	131	136	15	0	22	103	146	0	13	170	36	0	182	263	162	1,379	0
4:30 PM	**0**	**156**	**174**	**27**	**0**	**48**	**148**	**115**	**0**	**10**	**151**	**34**	**0**	**173**	**242**	**148**	**1,426**	**0**
4:45 PM	**0**	**139**	**168**	**22**	**0**	**28**	**100**	**125**	**0**	**17**	**146**	**49**	**0**	**195**	**233**	**152**	**1,374**	**5,547**
5:00 PM	**0**	**142**	**182**	**20**	**0**	**22**	**118**	**118**	**0**	**14**	**181**	**43**	**0**	**162**	**241**	**144**	**1,387**	**5,566**
5:15 PM	**0**	**193**	**202**	**23**	**0**	**31**	**91**	**94**	**0**	**8**	**196**	**34**	**0**	**177**	**244**	**145**	**1,438**	**5,625**
5:30 PM	0	143	141	21	0	30	109	142	0	12	149	47	0	197	259	136	1,386	5,585
5:45 PM	0	138	154	14	0	28	116	113	0	12	176	30	0	148	199	123	1,251	5,462
Count Total	0	1,231	1,291	156	0	240	892	963	0	100	1,351	308	0	1,396	1,912	1,169	11,009	
Pk Hr All	**0**	**630**	**726**	**92**	**0**	**129**	**457**	**452**	**0**	**49**	**674**	**160**	**0**	**707**	**960**	**589**	**5,625**	
Pk Hr HV	**0**	**6**	**8**	**0**	**0**	**0**	**4**	**5**	**0**	**1**	**26**	**2**	**0**	**25**	**24**	**7**	**108**	
Pk Hr HV%	**-**	**1%**	**1%**	**0%**	**-**	**0%**	**1%**	**1%**	**-**	**2%**	**4%**	**1%**	**-**	**4%**	**3%**	**1%**	**2%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	7	5	6	25	*43*	0	0	0	0	*0*	1	0	0	1	*2*
4:15 PM	8	5	8	23	*44*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	**8**	**2**	**7**	**19**	**36**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**3**
4:45 PM	**2**	**2**	**13**	**10**	**27**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**4**
5:00 PM	**0**	**1**	**5**	**17**	**23**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**5**
5:15 PM	**4**	**4**	**4**	**10**	**22**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**
5:30 PM	4	3	3	16	*26*	0	0	0	0	*0*	0	0	0	3	*3*
5:45 PM	5	1	6	12	*24*	0	0	0	0	*0*	0	0	0	6	*6*
Count Total	38	23	52	132	*245*	0	0	0	0	*0*	1	0	0	23	*24*
Peak Hour	**14**	**9**	**29**	**56**	***108***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**13**	**13**

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Count Summaries - Heavy Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	3	4	0	0	0	2	3	0	0	6	0	0	5	12	8	43	0
4:15 PM	0	4	3	1	0	1	2	2	0	0	8	0	0	11	10	2	44	0
4:30 PM	**0**	**2**	**6**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**7**	**0**	**0**	**10**	**7**	**2**	**36**	**0**
4:45 PM	**0**	**2**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**11**	**2**	**0**	**3**	**6**	**1**	**27**	**150**
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**4**	**0**	**0**	**9**	**5**	**3**	**23**	**130**
5:15 PM	**0**	**2**	**2**	**0**	**0**	**0**	**2**	**2**	**0**	**0**	**4**	**0**	**0**	**3**	**6**	**1**	**22**	**108**
5:30 PM	0	4	0	0	0	0	1	2	0	0	3	0	0	6	4	6	26	98
5:45 PM	0	3	2	0	0	0	1	0	0	0	6	0	0	8	2	2	24	95
Count Total	0	20	17	1	0	1	10	12	0	1	49	2	0	55	52	25	245	
Pk Hr Heavy	**0**	**6**	**8**	**0**	**0**	**0**	**4**	**5**	**0**	**1**	**26**	**2**	**0**	**25**	**24**	**7**	**108**	

Count Summaries - Bikes

Interval Start	Beavercreek Rd				Beavercreek Rd				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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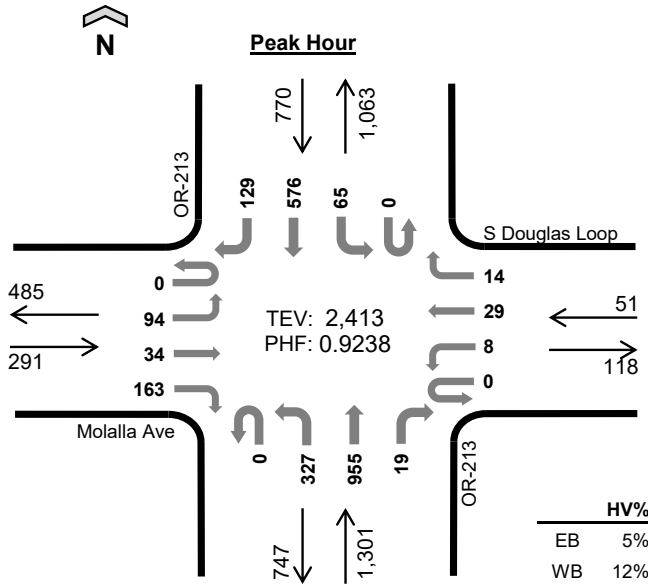
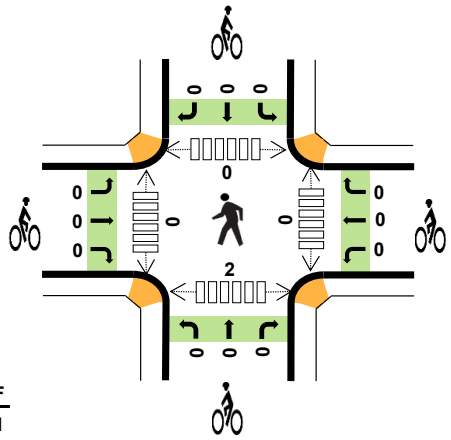
OR-213
Molalla Ave

Date: 9/9/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM





	HV%	PHF
EB	5%	0.71
WB	12%	0.64
NB	6%	0.91
SB	8%	0.86
TOTAL	6%	0.92

Peak Hour Count Summaries

Peak Hour Interval Start		Molalla Ave				S Douglas Loop				OR-213				OR-213				15-min Total	Rolling Hour Total
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:30 AM		0	21	6	31	0	0	6	2	0	64	250	4	0	17	121	24	546	0
7:45 AM		0	18	7	39	0	1	4	0	0	82	233	7	0	18	138	39	586	0
8:00 AM		0	36	12	55	0	4	11	5	0	82	220	3	0	15	173	37	653	0
8:15 AM		0	19	9	38	0	3	8	7	0	99	252	5	0	15	144	29	628	2,413
Pk Hr	All	0	94	34	163	0	8	29	14	0	327	955	19	0	65	576	129	2,413	
	HV	0	4	4	7	0	2	4	0	0	8	65	3	0	1	54	3	155	
	HV%	-	4%	12%	4%	-	25%	14%	0%	-	2%	7%	16%	-	2%	9%	2%	6%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:30 AM	3	1	16	11	*31*	0	0	0	0	*0*	0	0	0	1	*1*
7:45 AM	4	1	22	8	*35*	0	0	0	0	*0*	0	0	0	1	*1*
8:00 AM	6	1	16	20	*43*	0	0	0	0	*0*	0	0	0	0	*0*
8:15 AM	2	3	22	19	*46*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	15	6	76	58	*155*	0	0	0	0	*0*	0	0	0	2	*2*

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Count Summaries - All Vehicles

Interval Start	Molalla Ave				S Douglas Loop				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	25	5	22	0	1	5	3	0	60	275	1	0	6	121	23	547	0
7:15 AM	0	17	0	33	0	3	5	3	0	59	271	1	0	14	110	31	547	0
7:30 AM	**0**	**21**	**6**	**31**	**0**	**0**	**6**	**2**	**0**	**64**	**250**	**4**	**0**	**17**	**121**	**24**	**546**	**0**
7:45 AM	**0**	**18**	**7**	**39**	**0**	**1**	**4**	**0**	**0**	**82**	**233**	**7**	**0**	**18**	**138**	**39**	**586**	**2,226**
8:00 AM	**0**	**36**	**12**	**55**	**0**	**4**	**11**	**5**	**0**	**82**	**220**	**3**	**0**	**15**	**173**	**37**	**653**	**2,332**
8:15 AM	**0**	**19**	**9**	**38**	**0**	**3**	**8**	**7**	**0**	**99**	**252**	**5**	**0**	**15**	**144**	**29**	**628**	**2,413**
8:30 AM	0	20	8	45	0	3	14	3	0	73	218	2	0	10	115	33	544	2,411
8:45 AM	0	22	2	47	0	1	9	4	0	82	210	3	0	13	151	30	574	2,399
Count Total	0	178	49	310	0	16	62	27	0	601	1,929	26	0	108	1,073	246	4,625	
Pk Hr All	**0**	**94**	**34**	**163**	**0**	**8**	**29**	**14**	**0**	**327**	**955**	**19**	**0**	**65**	**576**	**129**	**2,413**	
Pk Hr HV	**0**	**4**	**4**	**7**	**0**	**2**	**4**	**0**	**0**	**8**	**65**	**3**	**0**	**1**	**54**	**3**	**155**	
Pk Hr HV%	**-**	**4%**	**12%**	**4%**	**-**	**25%**	**14%**	**0%**	**-**	**2%**	**7%**	**16%**	**-**	**2%**	**9%**	**2%**	**6%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	3	2	25	13	*43*	0	0	0	0	*0*	0	0	0	1	*1*
7:15 AM	0	1	17	10	*28*	0	0	0	0	*0*	12	0	0	1	*13*
7:30 AM	**3**	**1**	**16**	**11**	**31**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**
7:45 AM	**4**	**1**	**22**	**8**	**35**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**
8:00 AM	**6**	**1**	**16**	**20**	**43**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	**2**	**3**	**22**	**19**	**46**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	4	1	25	15	*45*	0	0	0	0	*0*	0	0	1	0	*1*
8:45 AM	4	1	21	17	*43*	0	0	0	0	*0*	0	0	3	0	*3*
Count Total	26	11	164	113	*314*	0	0	0	0	*0*	12	0	4	4	*20*
Peak Hour	**15**	**6**	**76**	**58**	***155***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**2**	**2**

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Count Summaries - Heavy Vehicles

Interval Start	Molalla Ave				S Douglas Loop				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	1	1	1	0	0	2	0	0	6	18	1	0	1	12	0	43	0
7:15 AM	0	0	0	0	0	1	0	0	0	0	17	0	0	0	9	1	28	0
7:30 AM	**0**	**1**	**1**	**1**	**0**	**0**	**1**	**0**	**0**	**1**	**14**	**1**	**0**	**0**	**11**	**0**	**31**	**0**
7:45 AM	**0**	**0**	**1**	**3**	**0**	**1**	**0**	**0**	**0**	**2**	**20**	**0**	**0**	**0**	**7**	**1**	**35**	**137**
8:00 AM	**0**	**2**	**1**	**3**	**0**	**0**	**1**	**0**	**0**	**1**	**15**	**0**	**0**	**0**	**19**	**1**	**43**	**137**
8:15 AM	**0**	**1**	**1**	**0**	**0**	**1**	**2**	**0**	**0**	**4**	**16**	**2**	**0**	**1**	**17**	**1**	**46**	**155**
8:30 AM	0	1	0	3	0	0	1	0	0	0	25	0	0	0	15	0	45	169
8:45 AM	0	1	0	3	0	0	1	0	0	4	16	1	0	1	14	2	43	177
Count Total	0	7	5	14	0	3	8	0	0	18	141	5	0	3	104	6	314	
Pk Hr Heavy	**0**	**4**	**4**	**7**	**0**	**2**	**4**	**0**	**0**	**8**	**65**	**3**	**0**	**1**	**54**	**3**	**155**	

Count Summaries - Bikes

Interval Start	Molalla Ave				S Douglas Loop				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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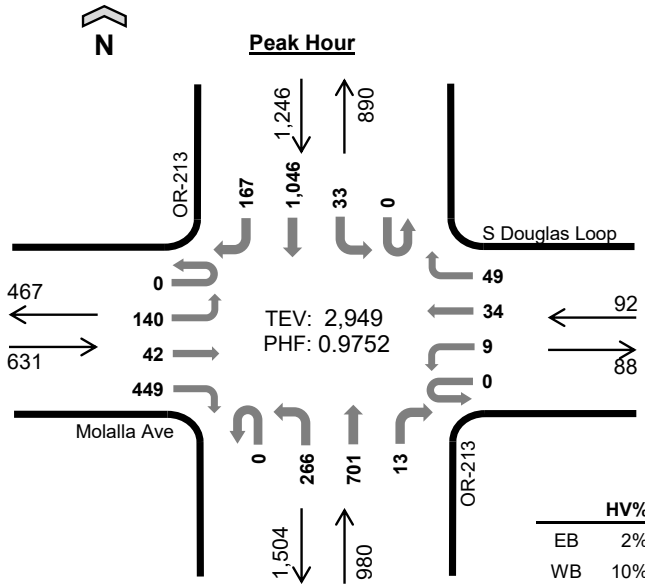
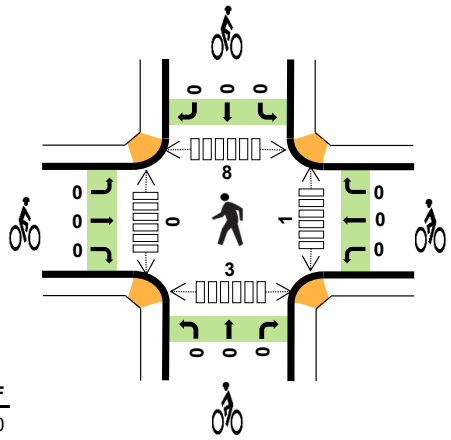
OR-213
Molalla Ave

Date: 9/9/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM





	HV%	PHF
EB	2%	0.90
WB	10%	0.70
NB	3%	0.92
SB	2%	0.96
TOTAL	3%	0.98

Peak Hour Count Summaries

Peak Hour Interval Start		Molalla Ave Eastbound				S Douglas Loop Westbound				OR-213 Northbound				OR-213 Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:45 PM		0	31	14	104	0	3	11	9	0	65	167	1	0	8	265	51	729	0
5:00 PM		0	41	8	126	0	2	10	21	0	56	167	3	0	10	227	44	715	0
5:15 PM		0	28	10	118	0	4	10	15	0	65	189	2	0	8	280	27	756	0
5:30 PM		0	40	10	101	0	0	3	4	0	80	178	7	0	7	274	45	749	2,949
Pk Hr	All	0	140	42	449	0	9	34	49	0	266	701	13	0	33	1,046	167	2,949	
	HV	0	2	5	4	0	2	5	2	0	4	23	2	0	1	20	4	74	
	HV%	-	1%	12%	1%	-	22%	15%	4%	-	2%	3%	15%	-	3%	2%	2%	3%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:45 PM	6	4	9	6	*25*	0	0	0	0	*0*	0	0	6	0	*6*
5:00 PM	3	1	7	7	*18*	0	0	0	0	*0*	1	0	1	1	*3*
5:15 PM	1	3	6	8	*18*	0	0	0	0	*0*	0	0	1	1	*2*
5:30 PM	1	1	7	4	*13*	0	0	0	0	*0*	0	0	0	1	*1*
Peak Hour	11	9	29	25	*74*	0	0	0	0	*0*	1	0	8	3	*12*

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Count Summaries - All Vehicles

Interval Start	Molalla Ave				S Douglas Loop				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	23	5	108	0	3	10	18	0	82	152	1	0	7	273	51	733	0
4:15 PM	0	26	9	108	0	4	8	12	0	63	162	0	0	1	277	41	711	0
4:30 PM	0	24	7	107	0	1	7	15	0	79	174	2	0	5	263	42	726	0
4:45 PM	**0**	**31**	**14**	**104**	**0**	**3**	**11**	**9**	**0**	**65**	**167**	**1**	**0**	**8**	**265**	**51**	**729**	**2,899**
5:00 PM	**0**	**41**	**8**	**126**	**0**	**2**	**10**	**21**	**0**	**56**	**167**	**3**	**0**	**10**	**227**	**44**	**715**	**2,881**
5:15 PM	**0**	**28**	**10**	**118**	**0**	**4**	**10**	**15**	**0**	**65**	**189**	**2**	**0**	**8**	**280**	**27**	**756**	**2,926**
5:30 PM	**0**	**40**	**10**	**101**	**0**	**0**	**3**	**4**	**0**	**80**	**178**	**7**	**0**	**7**	**274**	**45**	**749**	**2,949**
5:45 PM	0	28	11	106	0	4	11	5	0	63	152	3	0	15	234	31	663	2,883
Count Total	0	241	74	878	0	21	70	99	0	553	1,341	19	0	61	2,093	332	5,782	
Pk Hr All	**0**	**140**	**42**	**449**	**0**	**9**	**34**	**49**	**0**	**266**	**701**	**13**	**0**	**33**	**1,046**	**167**	**2,949**	
Pk Hr HV	**0**	**2**	**5**	**4**	**0**	**2**	**5**	**2**	**0**	**4**	**23**	**2**	**0**	**1**	**20**	**4**	**74**	
Pk Hr HV%	**-**	**1%**	**12%**	**1%**	**-**	**22%**	**15%**	**4%**	**-**	**2%**	**3%**	**15%**	**-**	**3%**	**2%**	**2%**	**3%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	2	2	6	10	*20*	0	0	0	0	*0*	0	0	1	1	*2*
4:15 PM	3	1	10	13	*27*	0	0	0	0	*0*	0	0	2	0	*2*
4:30 PM	2	1	10	12	*25*	1	0	0	0	*1*	0	0	2	0	*2*
4:45 PM	**6**	**4**	**9**	**6**	**25**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**6**
5:00 PM	**3**	**1**	**7**	**7**	**18**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**1**	**3**
5:15 PM	**1**	**3**	**6**	**8**	**18**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**2**
5:30 PM	**1**	**1**	**7**	**4**	**13**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**
5:45 PM	3	2	6	3	*14*	0	0	0	0	*0*	0	0	0	1	*1*
Count Total	21	15	61	63	*160*	1	0	0	0	*1*	1	0	13	5	*19*
Peak Hour	**11**	**9**	**29**	**25**	***74***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**8**	**3**	**12**

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Count Summaries - Heavy Vehicles

Interval Start	Molalla Ave				S Douglas Loop				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	1	0	1	0	0	2	0	0	0	5	1	0	0	9	1	20	0
4:15 PM	0	0	1	2	0	1	0	0	0	2	8	0	0	0	11	2	27	0
4:30 PM	0	0	0	2	0	0	1	0	0	0	9	1	0	0	12	0	25	0
4:45 PM	**0**	**0**	**3**	**3**	**0**	**1**	**2**	**1**	**0**	**1**	**8**	**0**	**0**	**0**	**6**	**0**	**25**	**97**
5:00 PM	**0**	**1**	**1**	**1**	**0**	**0**	**1**	**0**	**0**	**1**	**5**	**1**	**0**	**0**	**7**	**0**	**18**	**95**
5:15 PM	**0**	**0**	**1**	**0**	**0**	**1**	**1**	**1**	**0**	**1**	**5**	**0**	**0**	**0**	**5**	**3**	**18**	**86**
5:30 PM	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**5**	**1**	**0**	**1**	**2**	**1**	**13**	**74**
5:45 PM	0	1	1	1	0	1	1	0	0	1	5	0	0	1	2	0	14	63
Count Total	0	4	7	10	0	4	9	2	0	7	50	4	0	2	54	7	160	
Pk Hr Heavy	**0**	**2**	**5**	**4**	**0**	**2**	**5**	**2**	**0**	**4**	**23**	**2**	**0**	**1**	**20**	**4**	**74**	

Count Summaries - Bikes

Interval Start	Molalla Ave				S Douglas Loop				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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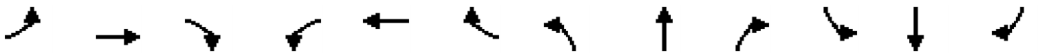
Appendix B: Operations Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	10	10	35	10	5	10	550	15	30	410	10
Future Volume (veh/h)	20	10	10	35	10	5	10	550	15	30	410	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1811	1811	1781	1781	1781	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	22	11	11	38	11	5	11	598	16	33	446	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	8	8	8	4	4	4	4	4	4
Cap, veh/h	264	76	51	327	62	18	667	1050	28	554	1054	26
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.59	0.59	0.59	0.59	0.59	0.59
Sat Flow, veh/h	575	575	383	855	468	135	919	1783	48	795	1789	44
Grp Volume(v), veh/h	44	0	0	54	0	0	11	0	614	33	0	457
Grp Sat Flow(s),veh/h/ln	1533	0	0	1457	0	0	919	0	1831	795	0	1833
Q Serve(g_s), s	0.0	0.0	0.0	0.2	0.0	0.0	0.2	0.0	5.9	0.8	0.0	3.9
Cycle Q Clear(g_c), s	0.7	0.0	0.0	0.8	0.0	0.0	4.1	0.0	5.9	6.7	0.0	3.9
Prop In Lane	0.50		0.25	0.70		0.09	1.00		0.03	1.00		0.02
Lane Grp Cap(c), veh/h	391	0	0	406	0	0	667	0	1079	554	0	1080
V/C Ratio(X)	0.11	0.00	0.00	0.13	0.00	0.00	0.02	0.00	0.57	0.06	0.00	0.42
Avail Cap(c_a), veh/h	1277	0	0	1245	0	0	1918	0	3574	1637	0	3577
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.1	0.0	0.0	11.2	0.0	0.0	4.4	0.0	3.6	5.7	0.0	3.2
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.8	0.1	0.0	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.6	0.1	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	11.2	0.0	0.0	11.3	0.0	0.0	4.4	0.0	4.5	5.8	0.0	3.7
LnGrp LOS	B			B			A		A	A		A
Approach Vol, veh/h		44			54			625			490	
Approach Delay, s/veh		11.2			11.3			4.5			3.8	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	20.9	7.8	20.9	7.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	56.0	21.0	56.0	21.0
Max Q Clear Time (g_c+I1), s	8.7	2.8	7.9	2.7
Green Ext Time (p_c), s	6.3	0.2	9.0	0.1

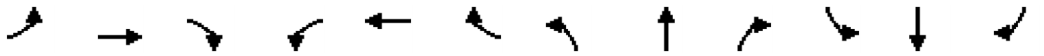
Intersection Summary	
HCM 7th Control Delay, s/veh	4.7
HCM 7th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	4	35	30	5	5	25	450	10	5	400	30
Future Volume (veh/h)	45	4	35	30	5	5	25	450	10	5	400	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1826	1826	1826	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	48	4	38	32	5	5	27	484	11	5	430	32
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	7	7	7	5	5	5	4	4	4	4	4	4
Cap, veh/h	409	238	202	411	111	111	517	808	18	466	790	667
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.03	0.45	0.45	0.01	0.43	0.43
Sat Flow, veh/h	1349	1796	1522	1332	838	838	1753	1792	41	1753	1841	1554
Grp Volume(v), veh/h	48	4	38	32	0	10	27	0	495	5	430	32
Grp Sat Flow(s),veh/h/ln	1349	1796	1522	1332	0	1675	1753	0	1833	1753	1841	1554
Q Serve(g_s), s	1.0	0.1	0.7	0.7	0.0	0.2	0.3	0.0	6.2	0.0	5.3	0.4
Cycle Q Clear(g_c), s	1.1	0.1	0.7	0.7	0.0	0.2	0.3	0.0	6.2	0.0	5.3	0.4
Prop In Lane	1.00		1.00	1.00		0.50	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	409	238	202	411	0	222	517	0	826	466	790	667
V/C Ratio(X)	0.12	0.02	0.19	0.08	0.00	0.05	0.05	0.00	0.60	0.01	0.54	0.05
Avail Cap(c_a), veh/h	1162	1241	1052	1155	0	1157	1105	0	2443	1091	2453	2072
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.0	11.5	11.7	11.8	0.0	11.5	5.0	0.0	6.3	5.4	6.5	5.1
Incr Delay (d2), s/veh	0.1	0.0	0.3	0.1	0.0	0.1	0.0	0.0	1.1	0.0	0.9	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.2	0.2	0.0	0.1	0.0	0.0	1.4	0.0	1.3	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	12.1	11.5	12.1	11.8	0.0	11.6	5.1	0.0	7.4	5.4	7.4	5.1
LnGrp LOS	B	B	B	B		B	A		A	A	A	A
Approach Vol, veh/h		90			42			522			467	
Approach Delay, s/veh		12.0			11.8			7.2			7.2	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.8	17.5		8.0	4.2	18.2		8.0				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	11.0	40.5		21.0	11.0	40.5		21.0				
Max Q Clear Time (g_c+I1), s	2.3	7.3		2.7	2.0	8.2		3.1				
Green Ext Time (p_c), s	0.0	4.8		0.1	0.0	5.5		0.2				

Intersection Summary												
HCM 7th Control Delay, s/veh			7.8									
HCM 7th LOS			A									



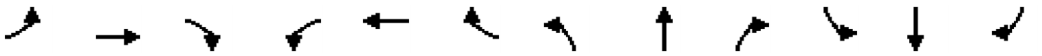
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	10	50	15	5	1	105	490	5	5	345	115
Future Volume (veh/h)	90	10	50	15	5	1	105	490	5	5	345	115
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1900	1900	1900	1826	1826	1826	1841	1841	1841
Adj Flow Rate, veh/h	99	11	55	16	5	1	115	538	5	5	379	126
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	4	4	4	0	0	0	5	5	5	4	4	4
Cap, veh/h	637	80	399	545	383	77	396	1276	12	388	936	307
Arrive On Green	0.07	0.30	0.30	0.02	0.25	0.25	0.36	0.36	0.36	0.36	0.36	0.36
Sat Flow, veh/h	1753	266	1332	1810	1537	307	870	3522	33	847	2583	847
Grp Volume(v), veh/h	99	0	66	16	0	6	115	265	278	5	255	250
Grp Sat Flow(s),veh/h/ln	1753	0	1598	1810	0	1844	870	1735	1820	847	1749	1681
Q Serve(g_s), s	1.7	0.0	1.2	0.3	0.0	0.1	4.6	4.6	4.6	0.2	4.4	4.5
Cycle Q Clear(g_c), s	1.7	0.0	1.2	0.3	0.0	0.1	9.1	4.6	4.6	4.8	4.4	4.5
Prop In Lane	1.00		0.83	1.00		0.17	1.00		0.02	1.00		0.50
Lane Grp Cap(c), veh/h	637	0	479	545	0	460	396	628	659	388	633	609
V/C Ratio(X)	0.16	0.00	0.14	0.03	0.00	0.01	0.29	0.42	0.42	0.01	0.40	0.41
Avail Cap(c_a), veh/h	1432	0	2176	1457	0	2510	641	1116	1171	626	1126	1082
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.0	0.0	10.3	11.0	0.0	11.4	13.1	9.7	9.7	11.5	9.6	9.7
Incr Delay (d2), s/veh	0.1	0.0	0.2	0.0	0.0	0.0	0.3	0.3	0.3	0.0	0.3	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.4	0.1	0.0	0.0	0.8	1.4	1.5	0.0	1.3	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	10.1	0.0	10.5	11.0	0.0	11.4	13.4	10.0	10.0	11.5	9.9	10.0
LnGrp LOS	B		B	B		B	B	B	B	B	A	A
Approach Vol, veh/h		165			22			658			510	
Approach Delay, s/veh		10.3			11.1			10.6			10.0	
Approach LOS		B			B			B			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.7	17.1		18.6	6.7	15.1		18.6				
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	21.0	55.0		26.0	21.0	55.0		26.0				
Max Q Clear Time (g_c+I1), s	2.3	3.2		6.8	3.7	2.1		11.1				
Green Ext Time (p_c), s	0.0	0.6		2.5	0.1	0.0		2.9				

Intersection Summary		
HCM 7th Control Delay, s/veh	10.3	
HCM 7th LOS	B	

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	0	65	0	0	0	80	555	0	0	345	45
Future Volume (veh/h)	50	0	65	0	0	0	80	555	0	0	345	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1870	1856	1856	1856	1841	1841	1841
Adj Flow Rate, veh/h	57	0	74	0	0	0	91	631	0	0	392	51
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	1	1	1	2	2	2	3	3	3	4	4	4
Cap, veh/h	441	0	221	192	261	0	116	1623	0	192	897	116
Arrive On Green	0.14	0.00	0.14	0.00	0.00	0.00	0.07	0.46	0.00	0.00	0.29	0.29
Sat Flow, veh/h	1780	0	1586	1326	1870	0	1767	3618	0	783	3110	402
Grp Volume(v), veh/h	57	0	74	0	0	0	91	631	0	0	219	224
Grp Sat Flow(s),veh/h/ln	1780	0	1586	1326	1870	0	1767	1763	0	783	1749	1763
Q Serve(g_s), s	1.1	0.0	1.6	0.0	0.0	0.0	1.9	4.4	0.0	0.0	3.8	3.9
Cycle Q Clear(g_c), s	1.1	0.0	1.6	0.0	0.0	0.0	1.9	4.4	0.0	0.0	3.8	3.9
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		0.23
Lane Grp Cap(c), veh/h	441	0	221	192	261	0	116	1623	0	192	504	508
V/C Ratio(X)	0.13	0.00	0.33	0.00	0.00	0.00	0.79	0.39	0.00	0.00	0.43	0.44
Avail Cap(c_a), veh/h	1283	0	972	820	1147	0	989	4887	0	1114	2564	2585
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	14.3	0.0	14.6	0.0	0.0	0.0	17.3	6.6	0.0	0.0	10.9	10.9
Incr Delay (d2), s/veh	0.1	0.0	0.5	0.0	0.0	0.0	7.0	0.2	0.0	0.0	0.9	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.5	0.0	0.0	0.0	0.9	1.1	0.0	0.0	1.3	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.4	0.0	15.1	0.0	0.0	0.0	24.2	6.9	0.0	0.0	11.8	11.8
LnGrp LOS	B		B				C	A			B	B
Approach Vol, veh/h		131			0			722			443	
Approach Delay, s/veh		14.8			0.0			9.1			11.8	
Approach LOS		B						A			B	

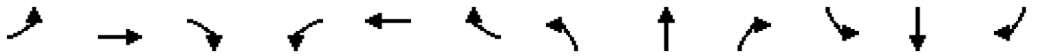
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	6.5	18.8		12.2		25.3		12.2				
Change Period (Y+Rc), s	4.0	* 8		7.0		8.0		7.0				
Max Green Setting (Gmax), s	21.0	* 55		23.0		52.0		23.0				
Max Q Clear Time (g_c+I1), s	3.9	5.9		3.6		6.4		0.0				
Green Ext Time (p_c), s	0.1	4.7		0.4		7.8		0.0				

Intersection Summary												
HCM 7th Control Delay, s/veh			10.6									
HCM 7th LOS			B									

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



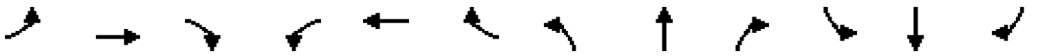
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	235	100	45	450	215	161	310	55	205	175	15
Future Volume (veh/h)	10	235	100	45	450	215	161	310	55	205	175	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1767	1767	1856	1856	1856	1856	1856	1856	1841	1841	1841
Adj Flow Rate, veh/h	10	242	103	46	464	222	166	320	57	211	180	15
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	9	9	9	3	3	3	3	3	3	4	4	4
Cap, veh/h	18	543	423	102	737	518	217	710	125	412	395	33
Arrive On Green	0.01	0.16	0.16	0.06	0.21	0.21	0.12	0.24	0.24	0.12	0.24	0.24
Sat Flow, veh/h	1682	3357	1483	1767	3526	1566	1767	2991	526	3401	1675	140
Grp Volume(v), veh/h	10	242	103	46	464	222	166	187	190	211	0	195
Grp Sat Flow(s),veh/h/ln	1682	1678	1483	1767	1763	1566	1767	1763	1755	1700	0	1814
Q Serve(g_s), s	0.3	3.0	2.5	1.2	5.5	5.1	4.2	4.2	4.3	2.7	0.0	4.3
Cycle Q Clear(g_c), s	0.3	3.0	2.5	1.2	5.5	5.1	4.2	4.2	4.3	2.7	0.0	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.30	1.00		0.08
Lane Grp Cap(c), veh/h	18	543	423	102	737	518	217	418	416	412	0	428
V/C Ratio(X)	0.57	0.45	0.24	0.45	0.63	0.43	0.77	0.45	0.46	0.51	0.00	0.46
Avail Cap(c_a), veh/h	382	1090	665	402	1144	699	765	1144	1140	2208	0	1178
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.8	17.5	12.7	21.1	16.6	12.1	19.6	15.0	15.1	19.0	0.0	15.1
Incr Delay (d2), s/veh	16.5	0.4	0.2	1.9	0.7	0.4	3.5	1.1	1.2	0.6	0.0	1.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	1.0	0.7	0.5	1.9	1.5	1.7	1.6	1.6	1.0	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	39.3	17.9	12.9	22.9	17.3	12.5	23.1	16.2	16.3	19.6	0.0	16.3
LnGrp LOS	D	B	B	C	B	B	C	B	B	B		B
Approach Vol, veh/h		355			732			543			406	
Approach Delay, s/veh		17.1			16.2			18.3			18.0	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.7	15.9	5.0	14.7	10.6	16.0	7.2	12.5
Change Period (Y+Rc), s	5.0	5.0	4.5	5.0	5.0	5.0	4.5	5.0
Max Green Setting (Gmax), s	20.0	30.0	10.5	15.0	30.0	30.0	10.5	15.0
Max Q Clear Time (g_c+I1), s	6.2	6.3	2.3	7.5	4.7	6.3	3.2	5.0
Green Ext Time (p_c), s	0.2	1.6	0.0	1.9	0.5	3.4	0.0	1.0

Intersection Summary	
HCM 7th Control Delay, s/veh	17.3
HCM 7th LOS	B

Notes

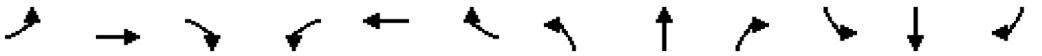
User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	25	45	3	20	15	30	415	10	15	270	30
Future Volume (veh/h)	100	25	45	3	20	15	30	415	10	15	270	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.98		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1826	1826	1826	1841	1841	1841	1826	1826	1826
Adj Flow Rate, veh/h	105	26	47	3	21	16	32	437	11	16	284	32
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	5	5	5	4	4	4	5	5	5
Cap, veh/h	411	78	140	305	55	42	459	594	15	361	512	58
Arrive On Green	0.08	0.13	0.13	0.00	0.06	0.06	0.03	0.33	0.33	0.02	0.32	0.32
Sat Flow, veh/h	1781	595	1075	1739	960	731	1753	1787	45	1739	1610	181
Grp Volume(v), veh/h	105	0	73	3	0	37	32	0	448	16	0	316
Grp Sat Flow(s),veh/h/ln	1781	0	1670	1739	0	1691	1753	0	1832	1739	0	1792
Q Serve(g_s), s	1.7	0.0	1.3	0.1	0.0	0.7	0.4	0.0	6.9	0.2	0.0	4.7
Cycle Q Clear(g_c), s	1.7	0.0	1.3	0.1	0.0	0.7	0.4	0.0	6.9	0.2	0.0	4.7
Prop In Lane	1.00		0.64	1.00		0.43	1.00		0.02	1.00		0.10
Lane Grp Cap(c), veh/h	411	0	218	305	0	98	459	0	609	361	0	570
V/C Ratio(X)	0.26	0.00	0.34	0.01	0.00	0.38	0.07	0.00	0.74	0.04	0.00	0.55
Avail Cap(c_a), veh/h	890	0	1100	627	0	1114	1285	0	2039	1205	0	1994
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.4	0.0	12.6	14.1	0.0	14.5	7.2	0.0	9.4	7.8	0.0	9.0
Incr Delay (d2), s/veh	0.1	0.0	0.3	0.0	0.0	0.9	0.0	0.0	0.7	0.0	0.0	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.4	0.0	0.0	0.2	0.1	0.0	1.9	0.0	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	12.6	0.0	12.9	14.1	0.0	15.4	7.3	0.0	10.1	7.8	0.0	9.3
LnGrp LOS	B		B	B		B	A		B	A		A
Approach Vol, veh/h		178			40			480			332	
Approach Delay, s/veh		12.7			15.3			9.9			9.2	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.0	14.6	6.4	5.8	4.5	15.1	4.1	8.2
Change Period (Y+Rc), s	4.0	4.5	4.0	4.0	4.0	4.5	4.0	4.0
Max Green Setting (Gmax), s	16.0	35.5	11.0	21.0	16.0	35.5	6.0	21.0
Max Q Clear Time (g_c+I1), s	2.4	6.7	3.7	2.7	2.2	8.9	2.1	3.3
Green Ext Time (p_c), s	0.0	0.4	0.0	0.0	0.0	0.6	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	10.4
HCM 7th LOS	B



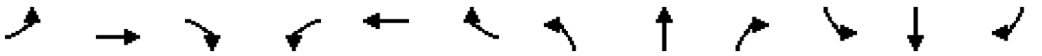
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	35	165	10	30	15	325	955	20	65	575	130
Future Volume (veh/h)	95	35	165	10	30	15	325	955	20	65	575	130
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1722	1722	1722	1811	1811	1811	1781	1781	1781
Adj Flow Rate, veh/h	103	38	179	11	33	16	353	1038	22	71	625	141
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	5	12	12	12	6	6	6	8	8	8
Cap, veh/h	126	218	525	17	98	82	381	2256	1006	90	1652	737
Arrive On Green	0.07	0.12	0.12	0.01	0.06	0.06	0.22	0.66	0.66	0.05	0.49	0.49
Sat Flow, veh/h	1739	1826	1540	1640	1722	1444	1725	3441	1535	1697	3385	1510
Grp Volume(v), veh/h	103	38	179	11	33	16	353	1038	22	71	625	141
Grp Sat Flow(s),veh/h/ln	1739	1826	1540	1640	1722	1444	1725	1721	1535	1697	1692	1510
Q Serve(g_s), s	7.0	2.2	10.4	0.8	2.2	1.3	24.1	17.9	0.6	5.0	13.9	6.3
Cycle Q Clear(g_c), s	7.0	2.2	10.4	0.8	2.2	1.3	24.1	17.9	0.6	5.0	13.9	6.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	126	218	525	17	98	82	381	2256	1006	90	1652	737
V/C Ratio(X)	0.81	0.17	0.34	0.66	0.34	0.19	0.93	0.46	0.02	0.79	0.38	0.19
Avail Cap(c_a), veh/h	203	313	606	164	267	224	489	2256	1006	368	1652	737
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.8	47.5	29.6	59.2	54.4	54.0	45.8	10.2	7.2	56.1	19.3	17.3
Incr Delay (d2), s/veh	5.5	0.1	0.1	23.4	1.2	0.7	19.6	0.7	0.0	8.9	0.7	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	1.0	3.8	0.4	1.0	0.5	11.8	5.8	0.2	2.3	5.2	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	60.4	47.7	29.7	82.6	55.6	54.7	65.4	10.9	7.3	65.1	19.9	17.9
LnGrp LOS	E	D	C	F	E	D	E	B	A	E	B	B
Approach Vol, veh/h		320			60			1413			837	
Approach Delay, s/veh		41.7			60.3			24.4			23.4	
Approach LOS		D			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	30.5	64.6	12.7	12.2	10.4	84.7	5.2	19.7
Change Period (Y+Rc), s	4.0	6.0	4.0	5.4	4.0	6.0	4.0	5.4
Max Green Setting (Gmax), s	34.0	34.0	14.0	18.6	26.0	42.0	12.0	20.6
Max Q Clear Time (g_c+I1), s	26.1	15.9	9.0	4.2	7.0	19.9	2.8	12.4
Green Ext Time (p_c), s	0.4	6.3	0.0	0.1	0.1	10.7	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	27.0
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.



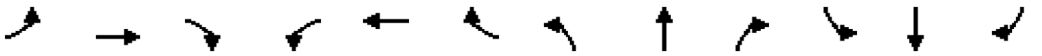
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	480	3	45	815	0	5	0	40	0	0	0
Future Volume (veh/h)	0	480	3	45	815	0	5	0	40	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1737	1737	1737	1856	1856	1856	1900	1900	1900	1870	1870	1870
Adj Flow Rate, veh/h	0	527	3	49	896	0	5	0	44	0	0	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	11	11	11	3	3	3	0	0	0	2	2	2
Cap, veh/h	507	1437	8	652	2244	0	336	0	73	255	85	0
Arrive On Green	0.00	0.43	0.43	0.07	0.64	0.00	0.05	0.00	0.05	0.00	0.00	0.00
Sat Flow, veh/h	1654	3364	19	1767	3618	0	1810	0	1610	1362	1870	0
Grp Volume(v), veh/h	0	258	272	49	896	0	5	0	44	0	0	0
Grp Sat Flow(s),veh/h/ln	1654	1650	1733	1767	1763	0	1810	0	1610	1362	1870	0
Q Serve(g_s), s	0.0	3.0	3.0	0.4	3.5	0.0	0.1	0.0	0.8	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	3.0	3.0	0.4	3.5	0.0	0.1	0.0	0.8	0.0	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	507	705	741	652	2244	0	336	0	73	255	85	0
V/C Ratio(X)	0.00	0.37	0.37	0.08	0.40	0.00	0.01	0.00	0.60	0.00	0.00	0.00
Avail Cap(c_a), veh/h	1145	1780	1870	1220	3803	0	1567	0	1167	458	364	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	5.5	5.5	3.2	2.5	0.0	12.9	0.0	13.3	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.5	0.5	0.0	0.2	0.0	0.0	0.0	5.9	0.0	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.5	0.5	0.0	0.1	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	6.0	6.0	3.2	2.7	0.0	12.9	0.0	19.1	0.0	0.0	0.0
LnGrp LOS		A	A	A	A		B		B			
Approach Vol, veh/h		530			945			49			0	
Approach Delay, s/veh		6.0			2.7			18.5			0.0	
Approach LOS		A			A			B				

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.9	16.6		5.8	0.0	22.5		5.8				
Change Period (Y+Rc), s	4.0	4.5		4.5	4.0	4.5		4.5				
Max Green Setting (Gmax), s	11.0	30.5		5.5	11.0	30.5		20.5				
Max Q Clear Time (g_c+I1), s	2.4	5.0		0.0	0.0	5.5		2.8				
Green Ext Time (p_c), s	0.0	4.9		0.0	0.0	9.7		0.1				

Intersection Summary		
HCM 7th Control Delay, s/veh	4.4	
HCM 7th LOS	A	

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	320	310	25	115	400	715	40	960	110	385	615	595
Future Volume (veh/h)	320	310	25	115	400	715	40	960	110	385	615	595
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1752	1752	1752	1841	1841	1841	1811	1811	1811	1826	1826	1826
Adj Flow Rate, veh/h	333	323	26	120	417	0	42	1000	0	401	641	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	10	10	10	4	4	4	6	6	6	5	5	5
Cap, veh/h	418	675	54	185	494		52	1149		488	1555	
Arrive On Green	0.13	0.22	0.22	0.05	0.14	0.00	0.03	0.33	0.00	0.14	0.45	0.00
Sat Flow, veh/h	3237	3121	250	3401	3497	1560	1725	3441	1535	3374	3469	1547
Grp Volume(v), veh/h	333	171	178	120	417	0	42	1000	0	401	641	0
Grp Sat Flow(s),veh/h/ln	1618	1664	1707	1700	1749	1560	1725	1721	1535	1687	1735	1547
Q Serve(g_s), s	9.4	8.4	8.5	3.2	10.9	0.0	2.3	25.6	0.0	10.8	11.7	0.0
Cycle Q Clear(g_c), s	9.4	8.4	8.5	3.2	10.9	0.0	2.3	25.6	0.0	10.8	11.7	0.0
Prop In Lane	1.00		0.15	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	418	360	369	185	494		52	1149		488	1555	
V/C Ratio(X)	0.80	0.48	0.48	0.65	0.84		0.80	0.87		0.82	0.41	
Avail Cap(c_a), veh/h	1123	435	446	345	541		175	1212		954	1555	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	39.6	32.1	32.1	43.4	39.2	0.0	45.1	29.3	0.0	38.9	17.5	0.0
Incr Delay (d2), s/veh	2.2	0.6	0.6	2.4	10.3	0.0	15.6	7.4	0.0	2.2	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	3.4	3.5	1.4	5.3	0.0	1.1	10.6	0.0	4.3	4.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	41.8	32.7	32.7	45.8	49.5	0.0	60.7	36.7	0.0	41.1	17.8	0.0
LnGrp LOS	D	C	C	D	D		E	D		D	B	
Approach Vol, veh/h		682			537			1042			1042	
Approach Delay, s/veh		37.1			48.7			37.6			26.8	
Approach LOS		D			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.1	38.3	10.6	25.7	8.3	49.0	17.6	18.7
Change Period (Y+Rc), s	5.5	7.0	5.5	5.5	5.5	7.0	5.5	5.5
Max Green Setting (Gmax), s	26.5	33.0	9.5	24.5	9.5	33.0	32.5	14.5
Max Q Clear Time (g_c+I1), s	12.8	27.6	5.2	10.5	4.3	13.7	11.4	12.9
Green Ext Time (p_c), s	0.8	3.7	0.1	1.2	0.0	6.1	0.7	0.4

Intersection Summary	
HCM 7th Control Delay, s/veh	35.9
HCM 7th LOS	D

Notes

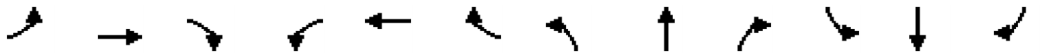
User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	5	15	65	10	25	10	630	20	2	735	10
Future Volume (veh/h)	10	5	15	65	10	25	10	630	20	2	735	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1885	1885	1885	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	11	5	16	68	11	26	11	663	21	2	774	11
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	1	1	1	2	2	2	1	1	1
Cap, veh/h	173	66	108	276	38	51	468	1170	37	533	1203	17
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.65	0.65	0.65	0.65	0.65	0.65
Sat Flow, veh/h	316	487	802	859	280	375	688	1801	57	762	1853	26
Grp Volume(v), veh/h	32	0	0	105	0	0	11	0	684	2	0	785
Grp Sat Flow(s),veh/h/ln	1605	0	0	1514	0	0	688	0	1858	762	0	1880
Q Serve(g_s), s	0.0	0.0	0.0	1.7	0.0	0.0	0.4	0.0	7.6	0.1	0.0	9.3
Cycle Q Clear(g_c), s	0.6	0.0	0.0	2.3	0.0	0.0	9.7	0.0	7.6	7.6	0.0	9.3
Prop In Lane	0.34		0.50	0.65		0.25	1.00		0.03	1.00		0.01
Lane Grp Cap(c), veh/h	347	0	0	364	0	0	468	0	1207	533	0	1221
V/C Ratio(X)	0.09	0.00	0.00	0.29	0.00	0.00	0.02	0.00	0.57	0.00	0.00	0.64
Avail Cap(c_a), veh/h	999	0	0	999	0	0	1059	0	2802	1187	0	2835
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.2	0.0	0.0	14.8	0.0	0.0	6.8	0.0	3.6	5.7	0.0	3.9
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.7	0.0	0.0	1.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.7	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.2	0.0	0.0	15.2	0.0	0.0	6.9	0.0	4.3	5.7	0.0	4.9
LnGrp LOS	B			B			A		A	A		A
Approach Vol, veh/h		32			105			695			787	
Approach Delay, s/veh		14.2			15.2			4.4			4.9	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	28.1	9.0	28.1	9.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	56.0	21.0	56.0	21.0
Max Q Clear Time (g_c+I1), s	11.3	4.3	11.7	2.6
Green Ext Time (p_c), s	12.8	0.4	10.4	0.1

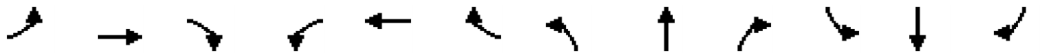
Intersection Summary	
HCM 7th Control Delay, s/veh	5.5
HCM 7th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	20	80	35	10	10	75	555	20	5	680	70
Future Volume (veh/h)	85	20	80	35	10	10	75	555	20	5	680	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.97	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1870	1870	1870	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	92	22	87	38	11	11	82	603	22	5	739	76
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	2	2	2	2	2	2	1	1	1
Cap, veh/h	324	249	209	314	115	115	418	1055	38	472	1015	829
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.06	0.59	0.59	0.01	0.54	0.54
Sat Flow, veh/h	1369	1856	1561	1276	854	854	1781	1791	65	1795	1885	1540
Grp Volume(v), veh/h	92	22	87	38	0	22	82	0	625	5	739	76
Grp Sat Flow(s),veh/h/ln	1369	1856	1561	1276	0	1709	1781	0	1856	1795	1885	1540
Q Serve(g_s), s	2.9	0.5	2.4	1.2	0.0	0.5	0.9	0.0	9.6	0.1	13.7	1.1
Cycle Q Clear(g_c), s	3.4	0.5	2.4	1.7	0.0	0.5	0.9	0.0	9.6	0.1	13.7	1.1
Prop In Lane	1.00		1.00	1.00		0.50	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	324	249	209	314	0	229	418	0	1093	472	1015	829
V/C Ratio(X)	0.28	0.09	0.42	0.12	0.00	0.10	0.20	0.00	0.57	0.01	0.73	0.09
Avail Cap(c_a), veh/h	765	846	711	725	0	779	742	0	1631	891	1657	1354
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.0	17.5	18.3	18.2	0.0	17.5	6.3	0.0	5.9	5.4	8.1	5.2
Incr Delay (d2), s/veh	0.4	0.1	1.0	0.1	0.0	0.1	0.1	0.0	0.7	0.0	1.6	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.2	0.8	0.3	0.0	0.2	0.2	0.0	2.5	0.0	4.1	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	19.4	17.6	19.3	18.4	0.0	17.6	6.4	0.0	6.6	5.4	9.6	5.2
LnGrp LOS	B	B	B	B		B	A		A	A	A	A
Approach Vol, veh/h		201			60			707			820	
Approach Delay, s/veh		19.1			18.1			6.6			9.2	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.6	29.3		10.2	4.2	31.6		10.2				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	11.0	40.5		21.0	11.0	40.5		21.0				
Max Q Clear Time (g_c+I1), s	2.9	15.7		3.7	2.1	11.6		5.4				
Green Ext Time (p_c), s	0.1	9.1		0.1	0.0	7.2		0.4				

Intersection Summary			
HCM 7th Control Delay, s/veh		9.6	
HCM 7th LOS		A	



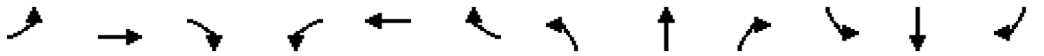
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	10	125	20	10	3	135	540	10	15	705	115
Future Volume (veh/h)	140	10	125	20	10	3	135	540	10	15	705	115
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1811	1811	1811	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	147	11	132	21	11	3	142	568	11	16	742	121
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	6	6	6	2	2	2	2	2	2
Cap, veh/h	574	33	395	412	270	74	321	1627	31	435	1390	227
Arrive On Green	0.09	0.27	0.27	0.02	0.20	0.20	0.46	0.46	0.46	0.46	0.46	0.46
Sat Flow, veh/h	1795	123	1473	1725	1370	374	640	3563	69	832	3045	496
Grp Volume(v), veh/h	147	0	143	21	0	14	142	283	296	16	433	430
Grp Sat Flow(s),veh/h/ln	1795	0	1596	1725	0	1743	640	1777	1856	832	1777	1764
Q Serve(g_s), s	3.1	0.0	3.7	0.5	0.0	0.3	10.5	5.3	5.3	0.6	8.9	8.9
Cycle Q Clear(g_c), s	3.1	0.0	3.7	0.5	0.0	0.3	19.4	5.3	5.3	5.9	8.9	8.9
Prop In Lane	1.00		0.92	1.00		0.21	1.00		0.04	1.00		0.28
Lane Grp Cap(c), veh/h	574	0	428	412	0	343	321	811	847	435	811	806
V/C Ratio(X)	0.26	0.00	0.33	0.05	0.00	0.04	0.44	0.35	0.35	0.04	0.53	0.53
Avail Cap(c_a), veh/h	1149	0	1720	1088	0	1880	355	906	946	480	906	899
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.9	0.0	15.0	15.8	0.0	16.6	16.9	9.0	9.0	10.9	10.0	10.0
Incr Delay (d2), s/veh	0.2	0.0	0.7	0.0	0.0	0.1	0.7	0.2	0.2	0.0	0.4	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	1.3	0.2	0.0	0.1	1.4	1.7	1.7	0.1	2.9	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	13.0	0.0	15.7	15.9	0.0	16.7	17.6	9.1	9.1	10.9	10.4	10.4
LnGrp LOS	B		B	B		B	B	A	A	B	B	B
Approach Vol, veh/h		290			35			721			879	
Approach Delay, s/veh		14.3			16.2			10.8			10.4	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.0	18.7		27.3	8.7	15.1		27.3				
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	21.0	55.0		26.0	21.0	55.0		26.0				
Max Q Clear Time (g_c+I1), s	2.5	5.7		10.9	5.1	2.3		21.4				
Green Ext Time (p_c), s	0.0	1.5		4.2	0.2	0.1		1.7				

Intersection Summary			
HCM 7th Control Delay, s/veh		11.2	
HCM 7th LOS		B	

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	0	140	0	0	0	130	645	0	0	775	70
Future Volume (veh/h)	40	0	140	0	0	0	130	645	0	0	775	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.98		0.98	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1870	1870	1870	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	41	0	144	0	0	0	134	665	0	0	799	72
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	2	2	2	1	1	1	2	2	2
Cap, veh/h	411	0	255	125	301	0	175	2072	0	125	1355	122
Arrive On Green	0.16	0.00	0.16	0.00	0.00	0.00	0.10	0.58	0.00	0.00	0.41	0.41
Sat Flow, veh/h	1779	0	1583	1244	1870	0	1795	3676	0	771	3293	297
Grp Volume(v), veh/h	41	0	144	0	0	0	134	665	0	0	431	440
Grp Sat Flow(s),veh/h/ln	1779	0	1583	1244	1870	0	1795	1791	0	771	1777	1813
Q Serve(g_s), s	1.1	0.0	4.8	0.0	0.0	0.0	4.2	5.5	0.0	0.0	10.9	10.9
Cycle Q Clear(g_c), s	1.1	0.0	4.8	0.0	0.0	0.0	4.2	5.5	0.0	0.0	10.9	10.9
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		0.16
Lane Grp Cap(c), veh/h	411	0	255	125	301	0	175	2072	0	125	731	746
V/C Ratio(X)	0.10	0.00	0.57	0.00	0.00	0.00	0.76	0.32	0.00	0.00	0.59	0.59
Avail Cap(c_a), veh/h	836	0	633	422	747	0	655	3236	0	545	1698	1732
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	20.7	0.0	22.3	0.0	0.0	0.0	25.3	6.3	0.0	0.0	13.2	13.2
Incr Delay (d2), s/veh	0.1	0.0	1.2	0.0	0.0	0.0	4.2	0.1	0.0	0.0	1.2	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	1.8	0.0	0.0	0.0	1.9	1.6	0.0	0.0	3.9	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	20.8	0.0	23.5	0.0	0.0	0.0	29.6	6.4	0.0	0.0	14.3	14.3
LnGrp LOS	C		C				C	A			B	B
Approach Vol, veh/h		185			0			799			871	
Approach Delay, s/veh		22.9			0.0			10.3			14.3	
Approach LOS		C						B			B	

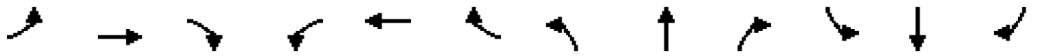
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	9.6	31.7		16.3		41.3		16.3				
Change Period (Y+Rc), s	4.0	* 8		7.0		8.0		7.0				
Max Green Setting (Gmax), s	21.0	* 55		23.0		52.0		23.0				
Max Q Clear Time (g_c+I1), s	6.2	12.9		6.8		7.5		0.0				
Green Ext Time (p_c), s	0.2	10.8		0.6		8.3		0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	13.4
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



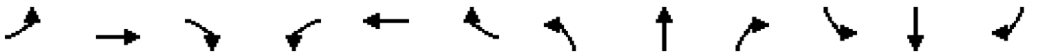
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	455	200	110	335	240	160	400	55	470	455	15
Future Volume (veh/h)	35	455	200	110	335	240	160	400	55	470	455	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1885	1885	1885	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	36	469	206	113	345	247	165	412	57	485	469	15
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	1	1	1	2	2	2	1	1	1
Cap, veh/h	52	639	467	146	830	655	209	836	115	625	598	19
Arrive On Green	0.03	0.18	0.18	0.08	0.23	0.23	0.12	0.27	0.27	0.18	0.33	0.33
Sat Flow, veh/h	1781	3554	1563	1795	3582	1587	1781	3127	429	3483	1815	58
Grp Volume(v), veh/h	36	469	206	113	345	247	165	233	236	485	0	484
Grp Sat Flow(s),veh/h/ln	1781	1777	1563	1795	1791	1587	1781	1777	1780	1742	0	1873
Q Serve(g_s), s	1.3	8.3	7.1	4.1	5.5	7.2	6.0	7.4	7.5	8.9	0.0	15.6
Cycle Q Clear(g_c), s	1.3	8.3	7.1	4.1	5.5	7.2	6.0	7.4	7.5	8.9	0.0	15.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.24	1.00		0.03
Lane Grp Cap(c), veh/h	52	639	467	146	830	655	209	475	476	625	0	617
V/C Ratio(X)	0.69	0.73	0.44	0.78	0.42	0.38	0.79	0.49	0.50	0.78	0.00	0.78
Avail Cap(c_a), veh/h	280	799	538	283	830	655	534	799	800	1566	0	842
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.1	25.9	19.0	30.1	21.8	13.7	28.6	20.6	20.6	26.1	0.0	20.2
Incr Delay (d2), s/veh	9.6	2.3	0.5	5.3	0.2	0.3	4.1	1.2	1.2	1.3	0.0	4.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	3.5	2.4	1.9	2.2	2.3	2.7	3.0	3.1	3.6	0.0	7.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	41.7	28.2	19.5	35.4	22.0	14.0	32.7	21.8	21.9	27.4	0.0	24.6
LnGrp LOS	D	C	B	D	C	B	C	C	C	C		C
Approach Vol, veh/h		711			705			634			969	
Approach Delay, s/veh		26.4			21.4			24.7			26.0	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.8	27.0	6.4	20.5	17.0	22.8	9.9	17.0
Change Period (Y+Rc), s	5.0	5.0	4.5	5.0	5.0	5.0	4.5	5.0
Max Green Setting (Gmax), s	20.0	30.0	10.5	15.0	30.0	30.0	10.5	15.0
Max Q Clear Time (g_c+I1), s	8.0	17.6	3.3	9.2	10.9	9.5	6.1	10.3
Green Ext Time (p_c), s	0.2	3.5	0.0	1.3	1.1	4.1	0.1	1.4

Intersection Summary	
HCM 7th Control Delay, s/veh	24.7
HCM 7th LOS	C

Notes

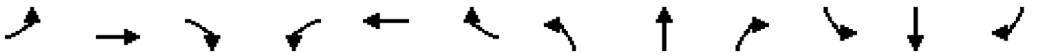
User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	40	40	20	40	40	40	440	20	20	525	140
Future Volume (veh/h)	105	40	40	20	40	40	40	440	20	20	525	140
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.96	0.97		0.98	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1900	1900	1900	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	108	41	41	21	41	41	41	454	21	21	541	144
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	0	0	0	3	3	3	3	3	3
Cap, veh/h	361	128	128	326	87	87	273	780	36	422	600	160
Arrive On Green	0.07	0.15	0.15	0.02	0.10	0.10	0.04	0.44	0.44	0.02	0.43	0.43
Sat Flow, veh/h	1795	843	843	1810	864	864	1767	1759	81	1767	1403	373
Grp Volume(v), veh/h	108	0	82	21	0	82	41	0	475	21	0	685
Grp Sat Flow(s),veh/h/ln	1795	0	1687	1810	0	1728	1767	0	1840	1767	0	1776
Q Serve(g_s), s	2.4	0.0	2.0	0.5	0.0	2.0	0.6	0.0	8.8	0.3	0.0	16.3
Cycle Q Clear(g_c), s	2.4	0.0	2.0	0.5	0.0	2.0	0.6	0.0	8.8	0.3	0.0	16.3
Prop In Lane	1.00		0.50	1.00		0.50	1.00		0.04	1.00		0.21
Lane Grp Cap(c), veh/h	361	0	257	326	0	174	273	0	816	422	0	760
V/C Ratio(X)	0.30	0.00	0.32	0.06	0.00	0.47	0.15	0.00	0.58	0.05	0.00	0.90
Avail Cap(c_a), veh/h	667	0	780	528	0	799	833	0	1439	1008	0	1389
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.3	0.0	17.1	17.7	0.0	19.3	9.8	0.0	9.5	7.7	0.0	12.1
Incr Delay (d2), s/veh	0.2	0.0	0.3	0.0	0.0	0.7	0.1	0.0	0.2	0.0	0.0	1.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.7	0.2	0.0	0.8	0.2	0.0	2.7	0.1	0.0	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	16.5	0.0	17.4	17.8	0.0	20.0	9.9	0.0	9.7	7.7	0.0	13.7
LnGrp LOS	B		B	B		B	A		A	A		B
Approach Vol, veh/h		190			103			516			706	
Approach Delay, s/veh		16.9			19.5			9.7			13.6	
Approach LOS		B			B			A			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.6	23.9	7.3	8.6	4.9	24.6	4.9	10.9
Change Period (Y+Rc), s	4.0	4.5	4.0	4.0	4.0	4.5	4.0	4.0
Max Green Setting (Gmax), s	16.0	35.5	11.0	21.0	16.0	35.5	6.0	21.0
Max Q Clear Time (g_c+I1), s	2.6	18.3	4.4	4.0	2.3	10.8	2.5	4.0
Green Ext Time (p_c), s	0.0	1.1	0.0	0.1	0.0	0.7	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	13.1
HCM 7th LOS	B



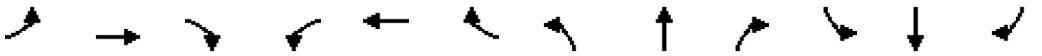
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	40	450	10	35	50	265	700	15	35	1045	165
Future Volume (veh/h)	140	40	450	10	35	50	265	700	15	35	1045	165
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1752	1752	1752	1856	1856	1856	1870	1870	1870
Adj Flow Rate, veh/h	143	41	459	10	36	51	270	714	15	36	1066	168
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	10	10	10	3	3	3	2	2	2
Cap, veh/h	167	304	520	16	137	112	297	2301	1026	46	1815	809
Arrive On Green	0.09	0.16	0.16	0.01	0.08	0.08	0.17	0.65	0.65	0.03	0.51	0.51
Sat Flow, veh/h	1781	1870	1562	1668	1752	1439	1767	3526	1571	1781	3554	1583
Grp Volume(v), veh/h	143	41	459	10	36	51	270	714	15	36	1066	168
Grp Sat Flow(s),veh/h/ln	1781	1870	1562	1668	1752	1439	1767	1763	1571	1781	1777	1583
Q Serve(g_s), s	10.3	2.4	21.2	0.8	2.5	4.4	19.5	11.5	0.4	2.6	27.3	7.5
Cycle Q Clear(g_c), s	10.3	2.4	21.2	0.8	2.5	4.4	19.5	11.5	0.4	2.6	27.3	7.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	167	304	520	16	137	112	297	2301	1026	46	1815	809
V/C Ratio(X)	0.85	0.13	0.88	0.64	0.26	0.45	0.91	0.31	0.01	0.78	0.59	0.21
Avail Cap(c_a), veh/h	219	304	520	205	278	228	421	2301	1026	288	1815	809
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.0	46.6	41.2	64.2	56.4	57.3	53.1	9.8	7.9	62.9	22.2	17.4
Incr Delay (d2), s/veh	17.8	0.1	15.7	23.9	0.6	1.7	16.4	0.4	0.0	15.6	1.4	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	1.1	15.9	0.4	1.1	1.6	9.7	3.9	0.1	1.3	10.7	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	75.8	46.7	56.9	88.1	57.0	59.0	69.5	10.2	7.9	78.6	23.6	18.0
LnGrp LOS	E	D	E	F	E	E	E	B	A	E	C	B
Approach Vol, veh/h		643			97			999			1270	
Approach Delay, s/veh		60.4			61.3			26.2			24.4	
Approach LOS		E			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.8	72.4	16.2	15.5	7.4	90.9	5.2	26.6
Change Period (Y+Rc), s	4.0	6.0	4.0	5.4	4.0	6.0	4.0	5.4
Max Green Setting (Gmax), s	31.0	43.0	16.0	20.6	21.0	53.0	16.0	20.6
Max Q Clear Time (g_c+I1), s	21.5	29.3	12.3	6.4	4.6	13.5	2.8	23.2
Green Ext Time (p_c), s	0.3	8.7	0.0	0.2	0.0	8.5	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	33.9
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.



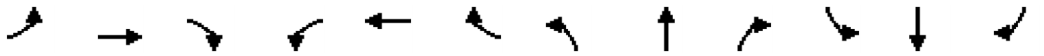
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	950	50	120	750	0	25	0	60	0	0	1
Future Volume (veh/h)	1	950	50	120	750	0	25	0	60	0	0	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	0.98		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1870	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	1	1022	54	129	806	0	27	0	65	0	0	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	2	2	2	0	0	0	0	0	0
Cap, veh/h	496	1690	89	505	2119	0	308	0	158	167	0	158
Arrive On Green	0.00	0.49	0.49	0.11	0.60	0.00	0.10	0.00	0.10	0.00	0.00	0.10
Sat Flow, veh/h	1795	3459	183	1781	3647	0	1405	0	1572	1358	0	1572
Grp Volume(v), veh/h	1	529	547	129	806	0	27	0	65	0	0	1
Grp Sat Flow(s),veh/h/ln	1795	1791	1851	1781	1777	0	1405	0	1572	1358	0	1572
Q Serve(g_s), s	0.0	9.3	9.3	1.2	5.1	0.0	0.8	0.0	1.7	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	9.3	9.3	1.2	5.1	0.0	0.8	0.0	1.7	0.0	0.0	0.0
Prop In Lane	1.00		0.10	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	496	875	904	505	2119	0	308	0	158	167	0	158
V/C Ratio(X)	0.00	0.60	0.60	0.26	0.38	0.00	0.09	0.00	0.41	0.00	0.00	0.01
Avail Cap(c_a), veh/h	949	1266	1308	764	2512	0	833	0	747	203	0	200
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	5.6	8.0	8.0	4.9	4.5	0.0	17.8	0.0	18.2	0.0	0.0	17.5
Incr Delay (d2), s/veh	0.0	1.0	1.0	0.2	0.2	0.0	0.1	0.0	1.3	0.0	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.5	2.6	0.2	1.0	0.0	0.2	0.0	0.6	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	5.6	9.0	9.0	5.1	4.7	0.0	17.9	0.0	19.5	0.0	0.0	17.5
LnGrp LOS	A	A	A	A	A		B		B			B
Approach Vol, veh/h		1077			935			92			1	
Approach Delay, s/veh		9.0			4.8			19.0			17.5	
Approach LOS		A			A			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.7	25.6		8.8	4.1	30.2		8.8				
Change Period (Y+Rc), s	4.0	4.5		4.5	4.0	4.5		4.5				
Max Green Setting (Gmax), s	11.0	30.5		5.5	11.0	30.5		20.5				
Max Q Clear Time (g_c+I1), s	3.2	11.3		2.0	2.0	7.1		3.7				
Green Ext Time (p_c), s	0.1	9.8		0.0	0.0	8.3		0.3				

Intersection Summary	
HCM 7th Control Delay, s/veh	7.6
HCM 7th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	630	725	90	130	455	450	50	675	160	705	960	590
Future Volume (veh/h)	630	725	90	130	455	450	50	675	160	705	960	590
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1856	1856	1856	1870	1870	1870
Adj Flow Rate, veh/h	643	740	92	133	464	0	51	689	0	719	980	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	3	3	3	2	2	2
Cap, veh/h	723	892	111	191	450		66	844		772	1513	
Arrive On Green	0.21	0.28	0.28	0.05	0.13	0.00	0.04	0.24	0.00	0.22	0.43	0.00
Sat Flow, veh/h	3483	3200	398	3483	3582	1598	1767	3526	1572	3456	3554	1585
Grp Volume(v), veh/h	643	414	418	133	464	0	51	689	0	719	980	0
Grp Sat Flow(s),veh/h/ln	1742	1791	1807	1742	1791	1598	1767	1763	1572	1728	1777	1585
Q Serve(g_s), s	20.7	25.0	25.0	4.3	14.5	0.0	3.3	21.3	0.0	23.5	25.2	0.0
Cycle Q Clear(g_c), s	20.7	25.0	25.0	4.3	14.5	0.0	3.3	21.3	0.0	23.5	25.2	0.0
Prop In Lane	1.00		0.22	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	723	499	503	191	450		66	844		772	1513	
V/C Ratio(X)	0.89	0.83	0.83	0.70	1.03		0.78	0.82		0.93	0.65	
Avail Cap(c_a), veh/h	982	499	503	287	450		146	1009		794	1513	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	44.4	39.0	39.0	53.6	50.4	0.0	55.1	41.5	0.0	43.9	26.3	0.0
Incr Delay (d2), s/veh	7.0	10.8	10.8	2.8	50.4	0.0	11.4	5.5	0.0	17.0	1.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.5	12.3	12.4	2.0	9.6	0.0	1.6	9.4	0.0	11.3	10.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	51.4	49.9	49.8	56.4	100.8	0.0	66.5	47.0	0.0	60.9	27.5	0.0
LnGrp LOS	D	D	D	E	F		E	D		E	C	
Approach Vol, veh/h		1475			597			740			1699	
Approach Delay, s/veh		50.5			90.9			48.3			41.6	
Approach LOS		D			F			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	31.3	34.6	11.8	37.6	9.8	56.1	29.4	20.0
Change Period (Y+Rc), s	5.5	7.0	5.5	5.5	5.5	7.0	5.5	5.5
Max Green Setting (Gmax), s	26.5	33.0	9.5	24.5	9.5	33.0	32.5	14.5
Max Q Clear Time (g_c+I1), s	25.5	23.3	6.3	27.0	5.3	27.2	22.7	16.5
Green Ext Time (p_c), s	0.2	4.3	0.1	0.0	0.0	3.9	1.3	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	52.2
HCM 7th LOS	D

Notes

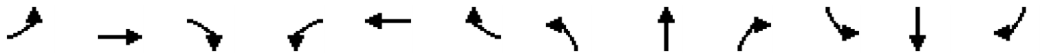
User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	10	10	40	10	5	10	625	15	35	465	10
Future Volume (veh/h)	20	10	10	40	10	5	10	625	15	35	465	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1811	1811	1781	1781	1781	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	22	11	11	43	11	5	11	679	16	38	505	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	8	8	8	4	4	4	4	4	4
Cap, veh/h	238	79	50	305	60	16	636	1116	26	512	1119	24
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.62	0.62	0.62	0.62	0.62	0.62
Sat Flow, veh/h	547	609	385	868	461	123	870	1790	42	737	1794	39
Grp Volume(v), veh/h	44	0	0	59	0	0	11	0	695	38	0	516
Grp Sat Flow(s),veh/h/ln	1542	0	0	1452	0	0	870	0	1832	737	0	1834
Q Serve(g_s), s	0.0	0.0	0.0	0.3	0.0	0.0	0.2	0.0	7.5	1.1	0.0	4.8
Cycle Q Clear(g_c), s	0.7	0.0	0.0	1.1	0.0	0.0	5.0	0.0	7.5	8.5	0.0	4.8
Prop In Lane	0.50		0.25	0.73		0.08	1.00		0.02	1.00		0.02
Lane Grp Cap(c), veh/h	367	0	0	381	0	0	636	0	1142	512	0	1143
V/C Ratio(X)	0.12	0.00	0.00	0.15	0.00	0.00	0.02	0.00	0.61	0.07	0.00	0.45
Avail Cap(c_a), veh/h	1131	0	0	1099	0	0	1595	0	3162	1325	0	3165
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.6	0.0	0.0	12.7	0.0	0.0	4.5	0.0	3.7	6.3	0.0	3.2
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.9	0.1	0.0	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.9	0.1	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	12.7	0.0	0.0	12.9	0.0	0.0	4.5	0.0	4.6	6.4	0.0	3.7
LnGrp LOS	B			B			A		A	A		A
Approach Vol, veh/h		44			59			706			554	
Approach Delay, s/veh		12.7			12.9			4.6			3.9	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	24.2	8.2	24.2	8.2
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	56.0	21.0	56.0	21.0
Max Q Clear Time (g_c+I1), s	10.5	3.1	9.5	2.7
Green Ext Time (p_c), s	7.4	0.2	10.8	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	4.9
HCM 7th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	4	40	35	5	5	30	510	10	5	455	35
Future Volume (veh/h)	50	4	40	35	5	5	30	510	10	5	455	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1826	1826	1826	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	54	4	43	38	5	5	32	548	11	5	489	38
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	7	7	7	5	5	5	4	4	4	4	4	4
Cap, veh/h	393	243	206	395	113	113	495	865	17	439	839	708
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.03	0.48	0.48	0.01	0.46	0.46
Sat Flow, veh/h	1349	1796	1522	1326	838	838	1753	1798	36	1753	1841	1555
Grp Volume(v), veh/h	54	4	43	38	0	10	32	0	559	5	489	38
Grp Sat Flow(s),veh/h/ln	1349	1796	1522	1326	0	1675	1753	0	1834	1753	1841	1555
Q Serve(g_s), s	1.2	0.1	0.8	0.8	0.0	0.2	0.3	0.0	7.5	0.1	6.5	0.5
Cycle Q Clear(g_c), s	1.4	0.1	0.8	0.9	0.0	0.2	0.3	0.0	7.5	0.1	6.5	0.5
Prop In Lane	1.00		1.00	1.00		0.50	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	393	243	206	395	0	227	495	0	882	439	839	708
V/C Ratio(X)	0.14	0.02	0.21	0.10	0.00	0.04	0.06	0.00	0.63	0.01	0.58	0.05
Avail Cap(c_a), veh/h	1068	1141	967	1058	0	1065	1024	0	2248	1013	2256	1905
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.0	12.4	12.7	12.8	0.0	12.4	5.1	0.0	6.4	5.5	6.7	5.0
Incr Delay (d2), s/veh	0.1	0.0	0.4	0.1	0.0	0.1	0.0	0.0	1.2	0.0	1.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.3	0.2	0.0	0.1	0.1	0.0	1.8	0.0	1.6	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	13.1	12.4	13.1	12.9	0.0	12.5	5.1	0.0	7.6	5.5	7.7	5.1
LnGrp LOS	B	B	B	B		B	A		A	A	A	A
Approach Vol, veh/h		101			48			591			532	
Approach Delay, s/veh		13.1			12.8			7.4			7.4	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.0	19.6		8.5	4.2	20.4		8.5				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	11.0	40.5		21.0	11.0	40.5		21.0				
Max Q Clear Time (g_c+I1), s	2.3	8.5		2.9	2.1	9.5		3.4				
Green Ext Time (p_c), s	0.0	5.6		0.1	0.0	6.4		0.2				

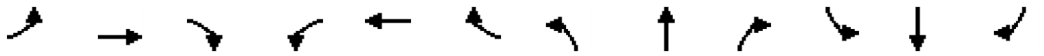
Intersection Summary												
HCM 7th Control Delay, s/veh			8.1									
HCM 7th LOS			A									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	10	65	15	5	1	120	555	5	5	395	125
Future Volume (veh/h)	105	10	65	15	5	1	120	555	5	5	395	125
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1900	1900	1900	1826	1826	1826	1841	1841	1841
Adj Flow Rate, veh/h	115	11	71	16	5	1	132	610	5	5	434	137
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	4	4	4	0	0	0	5	5	5	4	4	4
Cap, veh/h	614	62	400	506	358	72	389	1387	11	377	1030	322
Arrive On Green	0.07	0.29	0.29	0.02	0.23	0.23	0.39	0.39	0.39	0.39	0.39	0.39
Sat Flow, veh/h	1753	213	1376	1810	1536	307	819	3526	29	793	2618	818
Grp Volume(v), veh/h	115	0	82	16	0	6	132	300	315	5	289	282
Grp Sat Flow(s),veh/h/ln	1753	0	1590	1810	0	1844	819	1735	1820	793	1749	1687
Q Serve(g_s), s	2.1	0.0	1.7	0.3	0.0	0.1	6.1	5.5	5.5	0.2	5.2	5.3
Cycle Q Clear(g_c), s	2.1	0.0	1.7	0.3	0.0	0.1	11.3	5.5	5.5	5.7	5.2	5.3
Prop In Lane	1.00		0.87	1.00		0.17	1.00		0.02	1.00		0.49
Lane Grp Cap(c), veh/h	614	0	461	506	0	429	389	682	716	377	688	664
V/C Ratio(X)	0.19	0.00	0.18	0.03	0.00	0.01	0.34	0.44	0.44	0.01	0.42	0.43
Avail Cap(c_a), veh/h	1335	0	2019	1354	0	2342	558	1041	1093	542	1050	1013
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.8	0.0	11.5	12.3	0.0	12.8	13.7	9.6	9.6	11.7	9.5	9.6
Incr Delay (d2), s/veh	0.1	0.0	0.3	0.0	0.0	0.0	0.4	0.3	0.3	0.0	0.3	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.5	0.1	0.0	0.0	1.0	1.7	1.7	0.0	1.6	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	10.9	0.0	11.8	12.3	0.0	12.8	14.1	10.0	10.0	11.7	9.8	9.9
LnGrp LOS	B		B	B		B	B	A	A	B	A	A
Approach Vol, veh/h		197			22			747			576	
Approach Delay, s/veh		11.3			12.5			10.7			9.9	
Approach LOS		B			B			B			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.7	17.6		21.0	7.2	15.1		21.0				
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	21.0	55.0		26.0	21.0	55.0		26.0				
Max Q Clear Time (g_c+I1), s	2.3	3.7		7.7	4.1	2.1		13.3				
Green Ext Time (p_c), s	0.0	0.8		2.8	0.2	0.0		3.2				

Intersection Summary			
HCM 7th Control Delay, s/veh		10.5	
HCM 7th LOS		B	

Notes
User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	0	70	0	0	0	90	625	0	0	400	50
Future Volume (veh/h)	55	0	70	0	0	0	90	625	0	0	400	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1870	1856	1856	1856	1841	1841	1841
Adj Flow Rate, veh/h	63	0	80	0	0	0	102	710	0	0	455	57
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	1	1	1	2	2	2	3	3	3	4	4	4
Cap, veh/h	428	0	221	180	261	0	132	1714	0	180	974	121
Arrive On Green	0.14	0.00	0.14	0.00	0.00	0.00	0.07	0.49	0.00	0.00	0.31	0.31
Sat Flow, veh/h	1780	0	1585	1319	1870	0	1767	3618	0	728	3125	390
Grp Volume(v), veh/h	63	0	80	0	0	0	102	710	0	0	254	258
Grp Sat Flow(s),veh/h/ln	1780	0	1585	1319	1870	0	1767	1763	0	728	1749	1766
Q Serve(g_s), s	1.3	0.0	1.8	0.0	0.0	0.0	2.3	5.2	0.0	0.0	4.7	4.7
Cycle Q Clear(g_c), s	1.3	0.0	1.8	0.0	0.0	0.0	2.3	5.2	0.0	0.0	4.7	4.7
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		0.22
Lane Grp Cap(c), veh/h	428	0	221	180	261	0	132	1714	0	180	545	550
V/C Ratio(X)	0.15	0.00	0.36	0.00	0.00	0.00	0.77	0.41	0.00	0.00	0.47	0.47
Avail Cap(c_a), veh/h	1202	0	910	753	1074	0	926	4576	0	952	2401	2425
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	15.4	0.0	15.6	0.0	0.0	0.0	18.2	6.6	0.0	0.0	11.1	11.1
Incr Delay (d2), s/veh	0.1	0.0	0.6	0.0	0.0	0.0	5.8	0.2	0.0	0.0	0.9	1.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.6	0.0	0.0	0.0	1.0	1.3	0.0	0.0	1.6	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	15.5	0.0	16.2	0.0	0.0	0.0	24.0	6.9	0.0	0.0	12.0	12.1
LnGrp LOS	B		B				C	A			B	B
Approach Vol, veh/h		143			0			812			512	
Approach Delay, s/veh		15.9			0.0			9.0			12.1	
Approach LOS		B						A			B	

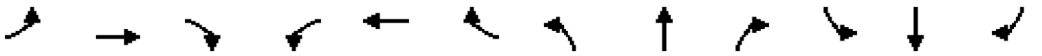
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	7.0	20.5		12.6		27.5		12.6				
Change Period (Y+Rc), s	4.0	* 8		7.0		8.0		7.0				
Max Green Setting (Gmax), s	21.0	* 55		23.0		52.0		23.0				
Max Q Clear Time (g_c+I1), s	4.3	6.7		3.8		7.2		0.0				
Green Ext Time (p_c), s	0.1	5.6		0.4		9.1		0.0				

Intersection Summary												
HCM 7th Control Delay, s/veh			10.8									
HCM 7th LOS			B									

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



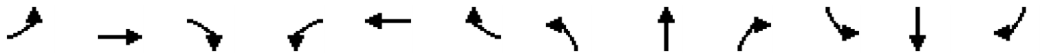
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	260	110	50	495	250	176	345	60	240	200	15
Future Volume (veh/h)	10	260	110	50	495	250	176	345	60	240	200	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1767	1767	1856	1856	1856	1856	1856	1856	1841	1841	1841
Adj Flow Rate, veh/h	10	268	113	52	510	258	181	356	62	247	206	15
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	9	9	9	3	3	3	3	3	3	4	4	4
Cap, veh/h	18	561	447	111	774	533	235	727	125	410	390	28
Arrive On Green	0.01	0.17	0.17	0.06	0.22	0.22	0.13	0.24	0.24	0.12	0.23	0.23
Sat Flow, veh/h	1682	3357	1484	1767	3526	1566	1767	3002	518	3401	1694	123
Grp Volume(v), veh/h	10	268	113	52	510	258	181	208	210	247	0	221
Grp Sat Flow(s),veh/h/ln	1682	1678	1484	1767	1763	1566	1767	1763	1757	1700	0	1817
Q Serve(g_s), s	0.3	3.5	2.8	1.4	6.3	6.2	4.7	4.8	4.9	3.3	0.0	5.1
Cycle Q Clear(g_c), s	0.3	3.5	2.8	1.4	6.3	6.2	4.7	4.8	4.9	3.3	0.0	5.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.29	1.00		0.07
Lane Grp Cap(c), veh/h	18	561	447	111	774	533	235	427	426	410	0	418
V/C Ratio(X)	0.57	0.48	0.25	0.47	0.66	0.48	0.77	0.49	0.49	0.60	0.00	0.53
Avail Cap(c_a), veh/h	369	1052	664	388	1105	680	738	1105	1101	2131	0	1139
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.6	18.0	12.7	21.7	17.1	12.5	20.1	15.6	15.6	20.0	0.0	16.2
Incr Delay (d2), s/veh	16.6	0.5	0.2	1.9	0.7	0.5	3.3	1.3	1.4	0.9	0.0	1.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	1.2	0.8	0.6	2.2	1.8	2.0	1.8	1.9	1.2	0.0	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	40.2	18.5	12.9	23.6	17.8	13.0	23.4	16.9	17.0	20.8	0.0	17.7
LnGrp LOS	D	B	B	C	B	B	C	B	B	C		B
Approach Vol, veh/h		391			820			599			468	
Approach Delay, s/veh		17.4			16.6			18.9			19.4	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.4	16.0	5.0	15.5	10.8	16.6	7.5	13.0
Change Period (Y+Rc), s	5.0	5.0	4.5	5.0	5.0	5.0	4.5	5.0
Max Green Setting (Gmax), s	20.0	30.0	10.5	15.0	30.0	30.0	10.5	15.0
Max Q Clear Time (g_c+I1), s	6.7	7.1	2.3	8.3	5.3	6.9	3.4	5.5
Green Ext Time (p_c), s	0.3	1.9	0.0	2.0	0.6	3.8	0.0	1.1

Intersection Summary	
HCM 7th Control Delay, s/veh	17.9
HCM 7th LOS	B

Notes

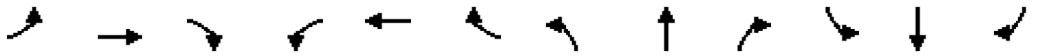
User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	30	50	3	20	15	35	460	10	15	305	35
Future Volume (veh/h)	110	30	50	3	20	15	35	460	10	15	305	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.98		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1826	1826	1826	1841	1841	1841	1826	1826	1826
Adj Flow Rate, veh/h	116	32	53	3	21	16	37	484	11	16	321	37
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	5	5	5	4	4	4	5	5	5
Cap, veh/h	415	85	140	301	55	42	432	602	14	331	510	59
Arrive On Green	0.08	0.13	0.13	0.00	0.06	0.06	0.03	0.34	0.34	0.02	0.32	0.32
Sat Flow, veh/h	1781	631	1045	1739	960	731	1753	1792	41	1739	1606	185
Grp Volume(v), veh/h	116	0	85	3	0	37	37	0	495	16	0	358
Grp Sat Flow(s),veh/h/ln	1781	0	1676	1739	0	1691	1753	0	1833	1739	0	1791
Q Serve(g_s), s	1.9	0.0	1.5	0.1	0.0	0.7	0.5	0.0	8.0	0.2	0.0	5.5
Cycle Q Clear(g_c), s	1.9	0.0	1.5	0.1	0.0	0.7	0.5	0.0	8.0	0.2	0.0	5.5
Prop In Lane	1.00		0.62	1.00		0.43	1.00		0.02	1.00		0.10
Lane Grp Cap(c), veh/h	415	0	225	301	0	97	432	0	616	331	0	569
V/C Ratio(X)	0.28	0.00	0.38	0.01	0.00	0.38	0.09	0.00	0.80	0.05	0.00	0.63
Avail Cap(c_a), veh/h	877	0	1087	617	0	1097	1237	0	2010	1161	0	1964
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.5	0.0	12.8	14.3	0.0	14.7	7.4	0.0	9.8	8.1	0.0	9.4
Incr Delay (d2), s/veh	0.1	0.0	0.4	0.0	0.0	0.9	0.0	0.0	0.9	0.0	0.0	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.5	0.0	0.0	0.2	0.1	0.0	2.3	0.1	0.0	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	12.6	0.0	13.2	14.3	0.0	15.6	7.4	0.0	10.7	8.1	0.0	9.8
LnGrp LOS	B		B	B		B	A		B	A		A
Approach Vol, veh/h		201			40			532			374	
Approach Delay, s/veh		12.8			15.5			10.5			9.8	
Approach LOS		B			B			B			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.1	14.8	6.6	5.9	4.5	15.4	4.1	8.3
Change Period (Y+Rc), s	4.0	4.5	4.0	4.0	4.0	4.5	4.0	4.0
Max Green Setting (Gmax), s	16.0	35.5	11.0	21.0	16.0	35.5	6.0	21.0
Max Q Clear Time (g_c+I1), s	2.5	7.5	3.9	2.7	2.2	10.0	2.1	3.5
Green Ext Time (p_c), s	0.0	0.5	0.0	0.0	0.0	0.7	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	10.8
HCM 7th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	45	185	10	35	15	360	1075	20	70	680	145
Future Volume (veh/h)	105	45	185	10	35	15	360	1075	20	70	680	145
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1722	1722	1722	1811	1811	1811	1781	1781	1781
Adj Flow Rate, veh/h	114	49	201	11	38	16	391	1168	22	76	739	158
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	5	12	12	12	6	6	6	8	8	8
Cap, veh/h	138	230	569	17	98	82	417	2220	990	96	1557	694
Arrive On Green	0.08	0.13	0.13	0.01	0.06	0.06	0.24	0.65	0.65	0.06	0.46	0.46
Sat Flow, veh/h	1739	1826	1540	1640	1722	1444	1725	3441	1535	1697	3385	1510
Grp Volume(v), veh/h	114	49	201	11	38	16	391	1168	22	76	739	158
Grp Sat Flow(s),veh/h/ln	1739	1826	1540	1640	1722	1444	1725	1721	1535	1697	1692	1510
Q Serve(g_s), s	7.7	2.9	11.4	0.8	2.6	1.3	26.7	21.9	0.6	5.3	18.1	7.6
Cycle Q Clear(g_c), s	7.7	2.9	11.4	0.8	2.6	1.3	26.7	21.9	0.6	5.3	18.1	7.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	138	230	569	17	98	82	417	2220	990	96	1557	694
V/C Ratio(X)	0.82	0.21	0.35	0.66	0.39	0.19	0.94	0.53	0.02	0.79	0.47	0.23
Avail Cap(c_a), veh/h	203	313	639	164	267	224	489	2220	990	368	1557	694
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.4	47.1	27.5	59.2	54.6	54.0	44.6	11.4	7.7	55.9	22.4	19.5
Incr Delay (d2), s/veh	10.5	0.2	0.1	23.4	1.5	0.7	23.0	0.9	0.0	8.5	1.0	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.8	2.4	7.5	0.8	2.1	0.9	19.4	11.6	0.4	4.3	11.1	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	64.9	47.2	27.7	82.6	56.1	54.7	67.6	12.3	7.7	64.4	23.4	20.3
LnGrp LOS	E	D	C	F	E	D	E	B	A	E	C	C
Approach Vol, veh/h		364			65			1581			973	
Approach Delay, s/veh		42.0			60.2			25.9			26.1	
Approach LOS		D			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	33.0	61.2	13.5	12.2	10.8	83.4	5.2	20.5
Change Period (Y+Rc), s	4.0	6.0	4.0	5.4	4.0	6.0	4.0	5.4
Max Green Setting (Gmax), s	34.0	34.0	14.0	18.6	26.0	42.0	12.0	20.6
Max Q Clear Time (g_c+I1), s	28.7	20.1	9.7	4.6	7.3	23.9	2.8	13.4
Green Ext Time (p_c), s	0.4	6.4	0.0	0.1	0.1	10.7	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	28.7
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

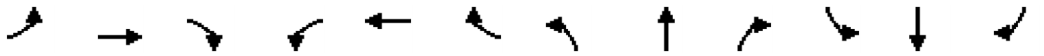
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	545	3	65	910	0	5	0	50	0	0	0
Future Volume (veh/h)	0	545	3	65	910	0	5	0	50	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1737	1737	1737	1856	1856	1856	1900	1900	1900	1870	1870	1870
Adj Flow Rate, veh/h	0	599	3	71	1000	0	5	0	55	0	0	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	11	11	11	3	3	3	0	0	0	2	2	2
Cap, veh/h	468	1391	7	637	2255	0	342	0	85	246	99	0
Arrive On Green	0.00	0.41	0.41	0.09	0.64	0.00	0.05	0.00	0.05	0.00	0.00	0.00
Sat Flow, veh/h	1654	3367	17	1767	3618	0	1810	0	1610	1349	1870	0
Grp Volume(v), veh/h	0	294	308	71	1000	0	5	0	55	0	0	0
Grp Sat Flow(s),veh/h/ln	1654	1650	1734	1767	1763	0	1810	0	1610	1349	1870	0
Q Serve(g_s), s	0.0	3.7	3.7	0.5	4.2	0.0	0.1	0.0	1.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	3.7	3.7	0.5	4.2	0.0	0.1	0.0	1.0	0.0	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	468	681	716	637	2255	0	342	0	85	246	99	0
V/C Ratio(X)	0.00	0.43	0.43	0.11	0.44	0.00	0.01	0.00	0.65	0.00	0.00	0.00
Avail Cap(c_a), veh/h	1084	1720	1808	1142	3675	0	1514	0	1128	428	352	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	6.1	6.1	3.4	2.7	0.0	13.2	0.0	13.6	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.7	0.6	0.0	0.2	0.0	0.0	0.0	6.0	0.0	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.7	0.7	0.0	0.1	0.0	0.0	0.0	0.4	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	6.8	6.8	3.5	2.9	0.0	13.2	0.0	19.6	0.0	0.0	0.0
LnGrp LOS		A	A	A	A		B		B			
Approach Vol, veh/h		602			1071			60			0	
Approach Delay, s/veh		6.8			2.9			19.1			0.0	
Approach LOS		A			A			B				

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.6	16.6		6.0	0.0	23.2		6.0				
Change Period (Y+Rc), s	4.0	4.5		4.5	4.0	4.5		4.5				
Max Green Setting (Gmax), s	11.0	30.5		5.5	11.0	30.5		20.5				
Max Q Clear Time (g_c+I1), s	2.5	5.7		0.0	0.0	6.2		3.0				
Green Ext Time (p_c), s	0.0	5.6		0.0	0.0	10.9		0.2				

Intersection Summary	
HCM 7th Control Delay, s/veh	4.8
HCM 7th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	365	350	30	130	450	800	45	1080	125	430	720	675
Future Volume (veh/h)	365	350	30	130	450	800	45	1080	125	430	720	675
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1752	1752	1752	1841	1841	1841	1811	1811	1811	1826	1826	1826
Adj Flow Rate, veh/h	380	365	31	135	469	0	47	1125	0	448	750	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	10	10	10	4	4	4	6	6	6	5	5	5
Cap, veh/h	460	706	60	198	501		59	1121		529	1555	
Arrive On Green	0.14	0.23	0.23	0.06	0.14	0.00	0.03	0.33	0.00	0.16	0.45	0.00
Sat Flow, veh/h	3237	3106	262	3401	3497	1560	1725	3441	1535	3374	3469	1547
Grp Volume(v), veh/h	380	195	201	135	469	0	47	1125	0	448	750	0
Grp Sat Flow(s),veh/h/ln	1618	1664	1705	1700	1749	1560	1725	1721	1535	1687	1735	1547
Q Serve(g_s), s	11.6	10.4	10.5	3.9	13.4	0.0	2.7	33.0	0.0	13.1	15.4	0.0
Cycle Q Clear(g_c), s	11.6	10.4	10.5	3.9	13.4	0.0	2.7	33.0	0.0	13.1	15.4	0.0
Prop In Lane	1.00		0.15	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	460	378	387	198	501		59	1121		529	1555	
V/C Ratio(X)	0.83	0.51	0.52	0.68	0.94		0.79	1.00		0.85	0.48	
Avail Cap(c_a), veh/h	1039	403	412	319	501		162	1121		883	1555	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	42.2	34.3	34.3	46.8	42.9	0.0	48.5	34.1	0.0	41.5	19.7	0.0
Incr Delay (d2), s/veh	2.4	0.7	0.7	2.5	25.2	0.0	13.3	27.7	0.0	2.6	0.4	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.2	7.5	7.7	3.1	11.9	0.0	2.4	23.5	0.0	9.1	9.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	44.6	34.9	35.0	49.3	68.1	0.0	61.8	61.9	0.0	44.1	20.1	0.0
LnGrp LOS	D	C	C	D	E		E	F		D	C	
Approach Vol, veh/h		776			604			1172			1198	
Approach Delay, s/veh		39.7			63.9			61.9			29.1	
Approach LOS		D			E			E			C	

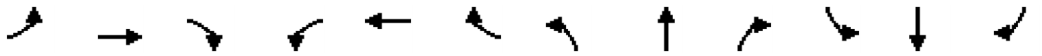
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.4	40.0	11.4	28.5	9.0	52.4	19.9	20.0
Change Period (Y+Rc), s	5.5	7.0	5.5	5.5	5.5	7.0	5.5	5.5
Max Green Setting (Gmax), s	26.5	33.0	9.5	24.5	9.5	33.0	32.5	14.5
Max Q Clear Time (g_c+I1), s	15.1	35.0	5.9	12.5	4.7	17.4	13.6	15.4
Green Ext Time (p_c), s	0.8	0.0	0.1	1.3	0.0	6.4	0.8	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	47.1
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

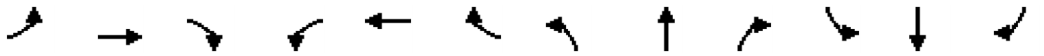
Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	5	15	70	10	30	10	710	20	2	825	10
Future Volume (veh/h)	10	5	15	70	10	30	10	710	20	2	825	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1885	1885	1885	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	11	5	16	74	11	32	11	747	21	2	868	11
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	1	1	1	2	2	2	1	1	1
Cap, veh/h	154	65	105	249	32	54	424	1235	35	493	1268	16
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.68	0.68	0.68	0.68	0.68	0.68
Sat Flow, veh/h	312	501	813	856	245	414	631	1809	51	705	1857	24
Grp Volume(v), veh/h	32	0	0	117	0	0	11	0	768	2	0	879
Grp Sat Flow(s),veh/h/ln	1627	0	0	1515	0	0	631	0	1860	705	0	1880
Q Serve(g_s), s	0.0	0.0	0.0	2.3	0.0	0.0	0.5	0.0	9.5	0.1	0.0	11.9
Cycle Q Clear(g_c), s	0.7	0.0	0.0	3.0	0.0	0.0	12.3	0.0	9.5	9.6	0.0	11.9
Prop In Lane	0.34		0.50	0.63		0.27	1.00		0.03	1.00		0.01
Lane Grp Cap(c), veh/h	324	0	0	334	0	0	424	0	1270	493	0	1284
V/C Ratio(X)	0.10	0.00	0.00	0.35	0.00	0.00	0.03	0.00	0.60	0.00	0.00	0.68
Avail Cap(c_a), veh/h	874	0	0	870	0	0	823	0	2446	939	0	2473
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.5	0.0	0.0	17.4	0.0	0.0	7.7	0.0	3.6	6.2	0.0	4.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.8	0.0	0.0	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.0	1.0	0.0	0.0	0.1	0.0	1.4	0.0	0.0	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	16.5	0.0	0.0	17.9	0.0	0.0	7.7	0.0	4.4	6.2	0.0	5.1
LnGrp LOS	B			B			A		A	A		A
Approach Vol, veh/h		32			117			779			881	
Approach Delay, s/veh		16.5			17.9			4.5			5.1	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	33.1	9.5	33.1	9.5
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	56.0	21.0	56.0	21.0
Max Q Clear Time (g_c+I1), s	13.9	5.0	14.3	2.7
Green Ext Time (p_c), s	15.2	0.4	12.3	0.1

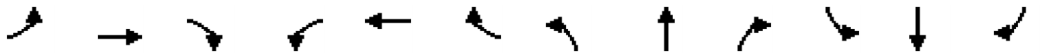
Intersection Summary	
HCM 7th Control Delay, s/veh	5.9
HCM 7th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	20	90	40	10	10	85	625	20	5	765	75
Future Volume (veh/h)	95	20	90	40	10	10	85	625	20	5	765	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.97	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1870	1870	1870	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	103	22	98	43	11	11	92	679	22	5	832	82
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	2	2	2	2	2	2	1	1	1
Cap, veh/h	308	250	210	296	115	115	378	1114	36	439	1070	875
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.06	0.62	0.62	0.01	0.57	0.57
Sat Flow, veh/h	1369	1856	1561	1264	854	854	1781	1799	58	1795	1885	1542
Grp Volume(v), veh/h	103	22	98	43	0	22	92	0	701	5	832	82
Grp Sat Flow(s),veh/h/ln	1369	1856	1561	1264	0	1709	1781	0	1857	1795	1885	1542
Q Serve(g_s), s	3.7	0.5	3.0	1.6	0.0	0.6	1.0	0.0	12.0	0.1	17.7	1.3
Cycle Q Clear(g_c), s	4.3	0.5	3.0	2.1	0.0	0.6	1.0	0.0	12.0	0.1	17.7	1.3
Prop In Lane	1.00		1.00	1.00		0.50	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	308	250	210	296	0	230	378	0	1150	439	1070	875
V/C Ratio(X)	0.33	0.09	0.47	0.15	0.00	0.10	0.24	0.00	0.61	0.01	0.78	0.09
Avail Cap(c_a), veh/h	678	752	632	638	0	693	655	0	1452	811	1473	1205
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.5	19.6	20.7	20.6	0.0	19.7	7.4	0.0	6.0	5.6	8.7	5.1
Incr Delay (d2), s/veh	0.5	0.1	1.2	0.2	0.0	0.1	0.2	0.0	0.8	0.0	2.4	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.2	1.1	0.5	0.0	0.2	0.3	0.0	3.2	0.0	5.7	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	22.0	19.8	21.9	20.7	0.0	19.8	7.6	0.0	6.8	5.6	11.1	5.2
LnGrp LOS	C	B	C	C		B	A		A	A	B	A
Approach Vol, veh/h		223			65			793			919	
Approach Delay, s/veh		21.7			20.4			6.9			10.5	
Approach LOS		C			C			A			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.9	33.9		11.0	4.3	36.6		11.0				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	11.0	40.5		21.0	11.0	40.5		21.0				
Max Q Clear Time (g_c+I1), s	3.0	19.7		4.1	2.1	14.0		6.3				
Green Ext Time (p_c), s	0.1	9.7		0.1	0.0	8.2		0.5				

Intersection Summary												
HCM 7th Control Delay, s/veh			10.7									
HCM 7th LOS			B									

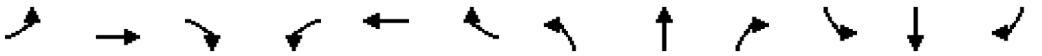


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	10	145	20	10	3	155	605	10	15	790	130
Future Volume (veh/h)	160	10	145	20	10	3	155	605	10	15	790	130
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1811	1811	1811	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	168	11	153	21	11	3	163	637	11	16	832	137
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	6	6	6	2	2	2	2	2	2
Cap, veh/h	566	28	396	382	252	69	293	1699	29	414	1445	238
Arrive On Green	0.10	0.27	0.27	0.02	0.18	0.18	0.48	0.48	0.48	0.48	0.48	0.48
Sat Flow, veh/h	1795	107	1486	1725	1370	374	579	3572	62	781	3040	501
Grp Volume(v), veh/h	168	0	164	21	0	14	163	317	331	16	486	483
Grp Sat Flow(s),veh/h/ln	1795	0	1593	1725	0	1743	579	1777	1857	781	1777	1763
Q Serve(g_s), s	3.8	0.0	4.6	0.5	0.0	0.4	15.2	6.2	6.2	0.7	10.8	10.8
Cycle Q Clear(g_c), s	3.8	0.0	4.6	0.5	0.0	0.4	26.0	6.2	6.2	7.0	10.8	10.8
Prop In Lane	1.00		0.93	1.00		0.21	1.00		0.03	1.00		0.28
Lane Grp Cap(c), veh/h	566	0	425	382	0	321	293	845	883	414	845	839
V/C Ratio(X)	0.30	0.00	0.39	0.05	0.00	0.04	0.56	0.37	0.38	0.04	0.58	0.58
Avail Cap(c_a), veh/h	1071	0	1602	1010	0	1753	293	845	883	414	845	839
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.9	0.0	16.4	17.5	0.0	18.4	19.8	9.2	9.2	11.4	10.4	10.4
Incr Delay (d2), s/veh	0.2	0.0	0.9	0.0	0.0	0.1	2.0	0.2	0.2	0.0	0.8	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	1.6	0.2	0.0	0.1	2.0	2.0	2.1	0.1	3.6	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.1	0.0	17.3	17.6	0.0	18.4	21.8	9.4	9.3	11.4	11.2	11.2
LnGrp LOS	B		B	B		B	C	A	A	B	B	B
Approach Vol, veh/h		332			35			811			985	
Approach Delay, s/veh		15.7			17.9			11.9			11.2	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.1	19.6		30.0	9.6	15.1		30.0				
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	21.0	55.0		26.0	21.0	55.0		26.0				
Max Q Clear Time (g_c+I1), s	2.5	6.6		12.8	5.8	2.4		28.0				
Green Ext Time (p_c), s	0.0	1.8		4.6	0.3	0.1		0.0				

Intersection Summary			
HCM 7th Control Delay, s/veh		12.2	
HCM 7th LOS		B	

Notes
User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	0	155	0	0	0	145	730	0	0	875	75
Future Volume (veh/h)	45	0	155	0	0	0	145	730	0	0	875	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.98		0.98	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1870	1870	1870	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	46	0	160	0	0	0	149	753	0	0	902	77
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	2	2	2	1	1	1	2	2	2
Cap, veh/h	406	0	263	111	310	0	192	2161	0	111	1440	123
Arrive On Green	0.17	0.00	0.17	0.00	0.00	0.00	0.11	0.60	0.00	0.00	0.43	0.43
Sat Flow, veh/h	1780	0	1584	1226	1870	0	1795	3676	0	710	3310	283
Grp Volume(v), veh/h	46	0	160	0	0	0	149	753	0	0	484	495
Grp Sat Flow(s),veh/h/ln	1780	0	1584	1226	1870	0	1795	1791	0	710	1777	1816
Q Serve(g_s), s	1.4	0.0	6.1	0.0	0.0	0.0	5.3	6.9	0.0	0.0	13.8	13.8
Cycle Q Clear(g_c), s	1.4	0.0	6.1	0.0	0.0	0.0	5.3	6.9	0.0	0.0	13.8	13.8
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		0.16
Lane Grp Cap(c), veh/h	406	0	263	111	310	0	192	2161	0	111	773	790
V/C Ratio(X)	0.11	0.00	0.61	0.00	0.00	0.00	0.78	0.35	0.00	0.00	0.63	0.63
Avail Cap(c_a), veh/h	740	0	560	341	662	0	580	2865	0	403	1503	1536
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	23.2	0.0	25.2	0.0	0.0	0.0	28.3	6.5	0.0	0.0	14.3	14.3
Incr Delay (d2), s/veh	0.1	0.0	1.4	0.0	0.0	0.0	4.1	0.1	0.0	0.0	1.3	1.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	2.3	0.0	0.0	0.0	2.4	2.1	0.0	0.0	5.1	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	23.3	0.0	26.5	0.0	0.0	0.0	32.4	6.6	0.0	0.0	15.5	15.5
LnGrp LOS	C		C				C	A			B	B
Approach Vol, veh/h		206			0			902			979	
Approach Delay, s/veh		25.8			0.0			10.9			15.5	
Approach LOS		C						B			B	

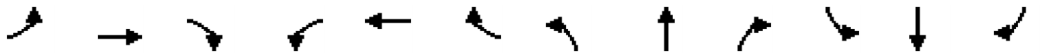
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	10.9	36.3		17.8		47.2		17.8				
Change Period (Y+Rc), s	4.0	* 8		7.0		8.0		7.0				
Max Green Setting (Gmax), s	21.0	* 55		23.0		52.0		23.0				
Max Q Clear Time (g_c+I1), s	7.3	15.8		8.1		8.9		0.0				
Green Ext Time (p_c), s	0.2	12.5		0.7		9.7		0.0				

Intersection Summary												
HCM 7th Control Delay, s/veh			14.5									
HCM 7th LOS			B									

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



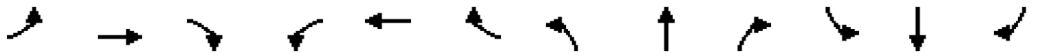
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	500	220	120	370	280	175	445	60	535	505	15
Future Volume (veh/h)	40	500	220	120	370	280	175	445	60	535	505	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1885	1885	1885	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	41	515	227	124	381	289	180	459	62	552	521	15
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	1	1	1	2	2	2	1	1	1
Cap, veh/h	55	646	483	158	856	692	223	848	114	682	621	18
Arrive On Green	0.03	0.18	0.18	0.09	0.24	0.24	0.13	0.27	0.27	0.20	0.34	0.34
Sat Flow, veh/h	1781	3554	1563	1795	3582	1588	1781	3137	421	3483	1822	52
Grp Volume(v), veh/h	41	515	227	124	381	289	180	259	262	552	0	536
Grp Sat Flow(s),veh/h/ln	1781	1777	1563	1795	1791	1588	1781	1777	1782	1742	0	1874
Q Serve(g_s), s	1.7	10.2	8.7	5.0	6.7	9.3	7.3	9.2	9.3	11.2	0.0	19.5
Cycle Q Clear(g_c), s	1.7	10.2	8.7	5.0	6.7	9.3	7.3	9.2	9.3	11.2	0.0	19.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.24	1.00		0.03
Lane Grp Cap(c), veh/h	55	646	483	158	856	692	223	480	482	682	0	639
V/C Ratio(X)	0.75	0.80	0.47	0.78	0.45	0.42	0.81	0.54	0.54	0.81	0.00	0.84
Avail Cap(c_a), veh/h	253	722	516	255	856	692	483	722	724	1416	0	762
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.5	28.9	20.7	33.0	23.9	14.4	31.4	23.0	23.0	28.4	0.0	22.5
Incr Delay (d2), s/veh	11.6	5.4	0.5	5.2	0.3	0.3	4.2	1.4	1.5	1.5	0.0	8.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	4.6	3.0	2.3	2.7	3.0	3.3	3.9	3.9	4.6	0.0	9.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	47.1	34.3	21.3	38.2	24.2	14.7	35.6	24.4	24.5	29.8	0.0	30.4
LnGrp LOS	D	C	C	D	C	B	D	C	C	C		C
Approach Vol, veh/h		783			794			701			1088	
Approach Delay, s/veh		31.2			22.9			27.3			30.1	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.2	30.1	6.8	22.6	19.4	24.9	11.0	18.4
Change Period (Y+Rc), s	5.0	5.0	4.5	5.0	5.0	5.0	4.5	5.0
Max Green Setting (Gmax), s	20.0	30.0	10.5	15.0	30.0	30.0	10.5	15.0
Max Q Clear Time (g_c+I1), s	9.3	21.5	3.7	11.3	13.2	11.3	7.0	12.2
Green Ext Time (p_c), s	0.2	3.1	0.0	1.1	1.3	4.4	0.1	1.0

Intersection Summary	
HCM 7th Control Delay, s/veh	28.1
HCM 7th LOS	C

Notes

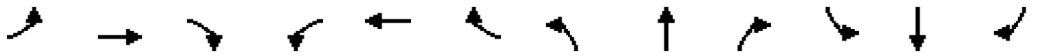
User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	45	45	20	45	45	45	490	20	20	585	155
Future Volume (veh/h)	115	45	45	20	45	45	45	490	20	20	585	155
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.96	0.97		0.98	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1900	1900	1900	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	119	46	46	21	46	46	46	505	21	21	603	160
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	0	0	0	3	3	3	3	3	3
Cap, veh/h	344	134	134	304	86	86	249	853	35	414	653	173
Arrive On Green	0.08	0.16	0.16	0.02	0.10	0.10	0.04	0.48	0.48	0.02	0.47	0.47
Sat Flow, veh/h	1795	844	844	1810	863	863	1767	1768	74	1767	1404	373
Grp Volume(v), veh/h	119	0	92	21	0	92	46	0	526	21	0	763
Grp Sat Flow(s),veh/h/ln	1795	0	1688	1810	0	1726	1767	0	1842	1767	0	1776
Q Serve(g_s), s	2.9	0.0	2.5	0.5	0.0	2.6	0.7	0.0	10.7	0.3	0.0	20.8
Cycle Q Clear(g_c), s	2.9	0.0	2.5	0.5	0.0	2.6	0.7	0.0	10.7	0.3	0.0	20.8
Prop In Lane	1.00		0.50	1.00		0.50	1.00		0.04	1.00		0.21
Lane Grp Cap(c), veh/h	344	0	267	304	0	173	249	0	889	414	0	826
V/C Ratio(X)	0.35	0.00	0.34	0.07	0.00	0.53	0.18	0.00	0.59	0.05	0.00	0.92
Avail Cap(c_a), veh/h	585	0	685	477	0	700	729	0	1263	925	0	1218
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.0	0.0	19.4	20.3	0.0	22.1	11.1	0.0	9.7	7.9	0.0	13.0
Incr Delay (d2), s/veh	0.2	0.0	0.3	0.0	0.0	0.9	0.1	0.0	0.2	0.0	0.0	6.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.9	0.2	0.0	1.0	0.2	0.0	3.4	0.1	0.0	8.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	18.2	0.0	19.7	20.3	0.0	23.1	11.2	0.0	9.9	7.9	0.0	19.8
LnGrp LOS	B		B	C		C	B		A	A		B
Approach Vol, veh/h		211			113			572			784	
Approach Delay, s/veh		18.8			22.6			10.0			19.5	
Approach LOS		B			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.9	28.6	8.1	9.2	5.0	29.5	5.0	12.2
Change Period (Y+Rc), s	4.0	4.5	4.0	4.0	4.0	4.5	4.0	4.0
Max Green Setting (Gmax), s	16.0	35.5	11.0	21.0	16.0	35.5	6.0	21.0
Max Q Clear Time (g_c+I1), s	2.7	22.8	4.9	4.6	2.3	12.7	2.5	4.5
Green Ext Time (p_c), s	0.0	1.2	0.0	0.1	0.0	0.8	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	16.4
HCM 7th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	155	45	500	10	40	55	295	835	15	40	1210	180
Future Volume (veh/h)	155	45	500	10	40	55	295	835	15	40	1210	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1752	1752	1752	1856	1856	1856	1870	1870	1870
Adj Flow Rate, veh/h	158	46	510	10	41	56	301	852	15	41	1235	184
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	10	10	10	3	3	3	2	2	2
Cap, veh/h	183	325	565	16	141	116	327	2249	1002	53	1715	764
Arrive On Green	0.10	0.17	0.17	0.01	0.08	0.08	0.19	0.64	0.64	0.03	0.48	0.48
Sat Flow, veh/h	1781	1870	1563	1668	1752	1440	1767	3526	1571	1781	3554	1583
Grp Volume(v), veh/h	158	46	510	10	41	56	301	852	15	41	1235	184
Grp Sat Flow(s),veh/h/ln	1781	1870	1563	1668	1752	1440	1767	1763	1571	1781	1777	1583
Q Serve(g_s), s	11.4	2.7	22.6	0.8	2.9	4.8	21.7	15.0	0.5	3.0	35.8	8.8
Cycle Q Clear(g_c), s	11.4	2.7	22.6	0.8	2.9	4.8	21.7	15.0	0.5	3.0	35.8	8.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	183	325	565	16	141	116	327	2249	1002	53	1715	764
V/C Ratio(X)	0.87	0.14	0.90	0.64	0.29	0.48	0.92	0.38	0.01	0.77	0.72	0.24
Avail Cap(c_a), veh/h	219	325	565	205	278	228	421	2249	1002	288	1715	764
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.5	45.5	39.6	64.2	56.3	57.2	52.0	11.2	8.6	62.6	26.7	19.7
Incr Delay (d2), s/veh	22.5	0.1	17.3	23.9	0.7	1.9	20.4	0.5	0.0	13.6	2.6	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	10.3	2.3	24.8	0.8	2.4	3.3	16.5	9.0	0.3	2.7	20.8	6.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	79.9	45.6	56.9	88.1	56.9	59.0	72.4	11.7	8.6	76.2	29.3	20.4
LnGrp LOS	E	D	E	F	E	E	E	B	A	E	C	C
Approach Vol, veh/h		714			107			1168			1460	
Approach Delay, s/veh		61.3			60.9			27.3			29.5	
Approach LOS		E			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	28.1	68.7	17.3	15.9	7.9	88.9	5.2	28.0
Change Period (Y+Rc), s	4.0	6.0	4.0	5.4	4.0	6.0	4.0	5.4
Max Green Setting (Gmax), s	31.0	43.0	16.0	20.6	21.0	53.0	16.0	20.6
Max Q Clear Time (g_c+I1), s	23.7	37.8	13.4	6.8	5.0	17.0	2.8	24.6
Green Ext Time (p_c), s	0.3	4.2	0.0	0.2	0.0	10.3	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	36.3
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	1065	55	140	840	0	30	0	80	0	0	1
Future Volume (veh/h)	1	1065	55	140	840	0	30	0	80	0	0	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	0.98		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1870	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	1	1145	59	151	903	0	32	0	86	0	0	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	2	2	2	0	0	0	0	0	0
Cap, veh/h	450	1735	89	464	2162	0	314	0	183	152	0	183
Arrive On Green	0.00	0.50	0.50	0.11	0.61	0.00	0.12	0.00	0.12	0.00	0.00	0.12
Sat Flow, veh/h	1795	3464	178	1781	3647	0	1409	0	1577	1332	0	1577
Grp Volume(v), veh/h	1	592	612	151	903	0	32	0	86	0	0	1
Grp Sat Flow(s),veh/h/ln	1795	1791	1851	1781	1777	0	1409	0	1577	1332	0	1577
Q Serve(g_s), s	0.0	11.7	11.7	1.5	6.3	0.0	1.0	0.0	2.4	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	11.7	11.7	1.5	6.3	0.0	1.0	0.0	2.4	0.0	0.0	0.0
Prop In Lane	1.00		0.10	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	450	897	928	464	2162	0	314	0	183	152	0	183
V/C Ratio(X)	0.00	0.66	0.66	0.33	0.42	0.00	0.10	0.00	0.47	0.00	0.00	0.01
Avail Cap(c_a), veh/h	863	1151	1190	683	2284	0	760	0	681	152	0	183
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	5.9	8.8	8.8	6.1	4.9	0.0	19.0	0.0	19.6	0.0	0.0	18.6
Incr Delay (d2), s/veh	0.0	1.3	1.3	0.2	0.2	0.0	0.1	0.0	1.4	0.0	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.4	3.5	0.3	1.3	0.0	0.3	0.0	0.9	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	5.9	10.2	10.1	6.3	5.1	0.0	19.1	0.0	21.0	0.0	0.0	18.6
LnGrp LOS	A	B	B	A	A		B		C			B
Approach Vol, veh/h		1205			1054			118			1	
Approach Delay, s/veh		10.1			5.3			20.5			18.6	
Approach LOS		B			A			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.2	28.3		10.0	4.1	33.4		10.0				
Change Period (Y+Rc), s	4.0	4.5		4.5	4.0	4.5		4.5				
Max Green Setting (Gmax), s	11.0	30.5		5.5	11.0	30.5		20.5				
Max Q Clear Time (g_c+I1), s	3.5	13.7		2.0	2.0	8.3		4.4				
Green Ext Time (p_c), s	0.1	10.1		0.0	0.0	9.2		0.4				

Intersection Summary	
HCM 7th Control Delay, s/veh	8.5
HCM 7th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	715	810	100	145	510	505	55	805	180	790	1115	665
Future Volume (veh/h)	715	810	100	145	510	505	55	805	180	790	1115	665
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1856	1856	1856	1870	1870	1870
Adj Flow Rate, veh/h	730	827	102	148	520	0	56	821	0	806	1138	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	3	3	3	2	2	2
Cap, veh/h	796	918	113	202	415		72	902		732	1517	
Arrive On Green	0.23	0.29	0.29	0.06	0.12	0.00	0.04	0.26	0.00	0.21	0.43	0.00
Sat Flow, veh/h	3483	3203	395	3483	3582	1598	1767	3526	1572	3456	3554	1585
Grp Volume(v), veh/h	730	462	467	148	520	0	56	821	0	806	1138	0
Grp Sat Flow(s),veh/h/ln	1742	1791	1808	1742	1791	1598	1767	1763	1572	1728	1777	1585
Q Serve(g_s), s	25.6	31.1	31.1	5.2	14.5	0.0	3.9	28.3	0.0	26.5	33.8	0.0
Cycle Q Clear(g_c), s	25.6	31.1	31.1	5.2	14.5	0.0	3.9	28.3	0.0	26.5	33.8	0.0
Prop In Lane	1.00		0.22	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	796	513	518	202	415		72	902		732	1517	
V/C Ratio(X)	0.92	0.90	0.90	0.73	1.25		0.78	0.91		1.10	0.75	
Avail Cap(c_a), veh/h	905	513	518	265	415		134	930		732	1517	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	47.1	42.9	42.9	58.0	55.3	0.0	59.4	45.2	0.0	49.3	30.2	0.0
Incr Delay (d2), s/veh	12.4	18.6	18.5	5.5	132.0	0.0	10.5	13.2	0.0	64.3	2.4	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	18.1	22.8	22.9	4.4	22.1	0.0	3.4	19.3	0.0	25.5	19.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	59.5	61.5	61.4	63.5	187.3	0.0	69.9	58.3	0.0	113.6	32.7	0.0
LnGrp LOS	E	E	E	E	F		E	E		F	C	
Approach Vol, veh/h		1659			668			877			1944	
Approach Delay, s/veh		60.6			159.9			59.1			66.2	
Approach LOS		E			F			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	32.0	39.0	12.7	41.3	10.6	60.4	34.1	20.0
Change Period (Y+Rc), s	5.5	7.0	5.5	5.5	5.5	7.0	5.5	5.5
Max Green Setting (Gmax), s	26.5	33.0	9.5	24.5	9.5	33.0	32.5	14.5
Max Q Clear Time (g_c+I1), s	28.5	30.3	7.2	33.1	5.9	35.8	27.6	16.5
Green Ext Time (p_c), s	0.0	1.7	0.1	0.0	0.0	0.0	1.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	75.4
HCM 7th LOS	E

Notes

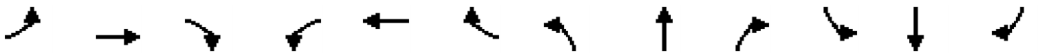
User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	10	13	43	10	5	13	668	18	35	496	10
Future Volume (veh/h)	20	10	13	43	10	5	13	668	18	35	496	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1811	1811	1781	1781	1781	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	22	11	14	47	11	5	14	726	20	38	539	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	8	8	8	4	4	4	4	4	4
Cap, veh/h	214	77	60	295	57	15	618	1146	32	484	1156	24
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.64	0.64	0.64	0.64	0.64	0.64
Sat Flow, veh/h	495	590	460	895	439	115	843	1781	49	703	1797	37
Grp Volume(v), veh/h	47	0	0	63	0	0	14	0	746	38	0	550
Grp Sat Flow(s),veh/h/ln	1545	0	0	1449	0	0	843	0	1831	703	0	1834
Q Serve(g_s), s	0.0	0.0	0.0	0.4	0.0	0.0	0.3	0.0	8.7	1.2	0.0	5.4
Cycle Q Clear(g_c), s	0.9	0.0	0.0	1.2	0.0	0.0	5.7	0.0	8.7	9.9	0.0	5.4
Prop In Lane	0.47		0.30	0.75		0.08	1.00		0.03	1.00		0.02
Lane Grp Cap(c), veh/h	351	0	0	367	0	0	618	0	1177	484	0	1180
V/C Ratio(X)	0.13	0.00	0.00	0.17	0.00	0.00	0.02	0.00	0.63	0.08	0.00	0.47
Avail Cap(c_a), veh/h	1039	0	0	1009	0	0	1414	0	2906	1148	0	2912
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.7	0.0	0.0	13.9	0.0	0.0	4.7	0.0	3.8	6.8	0.0	3.2
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.0	1.0	0.1	0.0	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.0	0.4	0.0	0.0	0.0	0.0	1.1	0.1	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	13.9	0.0	0.0	14.0	0.0	0.0	4.7	0.0	4.8	6.9	0.0	3.7
LnGrp LOS	B			B			A		A	A		A
Approach Vol, veh/h		47			63			760			588	
Approach Delay, s/veh		13.9			14.0			4.8			3.9	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	26.7	8.6	26.7	8.6
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	56.0	21.0	56.0	21.0
Max Q Clear Time (g_c+I1), s	11.9	3.2	10.7	2.9
Green Ext Time (p_c), s	8.1	0.2	12.0	0.1

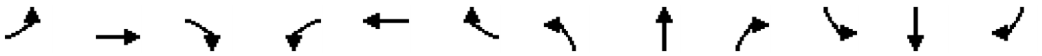
Intersection Summary	
HCM 7th Control Delay, s/veh	5.1
HCM 7th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	4	46	35	5	5	37	559	10	5	492	35
Future Volume (veh/h)	50	4	46	35	5	5	37	559	10	5	492	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1826	1826	1826	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	54	4	49	38	5	5	40	601	11	5	529	38
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	7	7	7	5	5	5	4	4	4	4	4	4
Cap, veh/h	377	239	203	378	111	111	487	912	17	420	874	738
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.04	0.51	0.51	0.01	0.47	0.47
Sat Flow, veh/h	1349	1796	1522	1319	838	838	1753	1802	33	1753	1841	1555
Grp Volume(v), veh/h	54	4	49	38	0	10	40	0	612	5	529	38
Grp Sat Flow(s),veh/h/ln	1349	1796	1522	1319	0	1675	1753	0	1835	1753	1841	1555
Q Serve(g_s), s	1.3	0.1	1.0	0.9	0.0	0.2	0.4	0.0	8.7	0.1	7.5	0.5
Cycle Q Clear(g_c), s	1.5	0.1	1.0	1.0	0.0	0.2	0.4	0.0	8.7	0.1	7.5	0.5
Prop In Lane	1.00		1.00	1.00		0.50	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	377	239	203	378	0	223	487	0	929	420	874	738
V/C Ratio(X)	0.14	0.02	0.24	0.10	0.00	0.04	0.08	0.00	0.66	0.01	0.61	0.05
Avail Cap(c_a), veh/h	1003	1072	909	990	0	1000	971	0	2112	959	2119	1790
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.9	13.2	13.7	13.7	0.0	13.3	5.1	0.0	6.4	5.6	6.8	5.0
Incr Delay (d2), s/veh	0.1	0.0	0.5	0.1	0.0	0.1	0.0	0.0	1.2	0.0	1.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.3	0.2	0.0	0.1	0.1	0.0	2.1	0.0	1.9	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.1	13.3	14.1	13.8	0.0	13.4	5.2	0.0	7.7	5.6	7.8	5.0
LnGrp LOS	B	B	B	B		B	A		A	A	A	A
Approach Vol, veh/h		107			48			652			572	
Approach Delay, s/veh		14.1			13.7			7.5			7.6	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.3	21.2		8.7	4.2	22.3		8.7				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	11.0	40.5		21.0	11.0	40.5		21.0				
Max Q Clear Time (g_c+I1), s	2.4	9.5		3.0	2.1	10.7		3.5				
Green Ext Time (p_c), s	0.0	6.2		0.1	0.0	7.1		0.2				

Intersection Summary												
HCM 7th Control Delay, s/veh			8.3									
HCM 7th LOS			A									



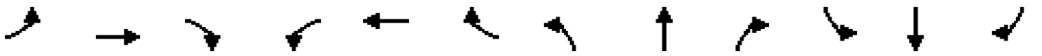
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	10	71	15	5	1	127	611	5	5	438	125
Future Volume (veh/h)	105	10	71	15	5	1	127	611	5	5	438	125
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1900	1900	1900	1826	1826	1826	1841	1841	1841
Adj Flow Rate, veh/h	115	11	78	16	5	1	140	671	5	5	481	137
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	4	4	4	0	0	0	5	5	5	4	4	4
Cap, veh/h	596	55	392	487	345	69	383	1457	11	366	1109	314
Arrive On Green	0.07	0.28	0.28	0.02	0.22	0.22	0.41	0.41	0.41	0.41	0.41	0.41
Sat Flow, veh/h	1753	196	1391	1810	1536	307	784	3529	26	749	2687	760
Grp Volume(v), veh/h	115	0	89	16	0	6	140	330	346	5	312	306
Grp Sat Flow(s),veh/h/ln	1753	0	1587	1810	0	1844	784	1735	1821	749	1749	1698
Q Serve(g_s), s	2.2	0.0	1.9	0.3	0.0	0.1	7.0	6.2	6.2	0.2	5.7	5.8
Cycle Q Clear(g_c), s	2.2	0.0	1.9	0.3	0.0	0.1	12.8	6.2	6.2	6.4	5.7	5.8
Prop In Lane	1.00		0.88	1.00		0.17	1.00		0.01	1.00		0.45
Lane Grp Cap(c), veh/h	596	0	447	487	0	414	383	716	752	366	722	701
V/C Ratio(X)	0.19	0.00	0.20	0.03	0.00	0.01	0.37	0.46	0.46	0.01	0.43	0.44
Avail Cap(c_a), veh/h	1286	0	1940	1302	0	2255	512	1003	1053	490	1011	982
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.4	0.0	12.3	13.1	0.0	13.6	14.0	9.6	9.6	11.9	9.4	9.5
Incr Delay (d2), s/veh	0.1	0.0	0.3	0.0	0.0	0.0	0.4	0.3	0.3	0.0	0.3	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.6	0.1	0.0	0.0	1.1	1.9	2.0	0.0	1.8	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	11.5	0.0	12.6	13.1	0.0	13.6	14.5	9.9	9.9	11.9	9.7	9.8
LnGrp LOS	B		B	B		B	B	A	A	B	A	A
Approach Vol, veh/h		204			22			816			623	
Approach Delay, s/veh		12.0			13.2			10.7			9.8	
Approach LOS		B			B			B			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.7	17.7		22.6	7.3	15.1		22.6				
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	21.0	55.0		26.0	21.0	55.0		26.0				
Max Q Clear Time (g_c+I1), s	2.3	3.9		8.4	4.2	2.1		14.8				
Green Ext Time (p_c), s	0.0	0.9		3.0	0.2	0.0		3.3				

Intersection Summary												
HCM 7th Control Delay, s/veh			10.5									
HCM 7th LOS			B									

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	0	70	23	0	83	90	605	25	68	381	50
Future Volume (veh/h)	55	0	70	23	0	83	90	605	25	68	381	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1870	1856	1856	1856	1841	1841	1841
Adj Flow Rate, veh/h	63	0	80	26	0	94	102	688	28	77	433	57
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	1	1	1	2	2	2	3	3	3	4	4	4
Cap, veh/h	316	0	263	328	0	261	132	1665	68	395	974	128
Arrive On Green	0.17	0.00	0.17	0.17	0.00	0.17	0.07	0.48	0.48	0.31	0.31	0.31
Sat Flow, veh/h	1305	0	1586	1311	0	1574	1767	3452	140	721	3105	406
Grp Volume(v), veh/h	63	0	80	26	0	94	102	351	365	77	243	247
Grp Sat Flow(s),veh/h/ln	1305	0	1586	1311	0	1574	1767	1763	1829	721	1749	1763
Q Serve(g_s), s	1.9	0.0	1.9	0.8	0.0	2.3	2.4	5.5	5.5	3.5	4.7	4.8
Cycle Q Clear(g_c), s	4.2	0.0	1.9	2.6	0.0	2.3	2.4	5.5	5.5	3.5	4.7	4.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.08	1.00		0.23
Lane Grp Cap(c), veh/h	316	0	263	328	0	261	132	850	882	395	549	553
V/C Ratio(X)	0.20	0.00	0.30	0.08	0.00	0.36	0.77	0.41	0.41	0.19	0.44	0.45
Avail Cap(c_a), veh/h	804	0	855	818	0	849	870	2149	2230	1098	2255	2273
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.6	0.0	15.6	16.8	0.0	15.8	19.4	7.1	7.1	11.2	11.7	11.7
Incr Delay (d2), s/veh	0.2	0.0	0.4	0.1	0.0	0.5	5.8	0.5	0.5	0.4	0.9	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.0	0.0	1.1	0.4	0.0	1.4	2.0	2.8	2.9	0.9	2.9	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	17.8	0.0	16.0	16.8	0.0	16.3	25.1	7.6	7.6	11.6	12.5	12.5
LnGrp LOS	B		B	B		B	C	A	A	B	B	B
Approach Vol, veh/h		143			120			818			567	
Approach Delay, s/veh		16.8			16.4			9.8			12.4	
Approach LOS		B			B			A			B	

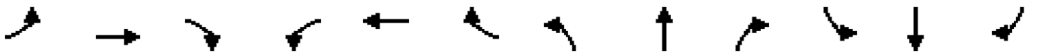
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	7.2	21.4		14.1		28.6		14.1				
Change Period (Y+Rc), s	4.0	* 8		7.0		8.0		7.0				
Max Green Setting (Gmax), s	21.0	* 55		23.0		52.0		23.0				
Max Q Clear Time (g_c+I1), s	4.4	6.8		6.2		7.5		4.6				
Green Ext Time (p_c), s	0.1	6.4		0.4		8.3		0.4				

Intersection Summary												
HCM 7th Control Delay, s/veh			11.8									
HCM 7th LOS			B									

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



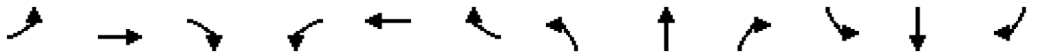
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	260	110	50	495	244	176	356	60	230	214	15
Future Volume (veh/h)	10	260	110	50	495	244	176	356	60	230	214	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1767	1767	1856	1856	1856	1856	1856	1856	1841	1841	1841
Adj Flow Rate, veh/h	10	268	113	52	510	252	181	367	62	237	221	15
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	9	9	9	3	3	3	3	3	3	4	4	4
Cap, veh/h	17	559	446	110	771	530	235	742	124	406	396	27
Arrive On Green	0.01	0.17	0.17	0.06	0.22	0.22	0.13	0.25	0.25	0.12	0.23	0.23
Sat Flow, veh/h	1682	3357	1484	1767	3526	1566	1767	3017	505	3401	1703	116
Grp Volume(v), veh/h	10	268	113	52	510	252	181	213	216	237	0	236
Grp Sat Flow(s),veh/h/ln	1682	1678	1484	1767	1763	1566	1767	1763	1760	1700	0	1819
Q Serve(g_s), s	0.3	3.5	2.8	1.4	6.4	6.1	4.8	5.0	5.1	3.2	0.0	5.5
Cycle Q Clear(g_c), s	0.3	3.5	2.8	1.4	6.4	6.1	4.8	5.0	5.1	3.2	0.0	5.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.29	1.00		0.06
Lane Grp Cap(c), veh/h	17	559	446	110	771	530	235	434	433	406	0	423
V/C Ratio(X)	0.57	0.48	0.25	0.47	0.66	0.48	0.77	0.49	0.50	0.58	0.00	0.56
Avail Cap(c_a), veh/h	367	1047	661	386	1099	676	735	1099	1097	2121	0	1134
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.7	18.2	12.8	21.8	17.2	12.6	20.2	15.6	15.6	20.0	0.0	16.3
Incr Delay (d2), s/veh	16.7	0.5	0.2	1.9	0.7	0.5	3.3	1.3	1.4	0.8	0.0	1.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	2.2	1.4	1.0	4.1	3.2	3.5	3.4	3.5	2.1	0.0	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	40.4	18.6	13.0	23.7	17.9	13.0	23.5	16.9	16.9	20.9	0.0	18.0
LnGrp LOS	D	B	B	C	B	B	C	B	B	C		B
Approach Vol, veh/h		391			814			610			473	
Approach Delay, s/veh		17.6			16.8			18.9			19.4	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.4	16.2	5.0	15.5	10.7	16.8	7.5	13.0
Change Period (Y+Rc), s	5.0	5.0	4.5	5.0	5.0	5.0	4.5	5.0
Max Green Setting (Gmax), s	20.0	30.0	10.5	15.0	30.0	30.0	10.5	15.0
Max Q Clear Time (g_c+I1), s	6.8	7.5	2.3	8.4	5.2	7.1	3.4	5.5
Green Ext Time (p_c), s	0.3	2.0	0.0	2.0	0.5	3.9	0.0	1.1

Intersection Summary	
HCM 7th Control Delay, s/veh	18.0
HCM 7th LOS	B

Notes

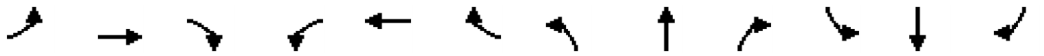
User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	113	30	50	3	20	15	35	468	10	15	316	38
Future Volume (veh/h)	113	30	50	3	20	15	35	468	10	15	316	38
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.98		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1826	1826	1826	1841	1841	1841	1826	1826	1826
Adj Flow Rate, veh/h	119	32	53	3	21	16	37	493	11	16	333	40
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	5	5	5	4	4	4	5	5	5
Cap, veh/h	414	85	141	299	55	42	424	610	14	328	514	62
Arrive On Green	0.08	0.14	0.14	0.00	0.06	0.06	0.03	0.34	0.34	0.02	0.32	0.32
Sat Flow, veh/h	1781	631	1045	1739	960	731	1753	1793	40	1739	1598	192
Grp Volume(v), veh/h	119	0	85	3	0	37	37	0	504	16	0	373
Grp Sat Flow(s),veh/h/ln	1781	0	1676	1739	0	1691	1753	0	1833	1739	0	1790
Q Serve(g_s), s	2.0	0.0	1.5	0.1	0.0	0.7	0.5	0.0	8.2	0.2	0.0	5.8
Cycle Q Clear(g_c), s	2.0	0.0	1.5	0.1	0.0	0.7	0.5	0.0	8.2	0.2	0.0	5.8
Prop In Lane	1.00		0.62	1.00		0.43	1.00		0.02	1.00		0.11
Lane Grp Cap(c), veh/h	414	0	226	299	0	97	424	0	624	328	0	576
V/C Ratio(X)	0.29	0.00	0.38	0.01	0.00	0.38	0.09	0.00	0.81	0.05	0.00	0.65
Avail Cap(c_a), veh/h	870	0	1077	612	0	1087	1221	0	1991	1150	0	1944
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.5	0.0	12.9	14.4	0.0	14.8	7.4	0.0	9.8	8.1	0.0	9.5
Incr Delay (d2), s/veh	0.1	0.0	0.4	0.0	0.0	0.9	0.0	0.0	1.0	0.0	0.0	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.5	0.0	0.0	0.2	0.1	0.0	2.3	0.1	0.0	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	12.7	0.0	13.3	14.4	0.0	15.7	7.5	0.0	10.8	8.1	0.0	10.0
LnGrp LOS	B		B	B		B	A		B	A		A
Approach Vol, veh/h		204			40			541			389	
Approach Delay, s/veh		12.9			15.6			10.5			9.9	
Approach LOS		B			B			B			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.1	15.0	6.6	5.9	4.5	15.6	4.1	8.4
Change Period (Y+Rc), s	4.0	4.5	4.0	4.0	4.0	4.5	4.0	4.0
Max Green Setting (Gmax), s	16.0	35.5	11.0	21.0	16.0	35.5	6.0	21.0
Max Q Clear Time (g_c+I1), s	2.5	7.8	4.0	2.7	2.2	10.2	2.1	3.5
Green Ext Time (p_c), s	0.0	0.5	0.0	0.0	0.0	0.7	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	10.9
HCM 7th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	50	191	10	39	15	364	1075	20	70	680	145
Future Volume (veh/h)	105	50	191	10	39	15	364	1075	20	70	680	145
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1722	1722	1722	1811	1811	1811	1781	1781	1781
Adj Flow Rate, veh/h	114	54	208	11	42	16	396	1168	22	76	739	158
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	5	12	12	12	6	6	6	8	8	8
Cap, veh/h	138	230	573	17	98	82	422	2220	990	96	1547	690
Arrive On Green	0.08	0.13	0.13	0.01	0.06	0.06	0.24	0.65	0.65	0.06	0.46	0.46
Sat Flow, veh/h	1739	1826	1540	1640	1722	1444	1725	3441	1535	1697	3385	1510
Grp Volume(v), veh/h	114	54	208	11	42	16	396	1168	22	76	739	158
Grp Sat Flow(s),veh/h/ln	1739	1826	1540	1640	1722	1444	1725	1721	1535	1697	1692	1510
Q Serve(g_s), s	7.7	3.2	11.8	0.8	2.8	1.3	27.0	21.9	0.6	5.3	18.2	7.6
Cycle Q Clear(g_c), s	7.7	3.2	11.8	0.8	2.8	1.3	27.0	21.9	0.6	5.3	18.2	7.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	138	230	573	17	98	82	422	2220	990	96	1547	690
V/C Ratio(X)	0.82	0.23	0.36	0.66	0.43	0.19	0.94	0.53	0.02	0.79	0.48	0.23
Avail Cap(c_a), veh/h	203	313	643	164	267	224	489	2220	990	368	1547	690
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.4	47.2	27.4	59.2	54.7	54.0	44.4	11.4	7.7	55.9	22.6	19.8
Incr Delay (d2), s/veh	10.5	0.2	0.1	23.4	1.8	0.7	23.5	0.9	0.0	8.5	1.1	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.8	2.6	7.7	0.8	2.3	0.9	19.7	11.6	0.4	4.3	11.2	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	64.9	47.4	27.6	82.6	56.5	54.7	67.9	12.3	7.7	64.4	23.7	20.5
LnGrp LOS	E	D	C	F	E	D	E	B	A	E	C	C
Approach Vol, veh/h		376			69			1586			973	
Approach Delay, s/veh		41.7			60.2			26.1			26.3	
Approach LOS		D			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	33.4	60.9	13.5	12.2	10.8	83.4	5.2	20.5
Change Period (Y+Rc), s	4.0	6.0	4.0	5.4	4.0	6.0	4.0	5.4
Max Green Setting (Gmax), s	34.0	34.0	14.0	18.6	26.0	42.0	12.0	20.6
Max Q Clear Time (g_c+I1), s	29.0	20.2	9.7	4.8	7.3	23.9	2.8	13.8
Green Ext Time (p_c), s	0.4	6.4	0.0	0.1	0.1	10.7	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	28.9
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	532	3	65	886	45	5	0	50	48	0	23
Future Volume (veh/h)	14	532	3	65	886	45	5	0	50	48	0	23
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1737	1737	1737	1856	1856	1856	1900	1900	1900	1870	1870	1870
Adj Flow Rate, veh/h	15	585	3	71	974	49	5	0	55	53	0	25
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	11	11	11	3	3	3	0	0	0	2	2	2
Cap, veh/h	407	1550	8	634	1780	90	312	0	152	284	0	150
Arrive On Green	0.02	0.46	0.46	0.08	0.52	0.52	0.09	0.00	0.09	0.09	0.00	0.09
Sat Flow, veh/h	1654	3367	17	1767	3411	172	1408	0	1610	1349	0	1585
Grp Volume(v), veh/h	15	287	301	71	503	520	5	0	55	53	0	25
Grp Sat Flow(s),veh/h/ln	1654	1650	1734	1767	1763	1820	1408	0	1610	1349	0	1585
Q Serve(g_s), s	0.2	4.1	4.1	0.7	6.9	6.9	0.1	0.0	1.2	1.4	0.0	0.5
Cycle Q Clear(g_c), s	0.2	4.1	4.1	0.7	6.9	6.9	0.6	0.0	1.2	2.5	0.0	0.5
Prop In Lane	1.00		0.01	1.00		0.09	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	407	759	798	634	920	950	312	0	152	284	0	150
V/C Ratio(X)	0.04	0.38	0.38	0.11	0.55	0.55	0.02	0.00	0.36	0.19	0.00	0.17
Avail Cap(c_a), veh/h	874	1396	1467	1023	1491	1539	980	0	915	362	0	242
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.2	6.4	6.4	4.1	5.8	5.8	15.3	0.0	15.3	16.5	0.0	15.0
Incr Delay (d2), s/veh	0.0	0.5	0.5	0.0	0.8	0.8	0.0	0.0	1.1	0.2	0.0	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.1	1.6	1.7	0.2	2.5	2.6	0.1	0.0	0.7	0.7	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	5.2	6.8	6.8	4.1	6.6	6.5	15.3	0.0	16.4	16.7	0.0	15.4
LnGrp LOS	A	A	A	A	A	A	B		B	B		B
Approach Vol, veh/h		603			1094			60			78	
Approach Delay, s/veh		6.8			6.4			16.3			16.3	
Approach LOS		A			A			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.1	21.1		7.9	4.8	23.3		7.9				
Change Period (Y+Rc), s	4.0	4.5		4.5	4.0	4.5		4.5				
Max Green Setting (Gmax), s	11.0	30.5		5.5	11.0	30.5		20.5				
Max Q Clear Time (g_c+I1), s	2.7	6.1		4.5	2.2	8.9		3.2				
Green Ext Time (p_c), s	0.0	5.4		0.0	0.0	9.9		0.2				

Intersection Summary		
HCM 7th Control Delay, s/veh	7.3	
HCM 7th LOS	A	

Notes
User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	387	363	30	130	459	800	45	1080	125	430	720	687
Future Volume (veh/h)	387	363	30	130	459	800	45	1080	125	430	720	687
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1752	1752	1752	1841	1841	1841	1811	1811	1811	1826	1826	1826
Adj Flow Rate, veh/h	403	378	31	135	478	0	47	1125	0	448	750	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	10	10	10	4	4	4	6	6	6	5	5	5
Cap, veh/h	483	726	59	197	496		59	1110		528	1543	
Arrive On Green	0.15	0.23	0.23	0.06	0.14	0.00	0.03	0.32	0.00	0.16	0.44	0.00
Sat Flow, veh/h	3237	3116	254	3401	3497	1560	1725	3441	1535	3374	3469	1547
Grp Volume(v), veh/h	403	201	208	135	478	0	47	1125	0	448	750	0
Grp Sat Flow(s),veh/h/ln	1618	1664	1706	1700	1749	1560	1725	1721	1535	1687	1735	1547
Q Serve(g_s), s	12.4	10.8	10.9	4.0	13.9	0.0	2.8	33.0	0.0	13.2	15.7	0.0
Cycle Q Clear(g_c), s	12.4	10.8	10.9	4.0	13.9	0.0	2.8	33.0	0.0	13.2	15.7	0.0
Prop In Lane	1.00		0.15	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	483	388	398	197	496		59	1110		528	1543	
V/C Ratio(X)	0.83	0.52	0.52	0.68	0.96		0.79	1.01		0.85	0.49	
Avail Cap(c_a), veh/h	1028	399	409	316	496		160	1110		874	1543	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	42.3	34.2	34.3	47.3	43.6	0.0	49.0	34.6	0.0	42.0	20.1	0.0
Incr Delay (d2), s/veh	2.4	0.7	0.7	2.6	31.2	0.0	13.3	30.4	0.0	2.8	0.4	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.7	7.8	8.0	3.1	12.7	0.0	2.4	24.2	0.0	9.2	9.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	44.7	34.9	35.0	49.8	74.8	0.0	62.3	65.0	0.0	44.8	20.6	0.0
LnGrp LOS	D	C	C	D	E		E	F		D	C	
Approach Vol, veh/h		812			613			1172			1198	
Approach Delay, s/veh		39.8			69.3			64.9			29.6	
Approach LOS		D			E			E			C	

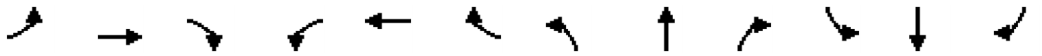
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.5	40.0	11.4	29.3	9.0	52.5	20.8	20.0
Change Period (Y+Rc), s	5.5	7.0	5.5	5.5	5.5	7.0	5.5	5.5
Max Green Setting (Gmax), s	26.5	33.0	9.5	24.5	9.5	33.0	32.5	14.5
Max Q Clear Time (g_c+I1), s	15.2	35.0	6.0	12.9	4.8	17.7	14.4	15.9
Green Ext Time (p_c), s	0.8	0.0	0.1	1.4	0.0	6.3	0.9	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	49.1
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

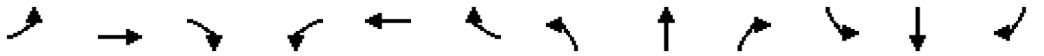
Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	5	19	74	10	30	13	740	23	2	865	10
Future Volume (veh/h)	10	5	19	74	10	30	13	740	23	2	865	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1885	1885	1885	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	11	5	20	78	11	32	14	779	24	2	911	11
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	1	1	1	2	2	2	1	1	1
Cap, veh/h	139	57	115	243	29	51	405	1256	39	477	1295	16
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.70	0.70	0.70	0.70	0.70	0.70
Sat Flow, veh/h	278	447	906	887	229	401	606	1803	56	683	1858	22
Grp Volume(v), veh/h	36	0	0	121	0	0	14	0	803	2	0	922
Grp Sat Flow(s),veh/h/ln	1631	0	0	1517	0	0	606	0	1859	683	0	1880
Q Serve(g_s), s	0.0	0.0	0.0	2.5	0.0	0.0	0.6	0.0	10.4	0.1	0.0	13.2
Cycle Q Clear(g_c), s	0.9	0.0	0.0	3.3	0.0	0.0	13.8	0.0	10.4	10.5	0.0	13.2
Prop In Lane	0.31		0.56	0.64		0.26	1.00		0.03	1.00		0.01
Lane Grp Cap(c), veh/h	310	0	0	323	0	0	405	0	1295	477	0	1310
V/C Ratio(X)	0.12	0.00	0.00	0.37	0.00	0.00	0.03	0.00	0.62	0.00	0.00	0.70
Avail Cap(c_a), veh/h	822	0	0	817	0	0	732	0	2299	846	0	2326
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.6	0.0	0.0	18.7	0.0	0.0	8.2	0.0	3.7	6.5	0.0	4.1
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.5	0.0	0.0	0.1	0.0	0.8	0.0	0.0	1.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.0	1.1	0.0	0.0	0.1	0.0	1.6	0.0	0.0	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	17.8	0.0	0.0	19.2	0.0	0.0	8.3	0.0	4.5	6.5	0.0	5.3
LnGrp LOS	B			B			A		A	A		A
Approach Vol, veh/h		36			121			817			924	
Approach Delay, s/veh		17.8			19.2			4.6			5.3	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	35.5	9.7	35.5	9.7
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	56.0	21.0	56.0	21.0
Max Q Clear Time (g_c+I1), s	15.2	5.3	15.8	2.9
Green Ext Time (p_c), s	16.3	0.4	13.2	0.1

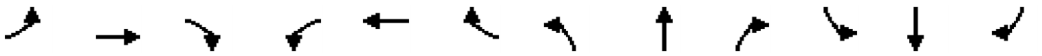
Intersection Summary	
HCM 7th Control Delay, s/veh	6.1
HCM 7th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	20	98	40	10	10	92	661	20	5	813	75
Future Volume (veh/h)	95	20	98	40	10	10	92	661	20	5	813	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1870	1870	1870	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	103	22	107	43	11	11	100	718	22	5	884	82
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	2	2	2	2	2	2	1	1	1
Cap, veh/h	298	247	207	285	114	114	357	1143	35	424	1097	898
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.06	0.63	0.63	0.01	0.58	0.58
Sat Flow, veh/h	1369	1856	1561	1254	854	854	1781	1803	55	1795	1885	1542
Grp Volume(v), veh/h	103	22	107	43	0	22	100	0	740	5	884	82
Grp Sat Flow(s),veh/h/ln	1369	1856	1561	1254	0	1709	1781	0	1858	1795	1885	1542
Q Serve(g_s), s	3.9	0.6	3.5	1.7	0.0	0.6	1.1	0.0	13.3	0.1	20.2	1.3
Cycle Q Clear(g_c), s	4.5	0.6	3.5	2.3	0.0	0.6	1.1	0.0	13.3	0.1	20.2	1.3
Prop In Lane	1.00		1.00	1.00		0.50	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	298	247	207	285	0	227	357	0	1178	424	1097	898
V/C Ratio(X)	0.35	0.09	0.52	0.15	0.00	0.10	0.28	0.00	0.63	0.01	0.81	0.09
Avail Cap(c_a), veh/h	640	711	598	599	0	655	613	0	1373	775	1393	1139
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.9	20.9	22.1	21.9	0.0	20.9	8.4	0.0	6.1	5.7	9.0	5.1
Incr Delay (d2), s/veh	0.5	0.1	1.5	0.2	0.0	0.1	0.3	0.0	1.0	0.0	3.3	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.2	1.3	0.5	0.0	0.2	0.4	0.0	3.6	0.0	6.8	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	23.4	21.0	23.6	22.0	0.0	21.0	8.6	0.0	7.1	5.7	12.4	5.1
LnGrp LOS	C	C	C	C		C	A		A	A	B	A
Approach Vol, veh/h		232			65			840			971	
Approach Delay, s/veh		23.3			21.7			7.3			11.7	
Approach LOS		C			C			A			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.1	36.4		11.3	4.3	39.2		11.3				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	11.0	40.5		21.0	11.0	40.5		21.0				
Max Q Clear Time (g_c+I1), s	3.1	22.2		4.3	2.1	15.3		6.5				
Green Ext Time (p_c), s	0.1	9.7		0.1	0.0	8.7		0.5				

Intersection Summary												
HCM 7th Control Delay, s/veh			11.5									
HCM 7th LOS			B									



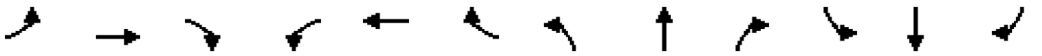
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	10	153	20	10	3	162	648	10	15	846	130
Future Volume (veh/h)	160	10	153	20	10	3	162	648	10	15	846	130
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1811	1811	1811	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	168	11	161	21	11	3	171	682	11	16	891	137
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	6	6	6	2	2	2	2	2	2
Cap, veh/h	566	27	397	375	252	69	275	1701	27	395	1462	225
Arrive On Green	0.10	0.27	0.27	0.02	0.18	0.18	0.48	0.48	0.48	0.48	0.48	0.48
Sat Flow, veh/h	1795	102	1490	1725	1370	374	548	3577	58	749	3074	473
Grp Volume(v), veh/h	168	0	172	21	0	14	171	339	354	16	515	513
Grp Sat Flow(s),veh/h/ln	1795	0	1592	1725	0	1743	548	1777	1858	749	1777	1769
Q Serve(g_s), s	3.8	0.0	4.9	0.5	0.0	0.4	14.3	6.8	6.8	0.8	11.7	11.7
Cycle Q Clear(g_c), s	3.8	0.0	4.9	0.5	0.0	0.4	26.0	6.8	6.8	7.5	11.7	11.7
Prop In Lane	1.00		0.94	1.00		0.21	1.00		0.03	1.00		0.27
Lane Grp Cap(c), veh/h	566	0	425	375	0	321	275	845	884	395	845	841
V/C Ratio(X)	0.30	0.00	0.41	0.06	0.00	0.04	0.62	0.40	0.40	0.04	0.61	0.61
Avail Cap(c_a), veh/h	1071	0	1602	1003	0	1753	275	845	884	395	845	841
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.9	0.0	16.5	17.5	0.0	18.4	21.4	9.3	9.3	11.7	10.6	10.6
Incr Delay (d2), s/veh	0.2	0.0	1.0	0.0	0.0	0.1	3.8	0.2	0.2	0.0	1.1	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	1.7	0.2	0.0	0.1	2.4	2.2	2.3	0.1	3.9	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.1	0.0	17.4	17.6	0.0	18.4	25.2	9.5	9.5	11.8	11.7	11.7
LnGrp LOS	B		B	B		B	C	A	A	B	B	B
Approach Vol, veh/h		340			35			864			1044	
Approach Delay, s/veh		15.8			17.9			12.6			11.7	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.1	19.6		30.0	9.6	15.1		30.0				
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	21.0	55.0		26.0	21.0	55.0		26.0				
Max Q Clear Time (g_c+I1), s	2.5	6.9		13.7	5.8	2.4		28.0				
Green Ext Time (p_c), s	0.0	1.9		4.7	0.3	0.1		0.0				

Intersection Summary												
HCM 7th Control Delay, s/veh			12.8									
HCM 7th LOS			B									

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	0	155	24	0	70	145	710	25	83	856	75
Future Volume (veh/h)	45	0	155	24	0	70	145	710	25	83	856	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.98	0.99		0.98	1.00		0.97	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1870	1870	1870	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	46	0	160	25	0	72	149	732	26	86	882	77
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	2	2	2	1	1	1	2	2	2
Cap, veh/h	287	0	278	207	0	274	191	2123	75	414	1443	126
Arrive On Green	0.18	0.00	0.18	0.18	0.00	0.18	0.11	0.60	0.60	0.44	0.44	0.44
Sat Flow, veh/h	1333	0	1585	1215	0	1561	1795	3524	125	704	3303	288
Grp Volume(v), veh/h	46	0	160	25	0	72	149	372	386	86	474	485
Grp Sat Flow(s),veh/h/ln	1333	0	1585	1215	0	1561	1795	1791	1858	704	1777	1815
Q Serve(g_s), s	2.1	0.0	6.3	1.3	0.0	2.7	5.5	7.0	7.0	5.3	13.9	13.9
Cycle Q Clear(g_c), s	4.8	0.0	6.3	7.6	0.0	2.7	5.5	7.0	7.0	5.3	13.9	13.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.07	1.00		0.16
Lane Grp Cap(c), veh/h	287	0	278	207	0	274	191	1079	1120	414	776	793
V/C Ratio(X)	0.16	0.00	0.57	0.12	0.00	0.26	0.78	0.34	0.34	0.21	0.61	0.61
Avail Cap(c_a), veh/h	507	0	539	407	0	531	558	1377	1429	679	1445	1476
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.2	0.0	25.6	29.0	0.0	24.1	29.4	6.7	6.7	12.2	14.6	14.6
Incr Delay (d2), s/veh	0.2	0.0	1.1	0.2	0.0	0.3	4.2	0.3	0.3	0.4	1.2	1.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.2	0.0	4.3	0.7	0.0	1.8	4.5	4.0	4.2	1.4	9.0	9.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	26.3	0.0	26.7	29.2	0.0	24.4	33.7	7.0	7.0	12.6	15.8	15.8
LnGrp LOS	C		C	C		C	C	A	A	B	B	B
Approach Vol, veh/h		206			97			907			1045	
Approach Delay, s/veh		26.6			25.6			11.4			15.5	
Approach LOS		C			C			B			B	

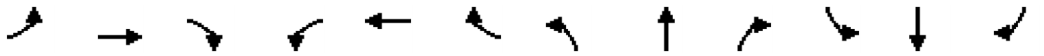
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	11.2	37.5		18.9		48.7		18.9				
Change Period (Y+Rc), s	4.0	* 8		7.0		8.0		7.0				
Max Green Setting (Gmax), s	21.0	* 55		23.0		52.0		23.0				
Max Q Clear Time (g_c+I1), s	7.5	15.9		8.3		9.0		9.6				
Green Ext Time (p_c), s	0.2	13.7		0.7		8.9		0.3				

Intersection Summary	
HCM 7th Control Delay, s/veh	15.3
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



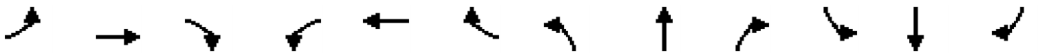
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	500	220	120	370	270	175	460	60	528	517	15
Future Volume (veh/h)	40	500	220	120	370	270	175	460	60	528	517	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1885	1885	1885	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	41	515	227	124	381	278	180	474	62	544	533	15
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	1	1	1	2	2	2	1	1	1
Cap, veh/h	55	643	481	158	853	686	223	872	113	672	628	18
Arrive On Green	0.03	0.18	0.18	0.09	0.24	0.24	0.13	0.28	0.28	0.19	0.34	0.34
Sat Flow, veh/h	1781	3554	1563	1795	3582	1588	1781	3151	410	3483	1823	51
Grp Volume(v), veh/h	41	515	227	124	381	278	180	266	270	544	0	548
Grp Sat Flow(s),veh/h/ln	1781	1777	1563	1795	1791	1588	1781	1777	1784	1742	0	1875
Q Serve(g_s), s	1.7	10.3	8.8	5.0	6.8	9.0	7.3	9.5	9.6	11.1	0.0	20.2
Cycle Q Clear(g_c), s	1.7	10.3	8.8	5.0	6.8	9.0	7.3	9.5	9.6	11.1	0.0	20.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.23	1.00		0.03
Lane Grp Cap(c), veh/h	55	643	481	158	853	686	223	491	494	672	0	646
V/C Ratio(X)	0.75	0.80	0.47	0.79	0.45	0.41	0.81	0.54	0.55	0.81	0.00	0.85
Avail Cap(c_a), veh/h	251	715	513	253	853	686	478	715	718	1402	0	755
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.8	29.2	21.0	33.3	24.2	14.6	31.7	22.9	23.0	28.8	0.0	22.6
Incr Delay (d2), s/veh	11.8	5.6	0.5	5.2	0.3	0.3	4.3	1.4	1.4	1.5	0.0	8.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.6	8.2	5.5	4.2	4.9	5.3	6.0	7.2	7.3	8.1	0.0	15.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	47.6	34.9	21.5	38.5	24.5	14.9	36.0	24.4	24.4	30.2	0.0	31.4
LnGrp LOS	D	C	C	D	C	B	D	C	C	C		C
Approach Vol, veh/h		783			783			716			1092	
Approach Delay, s/veh		31.7			23.3			27.3			30.8	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.3	30.7	6.8	22.7	19.4	25.6	11.1	18.5
Change Period (Y+Rc), s	5.0	5.0	4.5	5.0	5.0	5.0	4.5	5.0
Max Green Setting (Gmax), s	20.0	30.0	10.5	15.0	30.0	30.0	10.5	15.0
Max Q Clear Time (g_c+I1), s	9.3	22.2	3.7	11.0	13.1	11.6	7.0	12.3
Green Ext Time (p_c), s	0.2	3.0	0.0	1.1	1.2	4.5	0.1	1.0

Intersection Summary	
HCM 7th Control Delay, s/veh	28.5
HCM 7th LOS	C

Notes

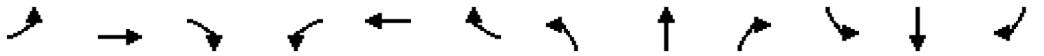
User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	119	45	45	20	45	45	45	501	20	20	594	158
Future Volume (veh/h)	119	45	45	20	45	45	45	501	20	20	594	158
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.96	0.97		0.98	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1900	1900	1900	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	123	46	46	21	46	46	46	516	21	21	612	163
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	0	0	0	3	3	3	3	3	3
Cap, veh/h	344	135	135	300	86	86	244	864	35	410	661	176
Arrive On Green	0.08	0.16	0.16	0.02	0.10	0.10	0.04	0.49	0.49	0.02	0.47	0.47
Sat Flow, veh/h	1795	844	844	1810	863	863	1767	1770	72	1767	1403	374
Grp Volume(v), veh/h	123	0	92	21	0	92	46	0	537	21	0	775
Grp Sat Flow(s),veh/h/ln	1795	0	1688	1810	0	1726	1767	0	1842	1767	0	1776
Q Serve(g_s), s	3.1	0.0	2.6	0.5	0.0	2.7	0.7	0.0	11.1	0.3	0.0	21.7
Cycle Q Clear(g_c), s	3.1	0.0	2.6	0.5	0.0	2.7	0.7	0.0	11.1	0.3	0.0	21.7
Prop In Lane	1.00		0.50	1.00		0.50	1.00		0.04	1.00		0.21
Lane Grp Cap(c), veh/h	344	0	270	300	0	171	244	0	899	410	0	836
V/C Ratio(X)	0.36	0.00	0.34	0.07	0.00	0.54	0.19	0.00	0.60	0.05	0.00	0.93
Avail Cap(c_a), veh/h	572	0	670	469	0	685	713	0	1236	909	0	1192
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.2	0.0	19.7	20.8	0.0	22.7	11.3	0.0	9.8	7.9	0.0	13.1
Incr Delay (d2), s/veh	0.2	0.0	0.3	0.0	0.0	1.0	0.1	0.0	0.2	0.0	0.0	7.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	1.0	0.2	0.0	1.1	0.2	0.0	3.6	0.1	0.0	8.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	18.4	0.0	20.0	20.8	0.0	23.6	11.5	0.0	10.0	8.0	0.0	20.9
LnGrp LOS	B		C	C		C	B		B	A		C
Approach Vol, veh/h		215			113			583			796	
Approach Delay, s/veh		19.1			23.1			10.1			20.6	
Approach LOS		B			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.0	29.4	8.3	9.2	5.1	30.3	5.1	12.5
Change Period (Y+Rc), s	4.0	4.5	4.0	4.0	4.0	4.5	4.0	4.0
Max Green Setting (Gmax), s	16.0	35.5	11.0	21.0	16.0	35.5	6.0	21.0
Max Q Clear Time (g_c+I1), s	2.7	23.7	5.1	4.7	2.3	13.1	2.5	4.6
Green Ext Time (p_c), s	0.0	1.2	0.0	0.1	0.0	0.8	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	17.0
HCM 7th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	155	49	505	10	45	55	301	835	15	40	1210	180
Future Volume (veh/h)	155	49	505	10	45	55	301	835	15	40	1210	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1752	1752	1752	1856	1856	1856	1870	1870	1870
Adj Flow Rate, veh/h	158	50	515	10	46	56	307	852	15	41	1235	184
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	10	10	10	3	3	3	2	2	2
Cap, veh/h	183	325	571	16	141	116	333	2249	1002	53	1702	759
Arrive On Green	0.10	0.17	0.17	0.01	0.08	0.08	0.19	0.64	0.64	0.03	0.48	0.48
Sat Flow, veh/h	1781	1870	1563	1668	1752	1440	1767	3526	1571	1781	3554	1583
Grp Volume(v), veh/h	158	50	515	10	46	56	307	852	15	41	1235	184
Grp Sat Flow(s),veh/h/ln	1781	1870	1563	1668	1752	1440	1767	1763	1571	1781	1777	1583
Q Serve(g_s), s	11.4	2.9	22.6	0.8	3.2	4.8	22.2	15.0	0.5	3.0	36.1	8.9
Cycle Q Clear(g_c), s	11.4	2.9	22.6	0.8	3.2	4.8	22.2	15.0	0.5	3.0	36.1	8.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	183	325	571	16	141	116	333	2249	1002	53	1702	759
V/C Ratio(X)	0.87	0.15	0.90	0.64	0.33	0.48	0.92	0.38	0.01	0.77	0.73	0.24
Avail Cap(c_a), veh/h	219	325	571	205	278	228	421	2249	1002	288	1702	759
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.5	45.6	39.4	64.2	56.4	57.1	51.8	11.2	8.6	62.6	27.0	20.0
Incr Delay (d2), s/veh	22.5	0.1	17.2	23.9	0.8	1.9	21.1	0.5	0.0	13.6	2.7	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	10.3	2.5	24.9	0.8	2.7	3.3	16.9	9.0	0.3	2.7	21.0	6.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	79.9	45.7	56.6	88.1	57.2	59.0	72.9	11.7	8.6	76.2	29.8	20.7
LnGrp LOS	E	D	E	F	E	E	E	B	A	E	C	C
Approach Vol, veh/h		723			112			1174			1460	
Approach Delay, s/veh		60.9			60.9			27.7			29.9	
Approach LOS		E			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	28.5	68.3	17.3	15.9	7.9	88.9	5.2	28.0
Change Period (Y+Rc), s	4.0	6.0	4.0	5.4	4.0	6.0	4.0	5.4
Max Green Setting (Gmax), s	31.0	43.0	16.0	20.6	21.0	53.0	16.0	20.6
Max Q Clear Time (g_c+I1), s	24.2	38.1	13.4	6.8	5.0	17.0	2.8	24.6
Green Ext Time (p_c), s	0.3	4.0	0.0	0.2	0.0	10.3	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	36.6
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	1048	55	140	826	46	30	0	80	40	0	16
Future Volume (veh/h)	17	1048	55	140	826	46	30	0	80	40	0	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	0.98		0.98	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1870	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	18	1127	59	151	888	49	32	0	86	43	0	17
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	2	2	2	0	0	0	0	0	0
Cap, veh/h	455	1710	89	462	1968	109	312	0	198	249	0	198
Arrive On Green	0.03	0.49	0.49	0.11	0.58	0.58	0.13	0.00	0.13	0.13	0.00	0.13
Sat Flow, veh/h	1795	3461	181	1781	3418	189	1393	0	1579	1314	0	1579
Grp Volume(v), veh/h	18	583	603	151	462	475	32	0	86	43	0	17
Grp Sat Flow(s),veh/h/ln	1795	1791	1851	1781	1777	1830	1393	0	1579	1314	0	1579
Q Serve(g_s), s	0.2	11.7	11.7	1.6	7.1	7.1	1.0	0.0	2.4	1.5	0.0	0.5
Cycle Q Clear(g_c), s	0.2	11.7	11.7	1.6	7.1	7.1	1.4	0.0	2.4	3.9	0.0	0.5
Prop In Lane	1.00		0.10	1.00		0.10	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	455	885	914	462	1023	1054	312	0	198	249	0	198
V/C Ratio(X)	0.04	0.66	0.66	0.33	0.45	0.45	0.10	0.00	0.43	0.17	0.00	0.09
Avail Cap(c_a), veh/h	821	1143	1181	678	1134	1167	735	0	677	249	0	198
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.7	9.1	9.1	6.2	5.8	5.8	19.1	0.0	19.3	21.1	0.0	18.5
Incr Delay (d2), s/veh	0.0	1.3	1.3	0.2	0.5	0.5	0.1	0.0	1.1	0.2	0.0	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.1	6.2	6.4	0.5	3.1	3.1	0.6	0.0	1.6	0.8	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	5.7	10.4	10.4	6.4	6.3	6.3	19.2	0.0	20.4	21.4	0.0	18.6
LnGrp LOS	A	B	B	A	A	A	B		C	C		B
Approach Vol, veh/h		1204			1088			118			60	
Approach Delay, s/veh		10.3			6.3			20.1			20.6	
Approach LOS		B			A			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.2	28.1		10.5	5.3	32.0		10.5				
Change Period (Y+Rc), s	4.0	4.5		4.5	4.0	4.5		4.5				
Max Green Setting (Gmax), s	11.0	30.5		5.5	11.0	30.5		20.5				
Max Q Clear Time (g_c+I1), s	3.6	13.7		5.9	2.2	9.1		4.4				
Green Ext Time (p_c), s	0.1	9.9		0.0	0.0	8.9		0.4				

Intersection Summary	
HCM 7th Control Delay, s/veh	9.3
HCM 7th LOS	A

Notes
User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	729	819	100	145	523	505	55	805	180	790	1115	684
Future Volume (veh/h)	729	819	100	145	523	505	55	805	180	790	1115	684
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1856	1856	1856	1870	1870	1870
Adj Flow Rate, veh/h	744	836	102	148	534	0	56	821	0	806	1138	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	3	3	3	2	2	2
Cap, veh/h	808	928	113	202	413		72	899		728	1511	
Arrive On Green	0.23	0.29	0.29	0.06	0.12	0.00	0.04	0.26	0.00	0.21	0.43	0.00
Sat Flow, veh/h	3483	3208	391	3483	3582	1598	1767	3526	1572	3456	3554	1585
Grp Volume(v), veh/h	744	467	471	148	534	0	56	821	0	806	1138	0
Grp Sat Flow(s),veh/h/ln	1742	1791	1808	1742	1791	1598	1767	1763	1572	1728	1777	1585
Q Serve(g_s), s	26.2	31.5	31.5	5.3	14.5	0.0	3.9	28.4	0.0	26.5	34.1	0.0
Cycle Q Clear(g_c), s	26.2	31.5	31.5	5.3	14.5	0.0	3.9	28.4	0.0	26.5	34.1	0.0
Prop In Lane	1.00		0.22	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	808	518	523	202	413		72	899		728	1511	
V/C Ratio(X)	0.92	0.90	0.90	0.73	1.29		0.78	0.91		1.11	0.75	
Avail Cap(c_a), veh/h	900	518	523	263	413		134	925		728	1511	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	47.2	42.9	42.9	58.3	55.6	0.0	59.7	45.5	0.0	49.6	30.6	0.0
Incr Delay (d2), s/veh	13.2	18.4	18.3	5.7	148.7	0.0	10.5	13.5	0.0	66.5	2.5	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	18.5	23.0	23.2	4.4	23.6	0.0	3.4	19.5	0.0	25.8	20.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	60.4	61.3	61.2	63.9	204.4	0.0	70.2	59.0	0.0	116.1	33.1	0.0
LnGrp LOS	E	E	E	E	F		E	E		F	C	
Approach Vol, veh/h		1682			682			877			1944	
Approach Delay, s/veh		60.9			173.9			59.7			67.5	
Approach LOS		E			F			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	32.0	39.1	12.8	41.9	10.6	60.4	34.7	20.0
Change Period (Y+Rc), s	5.5	7.0	5.5	5.5	5.5	7.0	5.5	5.5
Max Green Setting (Gmax), s	26.5	33.0	9.5	24.5	9.5	33.0	32.5	14.5
Max Q Clear Time (g_c+I1), s	28.5	30.4	7.3	33.5	5.9	36.1	28.2	16.5
Green Ext Time (p_c), s	0.0	1.6	0.1	0.0	0.0	0.0	0.9	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	78.0
HCM 7th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Appendix C: Detailed Trip Generation

OR City

UNCAPPED CAPPED 20%

Proposed Use

Land Use	Setting	Size	Units	Model	Equation	Rate	In %	Gross Trips Inbound	Gross Trips Outbound	Gross Trips Subtotal	Land Use Type	Internal Trips In	Internal Trips Out	Internal Trips Total	Internal Trips %	External Trips In	External Trips Out	External Trips Total	Internal Trips In	Internal Trips Out	Internal Trips Total	Internal Trips %	External Trips In	External Trips Out	External Trips Total	Pass-By Trips %	Pass-By Trips In	Pass-By Trips Out	Pass-By Trips Total	Primary Trips In	Primary Trips Out	Primary Trips Total
Multifamily (Mid-Rise) (LU 221)		**210**	du								Residential																					
Daily	General Urban/Suburban			Equation (lin)	T = 4.77(X) - 46.46	-	50%	478	478	956		149	149	298	31%	329	329	658	81	81	162	17%	397	397	794					397	397	794
AM Peak Hour	General Urban/Suburban			Equation (lin)	T = 0.44(X) - 11.61	-	23%	19	62	81		1	13	14	17%	18	49	67	1	13	14	17%	18	49	67					18	49	67
PM Peak Hour	General Urban/Suburban			Equation (lin)	T = 0.39(X) + 0.34	-	61%	50	32	82		24	13	37	45%	26	19	45	10	6	16	20%	40	26	66					40	26	66
Grocery (850)		**13,500**	sf								Retail																					
Daily	General Urban/Suburban			Rate	-	93.84	50%	633	633	1,266		224	224	448	35%	409	409	818	122	122	244	19%	511	511	1022	24%	123	123	246	388	388	776
AM Peak Hour	General Urban/Suburban			Rate	-	2.86	59%	23	16	39		3	2	5	13%	20	14	34	3	2	5	13%	20	14	34	24%	4	4	8	16	10	26
PM Peak Hour	General Urban/Suburban			Rate	-	8.95	50%	61	60	121		37	33	70	58%	24	27	51	16	14	30	25%	45	46	91	24%	11	11	22	34	35	69
Fast-Food Restaurant with Drive-Through Window (934)		**4,915**	sf								Restaurant																					
Daily	General Urban/Suburban			Rate	-	467.48	50%	1,149	1,149	2,298		268	268	536	23%	881	881	1762	146	146	292	13%	1003	1003	2006	53%	527	527	1054	476	476	952
AM Peak Hour	General Urban/Suburban			Rate	-	44.61	51%	112	107	219		14	3	17	8%	98	104	202	14	3	17	8%	98	104	202	50%	51	51	102	47	53	100
PM Peak Hour	General Urban/Suburban			Rate	-	33.03	52%	84	78	162		24	39	63	39%	60	39	99	10	17	27	17%	74	61	135	55%	37	37	74	37	24	61
Subtotal																																
Daily								2,260	2,260	4,520		641	641	1,282	28%	1,619	1,619	3,238	349	349	698	15%	1,911	1,911	3,822		650	650	1,300	1,261	1,261	2,522
AM Peak Hour								154	185	339		18	18	36	11%	136	167	303	18	18	36	11%	136	167	303		55	55	110	81	112	193
PM Peak Hour								195	170	365		85	85	170	47%	110	85	195	37	37	74	20%	159	133	291		48	48	96	111	85	195

Notes:

1. Trip rates based on Institute of Transportation Engineers' (ITE) *Trip Generation Manual (*11th Edition) equation and average trip rates as shown above.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Oregon City Mixed Use	**Organization:**	
Project Location:		**Performed By:**	
Scenario Description:		**Date:**	
Analysis Year:		**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0	0	0
Retail				39	23	16
Restaurant				219	112	107
Cinema/Entertainment				0	0	0
Residential				81	19	62
Hotel				0	0	0
All Other Land Uses[2]				0	0	0
Total				339	154	185

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		2	0	0	0
Restaurant	0	2		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	12	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	339	154	185
Internal Capture Percentage	11%	12%	10%
External Vehicle-Trips[3]	303	136	167
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	13%	13%
Restaurant	13%	3%
Cinema/Entertainment	N/A	N/A
Residential	5%	21%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	Oregon City Mixed Use
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	23	23	1.00	16	16
Restaurant	1.00	112	112	1.00	107	107
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	19	19	1.00	62	62
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	5		2	0	2	0
Restaurant	33	15		0	4	3
Cinema/Entertainment	0	0	0		0	0
Residential	1	1	12	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		7	26	0	0	0
Retail	0		56	0	0	0
Restaurant	0	2		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	4	22	0		0
Hotel	0	1	7	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	3	20	23	20	0	0
Restaurant	14	98	112	98	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	18	19	18	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	2	14	16	14	0	0
Restaurant	3	104	107	104	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	13	49	62	49	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Oregon City Mixed Use	**Organization:**	
Project Location:		**Performed By:**	
Scenario Description:		**Date:**	
Analysis Year:		**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0	0	0
Retail				121	61	60
Restaurant				162	84	78
Cinema/Entertainment				0	0	0
Residential				82	50	32
Hotel				0	0	0
All Other Land Uses[2]				0	0	0
Total				365	195	170

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		17	0	16	0
Restaurant	0	31		0	8	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	6	7	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	365	195	170
Internal Capture Percentage	47%	44%	50%
External Vehicle-Trips[3]	195	110	85
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	61%	55%
Restaurant	29%	50%
Cinema/Entertainment	N/A	N/A
Residential	48%	41%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	Oregon City Mixed Use
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	61	61	1.00	60	60
Restaurant	1.00	84	84	1.00	78	78
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	50	50	1.00	32	32
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	1		17	2	16	3
Restaurant	2	32		6	14	5
Cinema/Entertainment	0	0	0		0	0
Residential	1	13	7	0		1
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		5	2	0	2	0
Retail	0		24	0	23	0
Restaurant	0	31		0	8	0
Cinema/Entertainment	0	2	3		2	0
Residential	0	6	12	0		0
Hotel	0	1	4	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	37	24	61	24	0	0
Restaurant	24	60	84	60	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	24	26	50	26	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	33	27	60	27	0	0
Restaurant	39	39	78	39	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	13	19	32	19	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

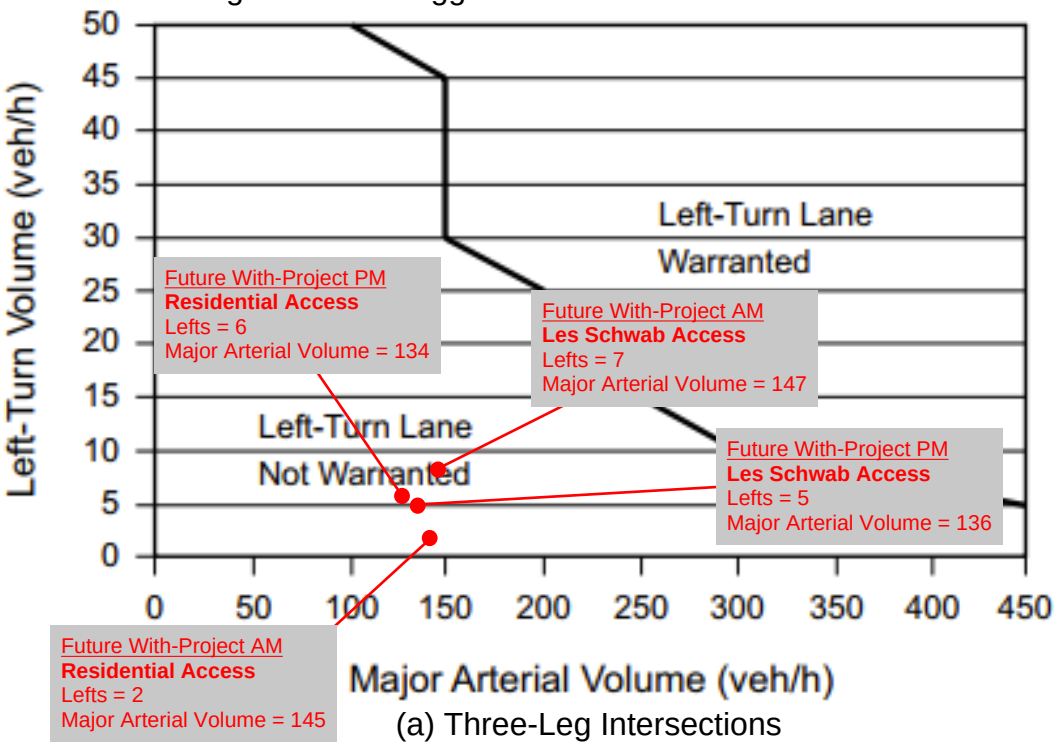
[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

Appendix D: Left Turn Lane Warrant

AASHTO Policy on Geometric Design of Highways and Streets

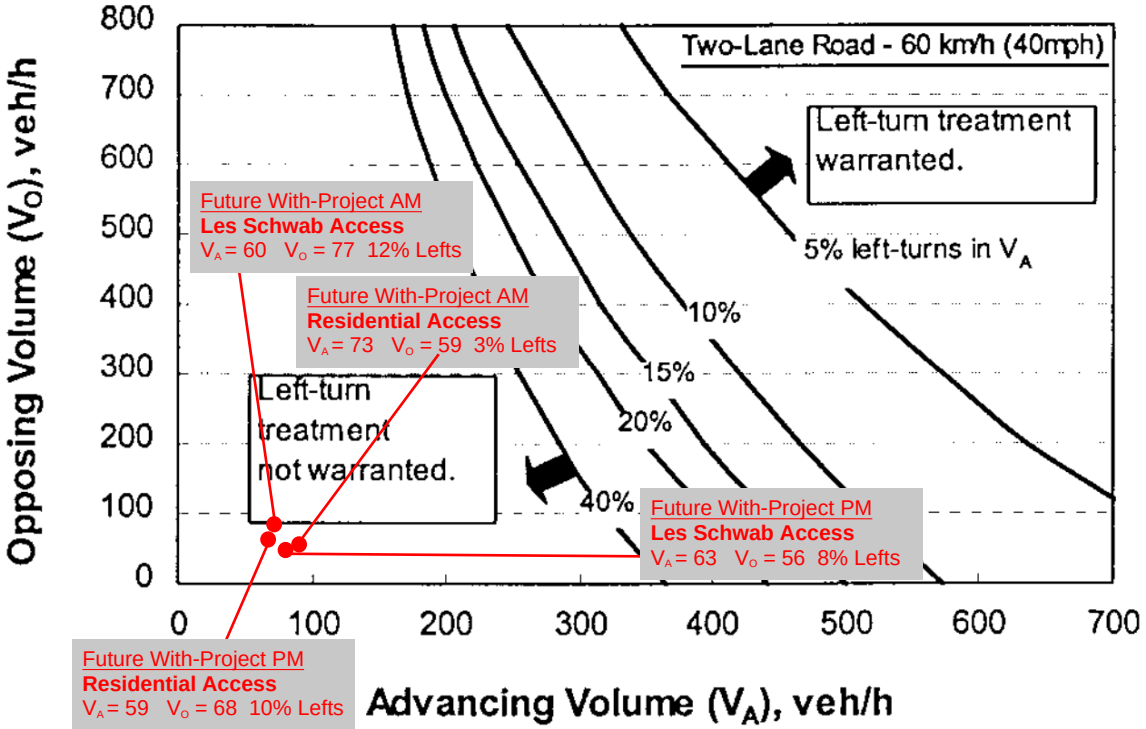
Figure 9-35 - Suggested Left-Turn Lane Warrants



(a) Three-Leg Intersections

NCHRP Report 457 *Evaluating Intersection Improvements*

Figure 2-5



(a)

Appendix E: Queueing Analysis

Queuing Analysis

Weekday AM Peak Hour (Average)

Number of Lanes	2	
Hourly Flow Rate (vph)	49	per Lane
Total Hourly Flow Rate	98	vehicles per hour
Average Stopped Time / Service Time	4:05	(mm:ss)
Average Service Rate (Total)	29.4	vehicles per hour
Average Vehicle Length	25	feet

Total Queues		Queues per Lane	
50th Percentile Queue		**50th Percentile Queue**	
Number of Vehicles	Length (ft)	Number of Vehicles	Length (ft)
7	175	3.5	87.5
85th Percentile Queue		**85th Percentile Queue**	
Number of Vehicles	Length (ft)	Number of Vehicles	Length (ft)
10	250	5	125
95th Percentile Queue		**95th Percentile Queue**	
Number of Vehicles	Length (ft)	Number of Vehicles	Length (ft)
12	300	6	150

Queuing Analysis

Weekday PM Peak Hour (Average)

Number of Lanes	2	
Hourly Flow Rate (vph)	37	per Lane
Total Hourly Flow Rate	74	vehicles per hour
Average Stopped Time / Service Time	4:25	(mm:ss)
Average Service Rate (Total)	27.2	vehicles per hour
Average Vehicle Length	25	feet

Total Queues		Queues per Lane	
50th Percentile Queue		**50th Percentile Queue**	
Number of Vehicles	Length (ft)	Number of Vehicles	Length (ft)
6	150	3	75
85th Percentile Queue		**85th Percentile Queue**	
Number of Vehicles	Length (ft)	Number of Vehicles	Length (ft)
9	225	4.5	112.5
95th Percentile Queue		**95th Percentile Queue**	
Number of Vehicles	Length (ft)	Number of Vehicles	Length (ft)
11	275	5.5	137.5

Traffic Impact Analysis

OREGON CITY MIXED-USE

Prepared for:
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March 2026

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1.25192.00



EXPIRES: 12/31/26

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Introduction

This traffic impact analysis (TIA) identifies potential transportation-related impacts associated with the proposed Mixed-Use Development in Oregon City, Oregon. As necessary, mitigation measures are identified that would reduce or offset significant transportation related impacts that the project may have on the surrounding transportation system.

Project Description

The proposed project site is located at 1367 Molalla Avenue in Oregon City, as shown in the vicinity map included in Figure 1.[1] The site is comprised of 4 parcels (3 parcels with land use development and 1 for right-of-way) in which the proposed mixed-use development is anticipated to include the following:

- Parcel A: 14,600 square feet (sf) retail
- Parcel B: up to 210 multi-family apartment units
- Parcel C: *No land use - right-of-way*
- Parcel D: 4,900 sf fast food restaurant with drive-through

The existing site is vacant. With the development of the site, a new roadway connection would be completed between the existing signalized intersections along Molalla Avenue at the west side of the site and Beavercreek Road south of the site. The preliminary site plan is illustrated in Figure 2. The proposed project is anticipated to be fully constructed and operational by 2030.

Study Scope and Study Area

The following off-site intersections surrounding the project site were identified for analysis following coordination with City of Oregon City and Oregon Department of Transportation (ODOT) staff:

1. Molalla Ave/Pearl St
2. Molalla Ave/Holmes Ln
3. Molalla Ave/Warner Milne Rd
4. Molalla Ave/Safeway access/Future site access
5. Molalla Ave/Beavercreek Rd
6. Molalla Ave/Clairmont Way
7. Molalla Ave/ OR-213
8. Commercial Access/Beavercreek Rd/Future site access
9. OR-213/Beavercreek Rd

The analysis includes a review of existing conditions in the vicinity of the project site, including the transportation network, planned improvements, existing and future without-project AM and PM[2] peak hour traffic volumes, traffic operations, and traffic safety. Future with-project conditions are evaluated by adding site-generated traffic to future without-project volumes. Future without and with-project conditions are compared to identify the impacts the proposed project has on the surrounding transportation system.

[1] The proposed land use and overall site plan is revised relative to the previously completed October 2025 TIA.

[2] Note that review of additional time periods is included in the TIA below, but as discussed in greater detail below, the operational analysis is limited to the AM and PM peak hours.



Site Vicinity and Study Intersections

FIGURE 1

OR City Mixed-Use

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Preliminary Site Plan

OR City Mixed-Use

FIGURE **2**

transpogroup

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Existing & Future Without-Project Conditions

This section describes both existing and future (2030) without-project conditions within the identified study area. Study area characteristics are provided for the transportation system, planned improvements, existing and future forecast without-project traffic volumes, traffic operations, and traffic safety.

Roadway Network

The following sections describe the existing street network within the vicinity of the proposed project and anticipated planned improvements.

Existing

The primary roadways within the study area and their characteristics near the study intersections are described below.

Molalla Avenue is a five-lane roadway functionally classified by the City of Oregon City as a minor arterial and has a speed limit of 30 mph. Molalla Avenue is a 2 to 3 lane roadway north of Warner Milne Road and south of Beavercreek Road, and five lane roadway Warner Milne Road and Beavercreek Road. Sidewalks are provided on both sides of Molalla Avenue through the entirety of the study area. Bike lanes are available on both sides north of Gales Lane, and south of the Safeway access driveway.

Beavercreek Road is a 5-lane roadway functionally classified as a minor arterial west of Molalla Avenue and a major arterial east of Molalla Avenue. Beavercreek Road has a speed limit of 35 mph in the vicinity of the project site. Beavercreek Road is a 3 to 5 lane roadway west of Molalla Avenue and a 5 to 6 lane road east of Molalla Avenue with additional urn lanes present surrounding its intersection with OR-213. Sidewalks and bicycle lanes are provided on both sides of the roadway between Molalla Avenue and OR-213.

OR-213 (Cascade Highway South) is a State Highway Route classified as a principal arterial. OR-213 is a four-lane roadway with a wide median north and south of its intersection with S Beavercreek Road, which transitions to a 6-lane roadway south of Beavercreek Road, and a 7-lane roadway north of Beavercreek Road. The speed limit along OR-213 in the study area is 55 mph. Sidewalks and bike lanes are available on the east side of OR-213 south of Beavercreek Road and wide painted shoulders are present where sidewalks are not within the study area.

Pearl Street is classified by the City of Oregon City as a major collector with 2 travel lanes. The speed limit is 25 mph. West of the intersection with Molalla Avenue, a sidewalk is present on the north side of Pearl Street. East of the intersection, sidewalks are present for approximately 230 feet.

Holmes Lane is classified as a collector west of Molalla Avenue, and continues into Hilda Street, which is a local road, east of Molalla Avenue. Holmes Lane is a 2 to 3 lane roadway with a speed limit of 25 mph. Sidewalks, bike lanes, and/or paved shoulders are present on both sides of Holmes Lane.

Warner Milne Road is classified as a minor arterial with a speed limit of 30 mph. Warner Milne Roadis a two-lane roadway with additional turn lanes provided surrounding its intersection with Molalla Avenue. Sidewalks and bicycle lanes are present along both sides of the roadway within the study area.

Clairmont Way is functionally classified by the City of Oregon City as a collector with a speed limit of 25 mph. Clairmont Way is a two-lane roadway with additional turn lanes

provided surrounding its intersection with Molalla Avenue. Sidewalks and bicycle lanes are present along both sides of the roadway within the study area.

Planned Improvements

A review of local plans was conducted to identify any changes in the study area that should be accounted for in the analysis. The local plans reviewed included the following: *City of Oregon City's Comprehensive Plan Project List (November 2022)*, *Oregon City's Transportation System Plan* (TSP), Yamhill County's *2015-2035 Transportation System Plan* (TSP)*, and Oregon Department of Transportation's (ODOT) 2024-2027 Statewide Transportation Improvement Program (STIP).* Planned improvements within the study area predominantly included maintenance and resurfacing projects; not impacting intersection capacity. This included the following projects:

- Warner Milne Road resurfacing near Molalla Avenue which was recently completed.
- Holmes Lane will be undergoing resurfacing in 2026.
- Molalla Avene will be undergoing resurfacing in 2027.
- Beavercreek Road will be undergoing microsurfacing in 2026, with more resurfacing planned for 2032.
- Water transmission pipes under Molalla Avenue will be upgraded in 2026.

In addition to the above projects, Beavercreek Road has also been undergoing safety improvements since 2023, including signal modifications and improved signage at the intersection with OR-213 which have since been completed. The Beavercreek Road/OR-213 intersection has an Alternative Mobility Target as the City's TSP identified it would not meet the state's required Oregon Highway Plan Mobility Standards by 2035. An additional project that has been identified as part of the Alternative Mobility Targets in the TSP includes project D95, the Beavercreek Road/OR-213 westbound right turn lane with northbound merge lane on OR 213. The City is collecting a pro-rata share to fund the D95 project; however, this project was not assumed in the future operational conditions.

Non-Motorized Facilities

Dedicated pedestrian and bicycle facilities are provided on roadways surrounding the project site as noted above. Sidewalks are available on both sides of Molalla Avenue, Beavercreek Road, and Holmes Lane. A sidewalk is available on the east side of OR-213 south of the intersection with Beavercreek Lane and on the north side of Pearl Street west of Molalla Avenue.

Transit Service

Transit service in the vicinity of the project site is provided by TriMet's Route 32. The closest transit stops to the site are located at the two site access intersections along Molalla Avenue and Beavercreek Road, directly adjacent to the project site. Additional transit stops served by TriMet's Route 33 are located approximately 0.25 miles west of the project site at the intersection of Beavercreek Road/Danielson Drive. Route 32 provides service 7-days per week between Milwaukie and Clackamas Community College in Oregon City with service between approximately 6:15 a.m. and 7:00 p.m. on weekdays with headways of approximately 30 minutes during peak periods. Route 33 provides service between the Oregon City Transit Center, Milwaukie and Clackamas Town Center 7-days per week between approximately 5:20 a.m. and 12:00 a.m. with peak period headways of approximately 15 minutes.

Traffic Volumes

The existing and future (2030) without-project traffic volumes forecasts are summarized in the sections below.

Existing

Existing weekday AM (7 to 9 a.m.) and PM (4 to 6 p.m.) peak period traffic counts were collected at each study intersection in September 2025.[3] The detailed traffic counts are included in Appendix A. Volumes are rounded to the nearest 5 vehicles to account for the daily fluctuations in traffic volumes. Figure 4 illustrates the existing weekday AM and PM peak hour traffic volumes at the study intersections.

In addition to the weekday peak hours, the traffic volumes throughout the week were also reviewed to confirm the time periods for analysis. Traffic volumes were collected along Molalla Avenue, north of Beavercreek Road in the project vicinity for one week in September 2025. The detailed volumes throughout the week are included in Appendix A and the volumes are illustrated in Figure 3.

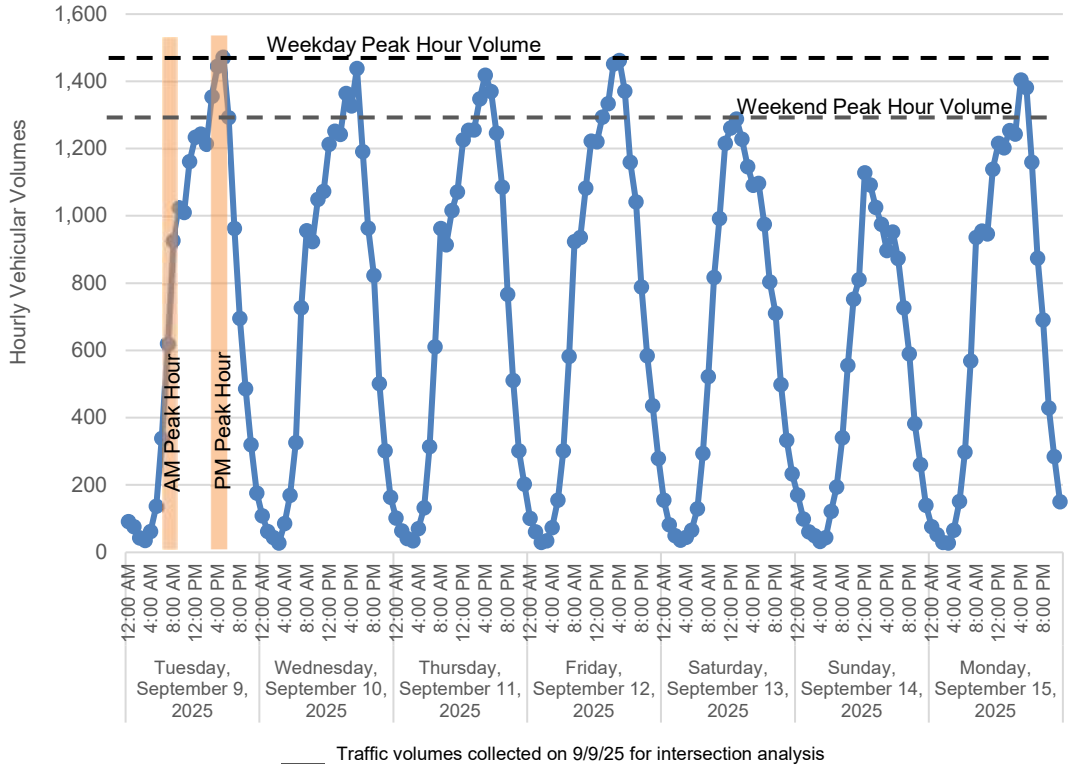
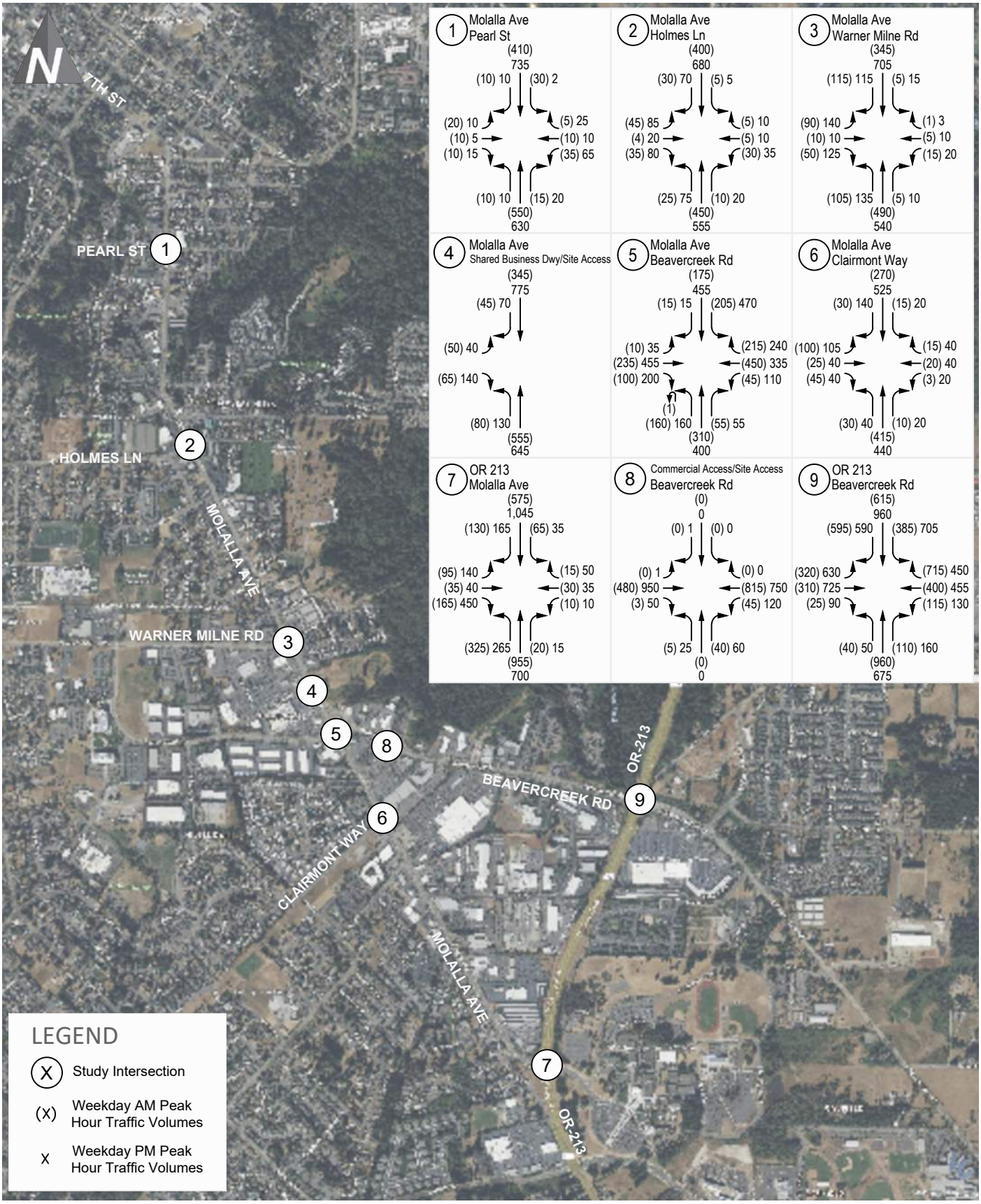


Figure 3. Existing Weekly volumes along Molalla Avenue, north of Beavercreek Road

As shown in the figure, the weekday AM and PM peak hours being studied as part of the project capture the peak traffic volumes that are occurring within the study area throughout the week. The weekend peak hourly volumes are approximately 12 percent less than the weekday peak volumes which occur during the studied PM peak hour.

[3] It was confirmed with City and ODOT staff that given the counts were conducted in September when school was in session, no seasonal adjustment to the volumes was needed.



Existing Weekday Peak Hour Traffic Volumes

FIGURE 4

OR City Mixed-Use

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Future Without-Project Traffic Volumes

Future (2030) without-project traffic volumes are comprised of background traffic growth and traffic from "in-process developments" in the vicinity of the project site. An annual growth rate of 2.0 percent was applied, as provided by the City. Ten in-process developments in the vicinity of the proposed project site are listed below and were included in the analysis as identified by City staff.

1. 770 Pleasant Townhomes
2. Abernethy Place
3. Canemah Road Subdivision
4. Central Point Subdivision
5. Clackamas Heights Redevelopment
6. Downtown North End Development
7. Park Place Crossing Phase 1
8. Serres Farms Master Plan
9. Thimble Creek South
10. White Lane Subdivision

The forecast future (2030) without-project weekday AM and PM peak hour traffic volumes are shown on Figure 5.

Traffic Operations

The following section summarizes the traffic operations for existing and future without-project conditions for the study intersections.

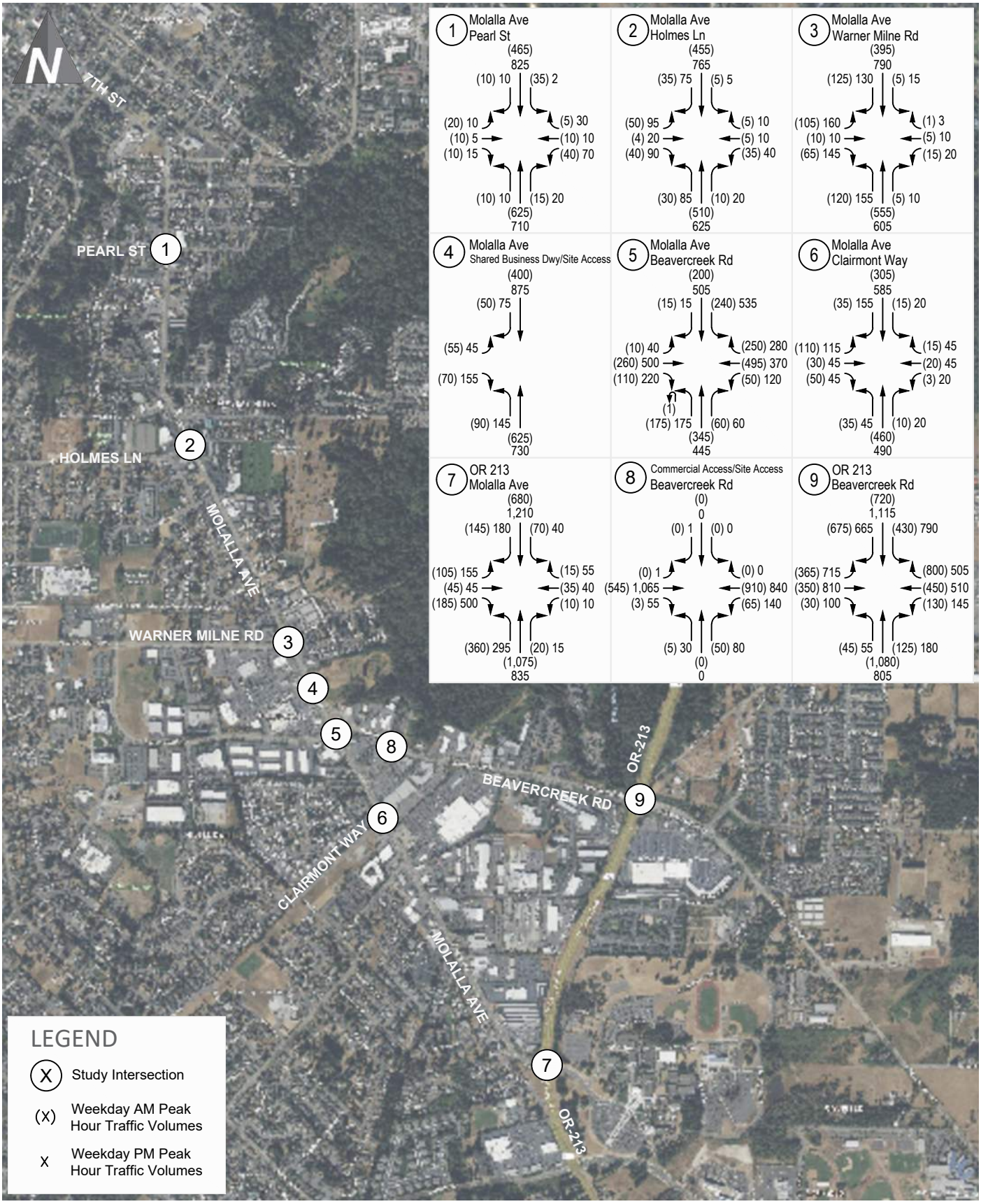
An operational analysis was conducted for the study area intersections for the weekday AM and PM peak hours. Existing and future without-project volume-to-capacity (v/c) ratios and delay were calculated at study intersections based on the methodologies contained in the *Highway Capacity Manual* 7th Edition (HCM 7). The software program *Synchro* 12 was used to evaluate intersection operations.

ODOT's targets were applied to the signalized intersections along Cascade Highway South (OR 213), while the City of Oregon City's standards were applied to the remaining study intersections along Molalla Avenue and Beavercreek Road.

The City of Oregon City's operational targets are defined in the *City of Oregon City Guidelines for Transportation Impact Analyses* (2021), Section 7.9.1 for *Intersection Level of Service Standards.* The City identified a v/c ratio of 0.99 or less for the overall intersection at signalized intersections with the exception of the intersection of OR 213/Beavercreek Road, which is noted to have a maximum v/c ratio of 1.00. ODOT operational targets are defined in the 1999 *Oregon Highway Plan* (June 2017). Within the study area, Cascade Highway South (OR 213) is functionally classified as a principal arterial route inside the Portland Metro Area's Metropolitan Planning Organization (MPO) requiring a v/c ratio of 0.99 or less for the overall intersections. The Oregon Transportation Commission amended the *Oregon Highway Plan* in November 2018 to approve an alternative mobility target at the intersection of OR 213/Beavercreek Road to align with the City of Oregon City's recommendation of a 1.0 v/c target. Note that OHP identifies that *"ODOT recognizes that there are many variables and levels of uncertainty in calculating volume-to-capacity ratios…ODOT considers calculated values for v/c ratios that are within 0.03 of the adopted target in the OHP to be considered in compliance with the target."*

Signal timing at the study intersections was provided by Clackamas County and ODOT staff. Analysis parameters such as lane channelization, traffic control type, and signal timing were maintained for future (2030) without-project conditions consistent with existing conditions.

Results for the existing and future without-project operations analyses are summarized in Table 1. Detailed operations worksheets for the existing and future without-project analysis are included in Appendix B. The overall intersection v/c for signalized intersections was calculated per ODOT's *Analysis Procedures Manual* (Version 2, July 2025) Section 13.4.4 using Synchro.



Future (2030) Without-Project Peak Hour Traffic Volumes

FIGURE 5

OR City Mixed-Use

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Table 1. Existing & Future Without-Project Peak Hour Intersection Operations

Intersection	Traffic Control	Existing		Future (2030) Without-Project	
		v/c[1]	Delay[2]	v/c	Delay
Weekday AM Peak Hour					
1. Molalla Ave/Pearl St	Signal	0.41	4.7	0.46	4.9
2. Molalla Ave/Holmes Ln/Hilda St	Signal	0.36	7.8	0.40	8.1
3. Molalla Ave/Warner Milne Rd	Signal	0.24	10.3	0.27	10.5
4. Molalla Ave/Shared Business Dwy (Safeway)	Signal	0.45	10.6	0.51	10.8
5. Molalla Ave/Beavercreek Rd	Signal	0.46	17.3	0.51	17.9
6. Molalla Ave/Clairmont Way	Signal	0.40	10.4	0.44	10.8
7. OR 213/Molalla Ave	Signal	0.57	27.0	0.64	28.7
8. Shared Business Dwy (South Ridge)/ Beavercreek Rd	Signal	0.65	4.4	0.72	4.8
9. OR 213/Beavercreek Rd	Signal	0.72	35.9	0.81	47.1
Weekday PM Peak Hour					
1. Molalla Ave/Pearl St	Signal	0.54	5.5	0.60	5.9
2. Molalla Ave/Holmes Ln/Hilda St	Signal	0.59	9.6	0.66	10.7
3. Molalla Ave/Warner Milne Rd	Signal	0.39	11.2	0.44	12.2
4. Molalla Ave/Shared Business Dwy (Safeway)	Signal	0.52	13.4	0.58	14.5
5. Molalla Ave/Beavercreek Rd	Signal	0.69	24.7	0.76	28.1
6. Molalla Ave/Clairmont Way	Signal	0.61	13.1	0.68	16.4
7. OR 213/Molalla Ave	Signal	0.68	33.9	0.78	36.3
8. Shared Business Dwy (South Ridge)/ Beavercreek Rd	Signal	0.59	7.6	0.67	8.5
9. OR 213/Beavercreek Rd	Signal	0.82	52.2	0.94	75.4

Note: **Bold** indicates the required V/C standard is not met.
1. Volume to capacity (v/c) ratio reported for the overall intersection at signalized intersections.
2. Average delay per vehicle in seconds reported for the overall intersection delay at signalized intersections.

Table 1 shows that under both existing and future (2030) without project conditions, the study intersections operate acceptably per the respective v/c target during both the existing AM and PM peak hours, operating with a v/c ratio of 0.94 or less.

Traffic Safety

The five most recent years of collision records (January 1, 2019, to December 31, 2023) provided by the Oregon Department of Transportation (ODOT) were reviewed to identify existing traffic safety issues at the study intersections. A summary of the total and average annual number of reported collisions as well as the observed crash rates at the study intersections are provided in Table 2.

Table 2. Study Intersection Collision Data Summary (2019 – 2023)

Intersection	Number of Reported Collisions					Total	Annual Average	Crash Rate per MEV
	2019	2020	2021	2022	2023			
1. Molalla Ave/Pearl St	4	2	0	2	3	11	2.20	0.39
2. Molalla Ave/Holmes Ln/Hilda St	3	2	3	3	1	12	2.40	0.40
3. Molalla Ave/Warner Milne Rd	6	3	6	2	3	20	4.00	0.60
4. Molalla Ave/Shared Business Dwy (Safeway)	4	3	3	0	0	10	2.00	0.30
5. Molalla Ave/Beavercreek Rd	13	9	5	8	10	45	9.00	0.84
6. Molalla Ave/Clairmont Way	4	2	1	4	3	14	2.80	0.52
7. OR 213/Molalla Ave	10	4	2	5	0	21	4.20	0.39
8. Shared Business Dwy (South Ridge)/ Beavercreek Rd	0	0	1	0	0	1	0.20	0.03
9. OR 213/Beavercreek Rd	29	27	23	16	33	128	25.60	1.25

Source: ODOT 2025.
Note: MEV = million entering vehicles

As shown in Table 2, the most collisions that occurred within the study area over the last five-year review period occurred along Beavercreek Road at Molalla Avenue and OR 213 with an annual average of 9 collisions per year and approximately 2 collisions per year, respectively. The most common collision types experienced at the study intersections were rear-end collisions followed by approach turn collisions, primarily resulting in property damage only and minor injury. There were five collisions over the last five-year review period at the study intersections of Molalla Avenue/Pearl Street, Molalla Avenue/Warner Milne Road and Molalla Avenue/Clairmont Way involving a pedestrian, two of which resulting in fatality at Molalla Avenue/Pearl Street and Molalla Avenue/Warner Milne Road, occurring in 2019 and 2022, respectively. Both intersections are signalized with crosswalks provided across all legs of the intersections. No other fatalities were reported within the study area. Based on the review of existing collisions in the study area, no patterns of safety concerns were identified.

The intersections of Molalla Avenue and Beavercreek Road are located along OR 213, a state highway classified as principal arterial. According to the ODOT CAR Unit Crash Rate Table II, the crash rate along the state highway system principal arterial roadways was observed to range from 1.25 in 2022 to 1.40 in 2019. The statewide 90th percentile intersection crash rates detailed in Exhibit 4-1 of ODOT's *Analysis Procedures Manual* (Version 2, October 2024) show a rate of 0.86 for urban four-legged signalized intersections. As shown in Table 2, the crash rate at OR 213/Molalla Avenue is below both the statewide observed crash rates and less than the 90th percentile crash rates. The OR 213/Beavercreek Road intersection is identified within the top 5 percent of sites in the ODOT's *Safety Priority Index System* (SPIS) sites and the crash rate during the study period exceeds the 90th percentile crash rates but is consistent with the lower of the observed crash rates along a principal arterial. As identified above, the City has been undergoing safety improvements at the OR 213/Beavercreek Road intersection since 2023 including signal modifications and improved signage at the intersection with OR-213 which have since been completed.

Project Impacts

This section of the report documents project-generated impacts within the study area. First, peak hour traffic volumes are estimated, distributed, and assigned to adjacent roadways and intersections within the study area. Next, future (2030) traffic volumes including project traffic are developed and the potential impact to traffic volumes and traffic operations are identified.

Trip Generation

Trip generation for the proposed project was calculated based on trip rates using the Institute of Transportation Engineers (ITE) *Trip Generation Manual* (11th Edition, 2021) as coordinated and approved with City and ODOT staff through scoping of the traffic analysis. The trip generation was adjusted for pass-by and internal trips. Pass-by trips reflect traffic already on streets in the vicinity of the project site that would visit the commercial components of the project while driving by the site on the way to its final destination. The land use assumptions and pass-by rates per parcel are summarized below based on ITE's *Trip Generation Manual* (11th Edition, 2021):

- Parcel A: 14,600 square feet (sf) retail – A drive-through window is planned for the northern side of the retail building with the drive-through lane circulating on the eastern side of the building. For purposes of the traffic analysis, one quarter of the building was assumed as ITE's Coffee Shop with Drive Through Window (LU #937) with the remaining as ITEs Strip Retail Plaza (<40k) (LU #822). Pass-by rates for the retail and drive through land uses are assumed to be 40 percent and up to 55 percent, respectively.
- Parcel B: up to 210 multi-family apartment units – ITE's Multifamily Housing (Mid-Rise) (LU #221). No pass-by is associated with residential.
- Parcel C: No land use - right-of-way
- Parcel D: 4,900 sf fast food restaurant with drive-through – ITE's Fast-Food Restaurant with Drive-Through Window (LU #934). Pass-by rates for the drive through restaurant land use is assumed to be 55 percent.

The inclusion of internal capture was assumed consistent with the methodology per ITE's *Trip Generation Handbook* (3rd Edition, 2017) resulting in an estimated overall internal capture rate for the full development of 5 percent and 25 percent in the AM and PM peak hours, respectively.

Table 3 shows the weekday vehicle trips generated by the proposed project. The detailed trip generation calculations are included in Appendix C.

Table 3. Estimated Weekday Vehicle Trip Generation

Land Use[1]	Size	Daily Trips	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Mid-Rise Apartments (LU #221)	210 du	710	18	49	67	33	21	54
Retail	14,600 sf	2,174	166	161	327	77	76	153
Pass-by		*-1,092*	*-81*	*-81*	*-162*	*-40*	*-40*	*-80*
Restaurant (LU #934)	4,900 sf	2,096	107	106	213	75	64	139
Pass-by		*-1,100*	*-53*	*-53*	*-106*	*-38*	*-38*	*-76*
Total Primary		**2,788**	**157**	**182**	**339**	**107**	**83**	**190**

Note: du = dwelling units, sf = square feet
1. Average trip rates from ITE *Trip Generation Manual*, 11th Edition (2021).

As shown in Table 3, the proposed project is estimated to generate 2,788 new weekday daily trips with 339 trips occurring in the AM peak hour and 190 trips occurring in the PM peak hour.

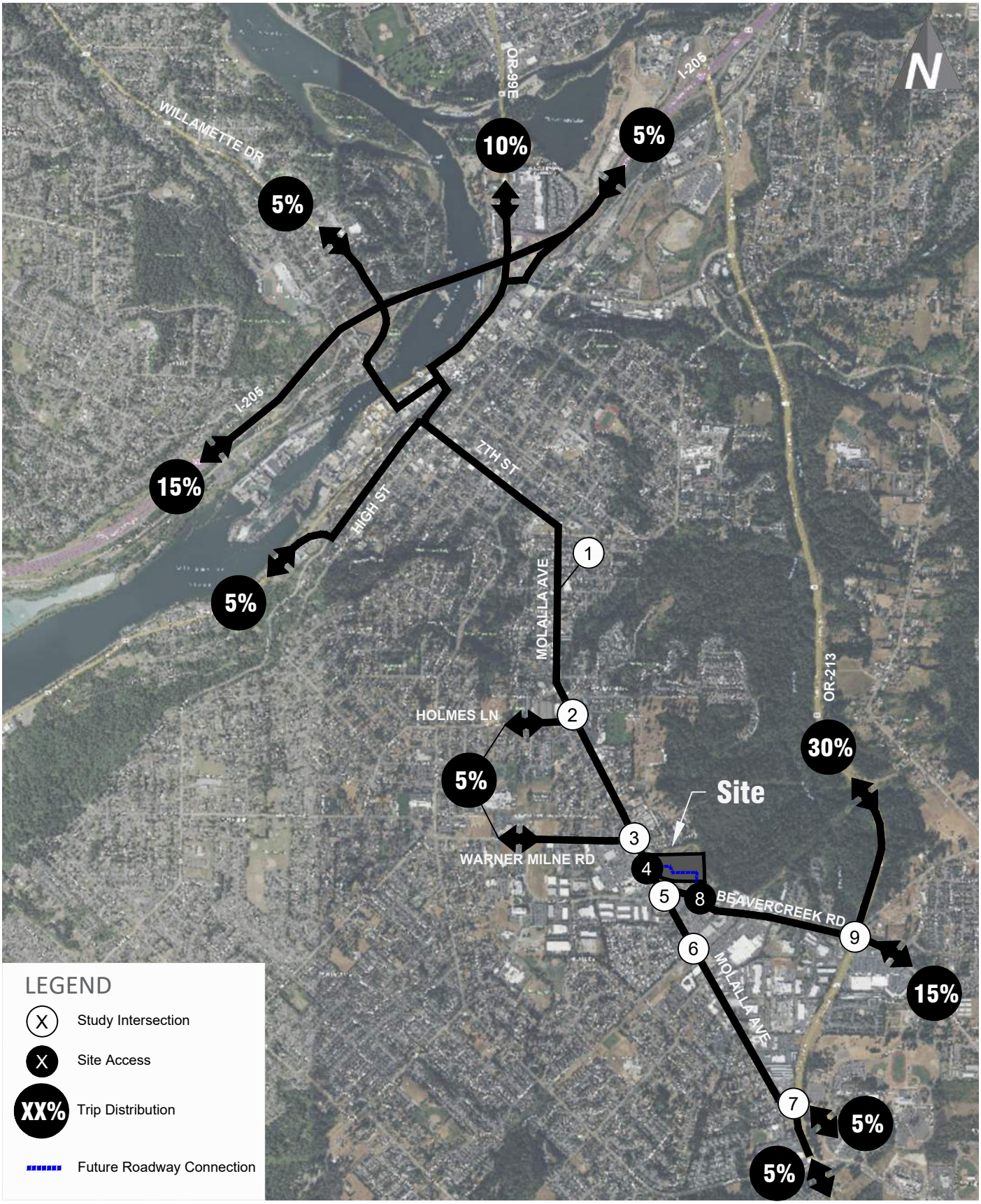
Trip Distribution and Assignment

Individual trip distribution patterns for the residential and commercial uses were estimated to and from the project site and were coordinated with City staff.

The residential trip distribution pattern was estimated based on U.S. Census Bureau's *OnTheMap* tool. *OnTheMap* is a web-based mapping and reporting application, which shows where workers are employed and where they live based on census data. The *OnTheMap* census data was translated to the number of people that live within a quarter-mile radius of the proposed project and where they work. The residential use project trip distribution for vehicle trips is shown in Figure 6.

Trip distribution patterns assumed for the commercial uses to and from the project site were generally assumed to be local and are based on the existing travel patterns in the vicinity of the project. The commercial use project trip distribution for vehicle trips is shown in Figure 7.

The weekday peak hour primary project trips were assigned to the study area based on the respective anticipated project trip distribution patterns. The commercial pass-by trips were assigned via the adjacent intersections of Molalla Avenue/Shared Business (Safeway) Driveway Shared Business (South Ridge) Driveway/Beavercreek Road. The resulting AM and PM peak hour trip assignment is illustrated in Figures 8 and 9, respectively.



Weekday Peak Hour Residential Project Trip Distribution

FIGURE 6

OR City Mixed-Use

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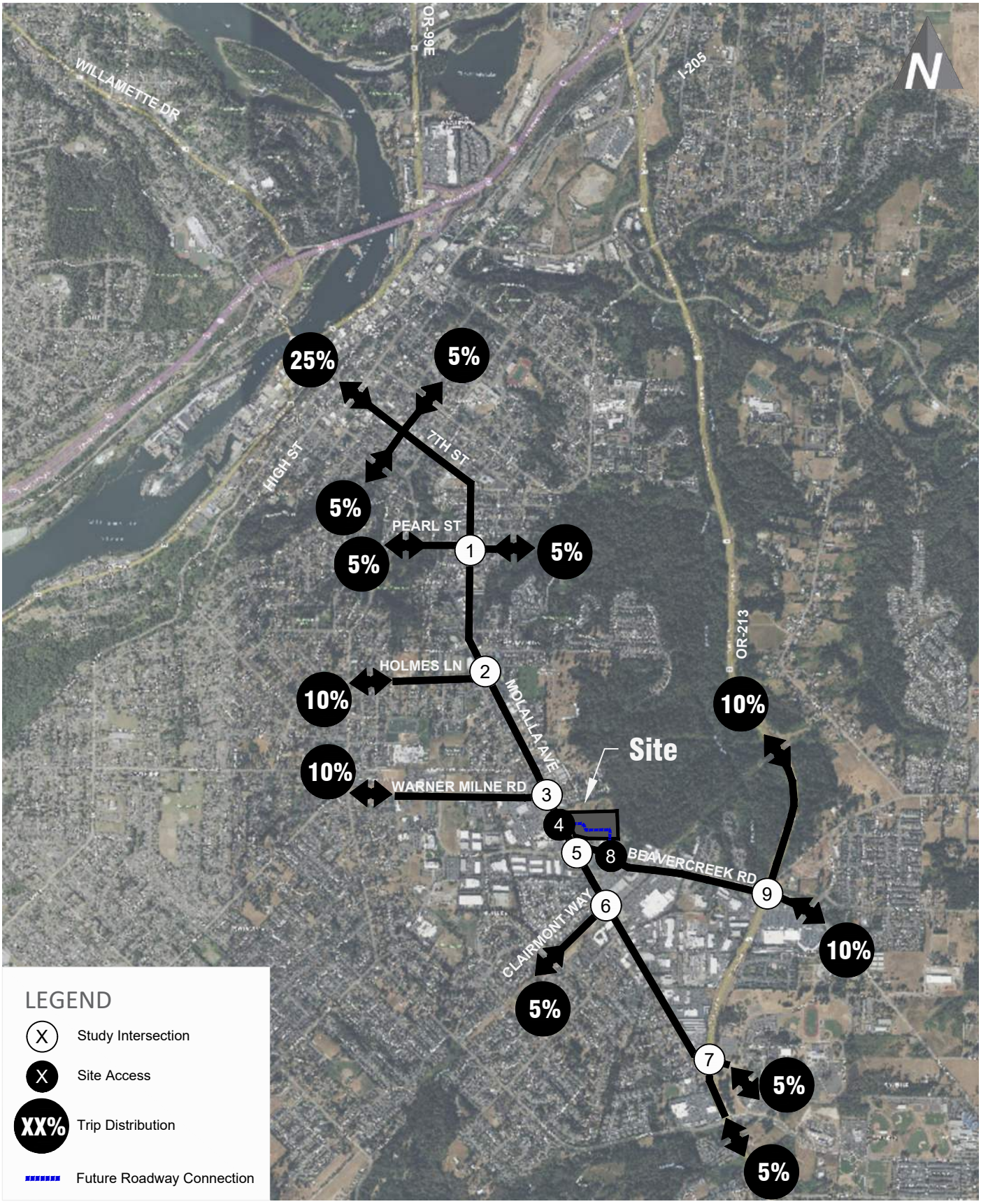

Weekday Peak Hour Commercial Project Trip Distribution

FIGURE 7

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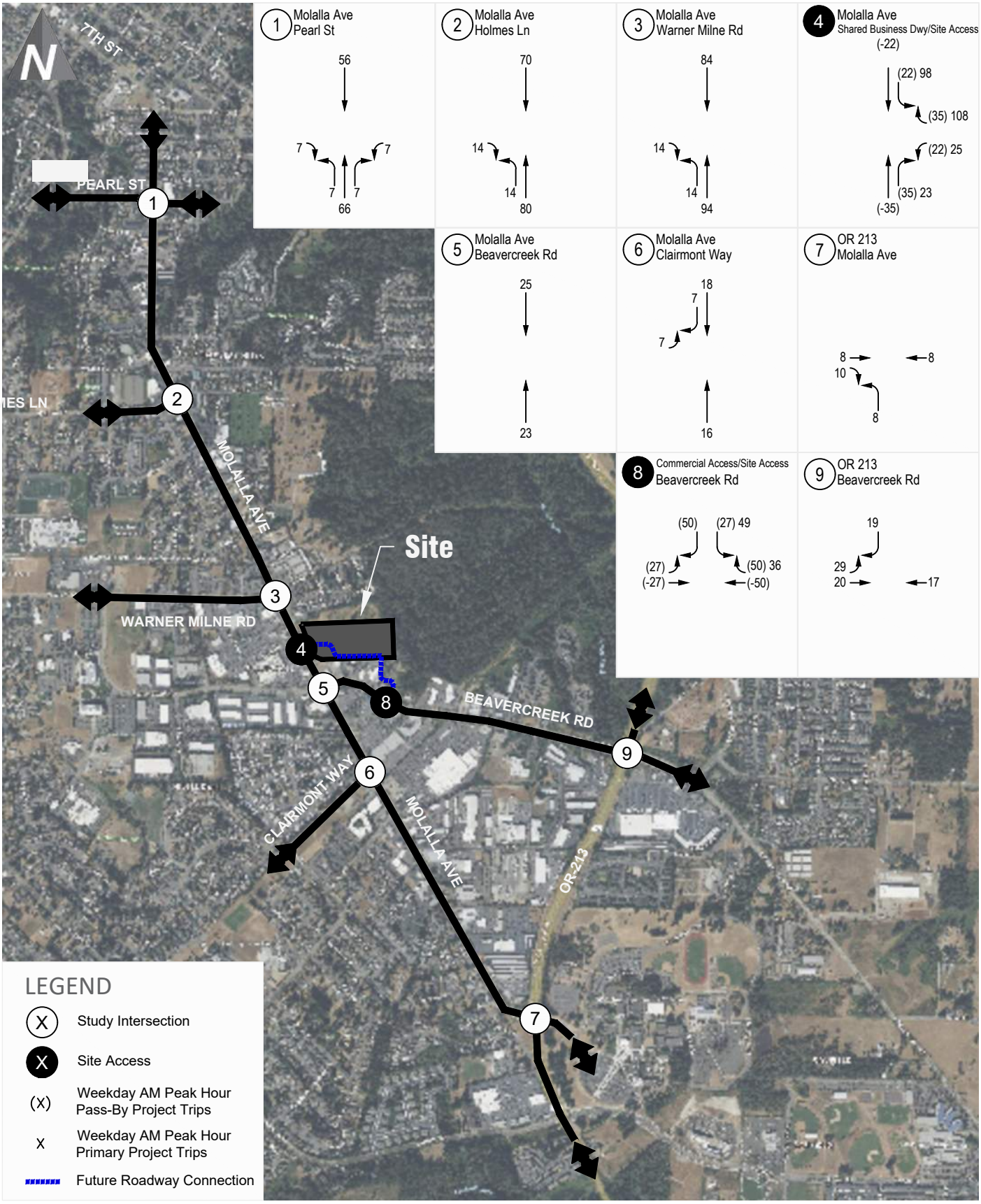

Weekday AM Peak Hour Project Trip Assignment

FIGURE 8

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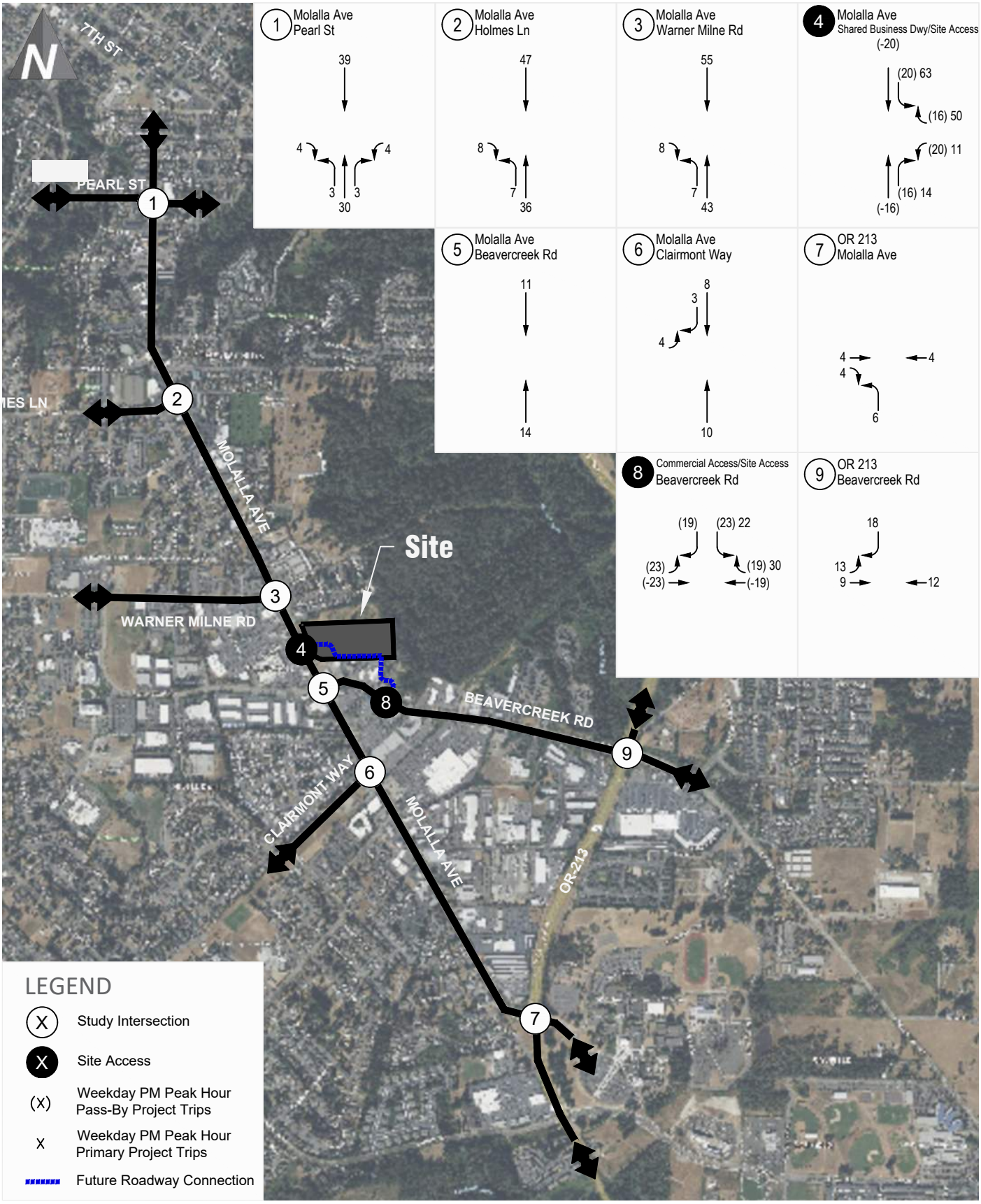

Weekday PM Peak Hour Project Trip Assignment

FIGURE 9

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Future With-Project Traffic Volumes

Site-generated weekday peak hour traffic volumes were added to the future without-project traffic volumes at the study intersections. Additionally, with the new roadway connection between the existing signalized intersections along Molalla Avenue and Beavercreek Road, driveways are proposed for the project as well as a new driveway serving the existing commercial uses northeast of the Molalla Avenue/Beavercreek Road intersection. A portion of the estimated existing commercial uses were assumed to utilize the proposed driveway. The resulting future (2030) with-project peak hour traffic volumes are illustrated on Figure 10.

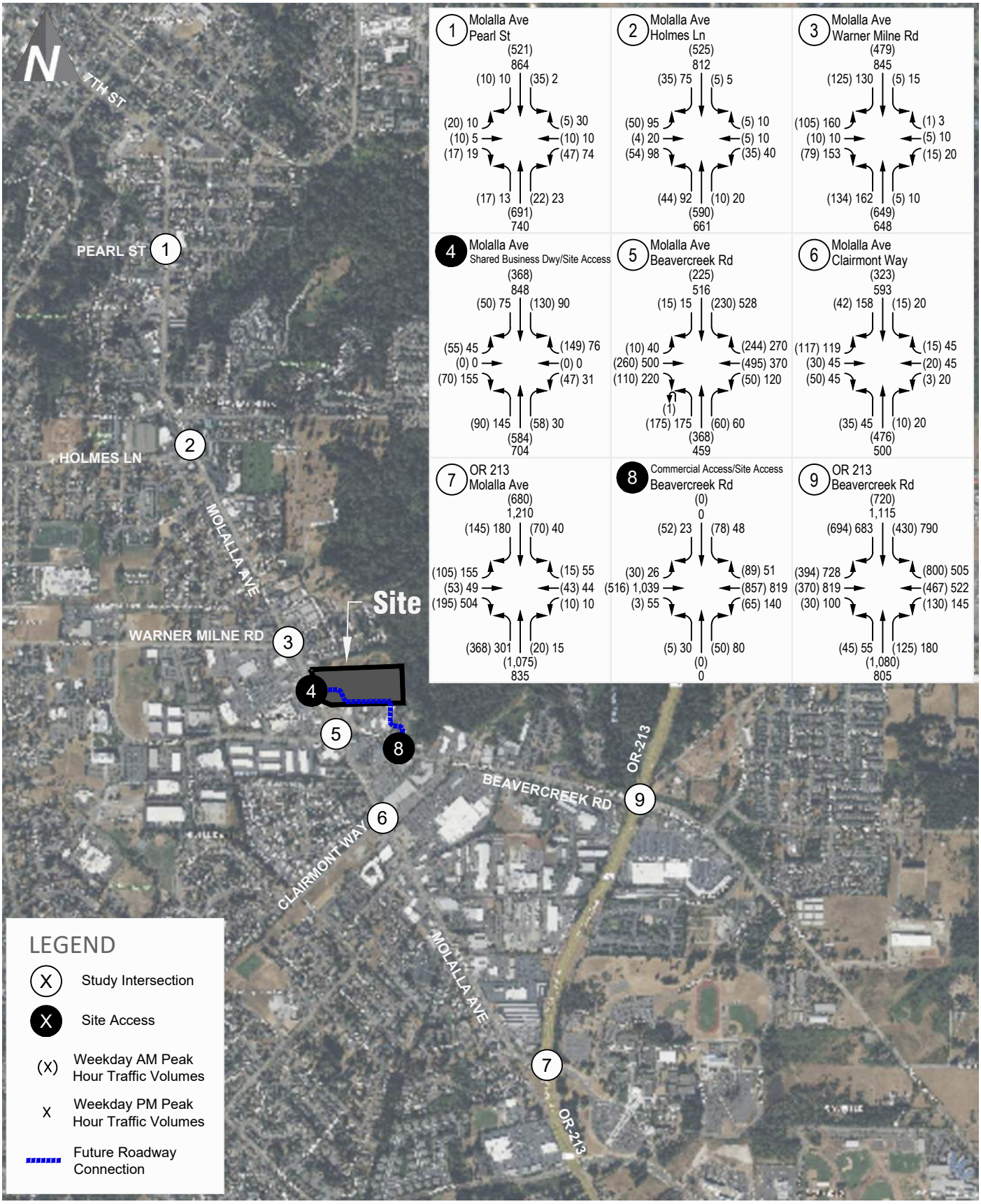
Table 4 summarizes the anticipated increase in total entering traffic at the off-site study intersections as well as the percent of future with-project traffic volumes attributable to the proposed project.

Table 4. Peak Hour Traffic Volume Impacts at Study Intersections

Intersection	Future (2030) Without-Project TEV	Project Trips TEV[1]	Shift of Existing Commercial	Future (2030) With-Project TEV	Percent Share
AM Peak Hour					
1. Molalla Ave/Pearl St	1,255	150	-	1.405	10.7%
2. Molalla Ave/Holmes Ln/Hilda St	1,184	178	-	1,362	13.1%
3. Molalla Ave/Warner Milne Rd	1,406	206	-	1,612	12.8%
4. Molalla Ave/Shared Business Dwy (Safeway)	1,290	311	0	1,601	19.4%
5. Molalla Ave/Beavercreek Rd	2,211	48	-16	2,243	1.4%
6. Molalla Ave/Clairmont Way	1,088	48	-	1,136	4.2%
7. OR 213/Molalla Ave	2,745	34	-	2,779	1.2%
8. Shared Business Dwy (South Ridge)/ Beavercreek Rd	1,578	162	5	1,745	9.6%
9. OR 213/Beavercreek Rd	5,200	85	-	5,285	1.6%
PM Peak Hour					
1. Molalla Ave/Pearl St	1,717	83	-	1,800	4.6%
2. Molalla Ave/Holmes Ln/Hilda St	1,840	98	-	1,938	5.1%
3. Molalla Ave/Warner Milne Rd	2,053	113	-	2,166	5.2%
4. Molalla Ave/Shared Business Dwy (Safeway)	2,025	174	0	2,199	7.9%
5. Molalla Ave/Beavercreek Rd	3,265	25	-17	3,273	0.3%
6. Molalla Ave/Clairmont Way	1,630	25	-	1,655	1.5%
7. OR 213/Molalla Ave	3,380	18	-	3,398	0.5%
8. Shared Business Dwy (South Ridge)/ Beavercreek Rd	2,212	94	6	2,311	4.3%
9. OR 213/Beavercreek Rd	6,395	52	-	6,447	0.8%

Note: TEV = Total Entering Vehicles
1. TEV project trips are inclusive of both primary and pass-by trips at the intersection as applicable.

As shown in Table 4, the project share in future (2030) traffic volumes is estimated to be approximately 8 percent or less during the weekday PM peak hours and up to 19 percent during the weekday AM peak hours at all of the study intersections.



Future (2030) With-Project Peak Hour Traffic Volumes

FIGURE 10

OR City Mixed-Use

transpogroup

Mar 05, 2026 – 2:09pm lilyh M:\25\1.25192.00 – OR City Retail\Graphics\DWG\OR City Graphics_Update.dwg Layout: Future With–Project Vols

Future With-Project Traffic Operations

Future (2030) with-project study intersection operations were evaluated during both the weekday AM and PM peak hours. The v/c ratio and delay were calculated for with-project conditions consistent with the methodology described for existing and without-project conditions. Analysis parameters such as lane channelization and signal timing were assumed to be consistent with the future without-project conditions. Table 5 compares the future (2030) without- and with-project intersection operations for the weekday AM and PM peak hours. Operational worksheets are included in Appendix B.

Note that the intersections of Molalla Avenue/Shared Business Driveway (Safeway) and Shared Business Driveway (South Ridge)/Beavercreek Road both assume the added legs to accommodate the new road connection between the intersections to be constructed with the proposed project. The new leg at each of the existing traffic signals was analyzed as a three-lane section with a separate left turn lane and shared through-right turn lane. The signal timing at each intersection was assumed to be permissive for the added approaches, consistent with the current timing. Additional discussion of the new roadway segment between Molalla Avenue and Beavercreek Road is provided in the site access section in the subsequent section.

Table 5. Future (2030) Without & With-Project Peak Hour Intersection Operations

Intersection	Traffic Control	Future (2030) Without-Project		Future (2030) With-Project	
		v/c[1]	Delay[2]	v/c	Delay
Weekday AM Peak Hour					
1. Molalla Ave/Pearl St	Signal	0.46	4.9	0.52	5.3
2. Molalla Ave/Holmes Ln/Hilda St	Signal	0.40	8.1	0.46	8.5
3. Molalla Ave/Warner Milne Rd	Signal	0.27	10.5	0.30	10.6
4. Molalla Ave/Shared Business Dwy (Safeway)	Signal	0.51	10.8	0.58	13.4
5. Molalla Ave/Beavercreek Rd	Signal	0.51	17.9	0.52	18.1
6. Molalla Ave/Clairmont Way	Signal	0.44	10.8	0.45	11.0
7. OR 213/Molalla Ave	Signal	0.64	28.7	0.65	29.2
8. Shared Business Dwy (South Ridge)/ Beavercreek Rd	Signal	0.72	4.8	0.45	8.5
9. OR 213/Beavercreek Rd	Signal	0.81	47.1	0.83	50.1
Weekday PM Peak Hour					
1. Molalla Ave/Pearl St	Signal	0.60	5.9	0.63	6.1
2. Molalla Ave/Holmes Ln/Hilda St	Signal	0.66	10.7	0.70	11.5
3. Molalla Ave/Warner Milne Rd	Signal	0.44	12.2	0.48	12.7
4. Molalla Ave/Shared Business Dwy (Safeway)	Signal	0.58	14.5	0.50	15.5
5. Molalla Ave/Beavercreek Rd	Signal	0.76	28.1	0.77	28.5
6. Molalla Ave/Clairmont Way	Signal	0.68	16.4	0.69	17.0
7. OR 213/Molalla Ave	Signal	0.78	36.3	0.78	36.6
8. Shared Business Dwy (South Ridge)/ Beavercreek Rd	Signal	0.67	8.5	0.55	9.5
9. OR 213/Beavercreek Rd	Signal	0.94	75.4	0.94	77.8

Note: **Bold** indicates the required V/C standard is not met.
1. Volume to capacity (v/c) ratio reported for the overall intersection at signalized intersections.
2. Average delay per vehicle in seconds reported for the overall intersection delay at signalized intersections.

As shown in Table 5, with the addition of the project, the study intersections are forecast to continue meeting the required v/c standards with a v/c ratio of 0.94 or less during the weekday AM and PM peak hour conditions. The v/c ratio is forecast to increase by 0.04 or less during both the weekday AM and PM peak hours relative to future (2030) without project conditions with the exception of at the

2 intersections of the added roadway segment between Molalla Avenue and Beavercreek Road due to the added legs of the intersection and resulting in a reduction in the v/c ratio.

Site Access Analysis

Access to and from the site will be provided via the new roadway constructed between the existing signalized intersections of Molalla Avenue/Shared Business (Safeway) Driveway Shared Business (South Ridge) Driveway/Beavercreek Road. The proposed road section between Molalla Avenue and Beavercreek Road is illustrated in Figure 2. As shown in the figure, a three-lane section is proposed along the project frontage extending from Molalla Avenue beyond the commercial accesses which then transitions to a two lane section to Beavercreek Road.

The traffic operational review for the site focused on the following key aspects as requested by City staff which are reviewed in the sections below.

- **Modified Traffic Signals** – The operations at the modified signals were evaluated both in terms of v/c of the intersections as well as 95th percentile queues.
- **Left-turn lane warrants** – A three lane section providing a two-way left turn lane is proposed through the project's commercial driveways but then is proposed to transition to a two-lane section. A warrant review is conducted to confirm if left turn lanes are recommended at the two driveways further to the east of this section. The two known driveway locations are illustrated in Figure 2.
- **On-site queueing** – The on-site queuing associated with the proposed drive-throughs.

Modified Traffic Signals

The traffic operations at the intersections of Molalla Avenue/Shared Business (Safeway) Driveway and Shared Business (South Ridge) Driveway/Beavercreek Road intersections were evaluated under future (2030) with-project conditions for the weekday AM and PM peak hours. As noted above, the new leg at each of the existing traffic signals is assumed to be a three-lane section with a separate left turn lane and shared through-right turn lane. The signal timing at each intersection was assumed to be permissive for the added approaches, consistent with the current timing. The resulting operations are summarized in Table 5 above. As shown in the table, both intersections are forecast to meet the required operational standards, operating with a v/c of 0.58 or lower during the weekday AM and PM peak hours.

The 95th percentile queues (the queues that are only exceeded 5% of the time) at the signalized access intersections along Molalla Avenue and Beavercreek Road were also evaluated using synchro, consistent with the operational analysis and are summarized in Table 6.

The 95th percentile queues of the westbound approach at the Molalla Avenue signal and the southbound approach at the Beavercreek Road signal (i.e. the approaches of the new roadway added with the project) are forecast to be approximately 3 vehicles or less. These forecast queues will be able to be accommodated within the provided storage at each intersection. These queues correspond with the forecast weekday AM and PM peak hour volumes along the proposed roadway section with the opening of the project of approximately 630 trips (in/out) split between the 2 accesses as illustrated in Figure 10 above.

The queues of the other approaches are anticipated to have minimal change with the project relative to without project conditions (i.e. approximately 1 car length or less increase in 95th percentile queues with the project compared to without the project). Additionally, all 95th percentile queues at the two signals are forecast to be accommodated within the available storage with the exception of the northbound left-turn queue at the Molalla Avenue signal during the PM peak hour.

Table 6. Future (2030) Molalla Ave & Beavercreek Rd Intersection 95th Percentile Queues

Movement	4. Molalla Ave/Shared Business Dwy (Safeway)					8. Shared Business Dwy (South Ridge)/ Beavercreek Rd				
	Available Storage[2]	AM Peak Hour		PM Peak Hour		Available Storage	AM Peak Hour		PM Peak Hour	
		Without-Project	With-Project	Without-Project	With-Project		Without-Project	With-Project	Without-Project	With-Project
Eastbound Left-Turn	110'	25'	30'	30'	30'	115'	<25'	<25'	<25'	<25'
Eastbound through/right	110'	30'	35'	105'	110'	715'	35'	50'	160'	160'
Westbound Left-Turn	-[1]	-	25'	-	25'	115'	<25'	<25'	25'	25'
Westbound through/right	-[1]	-	80'	-	50'	630'	<25'	95'	60'	85'
Northbound Left-Turn	100'	45'	60'	**110'**	**115'**	50'	<25'	<25'	25'	25'
Northbound through/right	530'	60'	95'	95'	110'	50'	25'	25'	40'	40'
Southbound Left-Turn	-[1]	<25'	60'	<25'	40'	-[1]	-	35'	-	25'
Southbound through/right	500'	75'	85'	225'	230'	-[1]	-	<25'	-	<25'

Note: **Bold** indicates the 95th percentile queues exceeds the available storage. Shading indicates the approaches of the new roadway added with the project.
1. Intersection movement being added and/or modified with project.
2. Available queueing storage distance to the adjacent intersection. Turn lane storage assumes storage plus full width opening (not including the taper).

The northbound left-turn 95th percentile queue at the Molalla Avenue signal is forecast to have up to 1 vehicle extending beyond the available storage under both future (2030) without-project and with-project conditions. The table shows that the 95th percentile queue is forecast to increase by 5' (less than 1 vehicle) with the project as compared to without project conditions, even though the project does not add any trips to the northbound left-turn movement. This minimal increase in 95th percentile queue is due to the actuated signal timing of the intersection, which adapts phasing time allocations to movements based on volumes of the intersection. Due to the addition of the east leg added with the project, the phase time at the actuated signal adjusts accordingly, resulting in the slight added forecast 95th percentile queue of the northbound left-turn movement. Although the 95th northbound left-turn percentile queue is forecast to exceed the storage, the average queue is forecast to be accommodated within the available storage under both future (2030) without- and with-project conditions at approximately 65 feet or less during the PM peak hour.

Left-Turn Lane Warrants

Left-turn lane warrants have been reviewed for the proposed Les Schwab Access and the eastern residential access located on the east side of the project site along the proposed Public Access Road. Based on the City of Oregon City's Turn Lane Warrant guidelines defined in the Transportation Impact Analysis Guidelines (July 2021), Section 7.14.2, the "Engineer shall exercise professional judgement in evaluating the need for, and benefit of, providing dedicated left-turn lanes". The City provided references to consider include the AASHTO *Policy on Geometric Design of Highways and Streets* and the National Cooperative Highway Research Program (NCHRP) Report 457 *Evaluating Intersection Improvements.* The left turn warrants from both sources were evaluated assuming the future (2030) with-project weekday peak hour traffic volumes. The left-turn warrant evaluation is included in Appendix D. As shown in the appendix, no left-turn lanes are warranted at any of the site access intersections under the future (2030) weekday AM or PM peak hours.

In addition to the driveways associated with the project, additional accesses are anticipated on the south side of the internal roadway in the future as identified as part of the Beavercreek Road Access Management Plan as illustrated in Figure 2. These access points would serve the existing commercial development adjacent to Les Schwab located between the commercial and residential driveways within the proposed two-lane roadway section. The turn lane needs associated with that potential future development would be evaluated as part of that future project and if shown to be warranted, the widening to accommodate a turn lane could be provided to the south of the proposed road.

On-Site Queueing

Additionally, on-site queuing associated with the proposed drive-through uses on both Parcels A and D were evaluated. The drive-through queuing was estimated using the Poisson queuing distribution. The total external inbound vehicle trips (inclusive of pass-by trips) were assumed to utilize the drive through for purposes of providing a conservative queueing analysis. The average service time for a fast-food restaurant drive-through window is approximately 4 minutes based on the annual study conducted by QSR[6]. This service time was assumed for both the drive-through uses proposed. The resulting queueing for each is summarized below with detailed Poisson queuing worksheets provided in Appendix E.

- Parcel A – The drive-through proposed along the northern side of the retail building includes approximately 335 feet of storage with dual lanes allowing for approximately 500 feet of total storage or at least 20 vehicles. The weekday AM and PM peak hour anticipated drive-through 95th-percentile queue lengths are estimated to be 17 vehicles which would be accommodated within the proposed drive-through storage.

- Parcel D – The weekday AM and PM peak hour anticipated drive-through 95th-percentile queue lengths are estimated to be 13 vehicles or less or up to 7 vehicles per lane. The proposed site plan illustrates each drive lane can accommodate a queue of at least 275’ or 11 vehicles per lane; therefore, the queues are anticipated to be accommodated within the proposed driveway storage.

[6] *25th Anniversary Edition Drive-Thru Study (Intouch Insight and QSR).*

Mitigation Measures

Based on the operational review above for both without and with-project conditions, all off-site study intersections are forecast to continue to meet the established v/c thresholds with the addition of project generated traffic.

Based on coordination with City staff, a pro-rata share contribution is required for the TSP project #D95, Beavercreek Road/OR-213 added westbound right turn merge lane as noted above. The City has indicated the current rate is $404 per weekday PM peak hour trip. As shown in Table 4 above, the project is forecast to contribute 52 project trips to the intersection during the PM peak hour. This results in an estimated fee of $21,008 at this location as pro-rata share contribution to the planned improvement project.

Additionally, a Transportation System Development Charge (TSDC) will be required associated with the development of the project's land uses.[7] The project site is located inside the Molalla Avenue Corridor SDC Special Location Discount Area. Based on the current TSDC rates (Effective July 1, 2018), multi-family developments are required to pay a fee of $6,474 per multi-family dwelling unit constructed. Non-residential developments are required to submit a *System Development Charges Request Form* to the City to determine the fee required. The residential portion of the project proposed to construct 210 multifamily dwelling units will require a fee of $1,359,540. The TSDC associated with the non-residential uses proposed on site will be determined by the City of Oregon City following the submittal of the *System Development Charges Request Form*.

[7] Each of the pad users will pay their own fees when they proceed with their own pad development.

Findings and Recommendations

This traffic impact analysis summarizes the project traffic impacts of the proposed Oregon City Mixed-Use project located at 1367 Molalla Avenue in Oregon City. General findings and recommendations include:

- **Project Description** – The proposed project will construct a 14,600 sf retail, a 4,900 sf fast food restaurant with drive through, and up to 210 multifamily apartment units on 3 parcels in Oregon City along with a 4th parcel being used for right-of-way.

- **Trip Generation** – Accounting for internal capture of trips that will occur between the proposed uses and pass-by trips associated with the commercial uses of the project, the proposed project is estimated to generate 2,788 new weekday daily trips with 339 trips occurring in the AM peak hour and 190 trips occurring in the PM peak hour.

- **Traffic Operations** – With the addition of project generated traffic, all of the study intersections are forecast to continue meeting the required v/c standards with a v/c ratio of 0.94 or less during the weekday AM and PM peak hour conditions. The v/c ratio is forecast to increase by 0.04 or less during both the weekday AM and PM peak hours relative to future (2030) without project conditions.

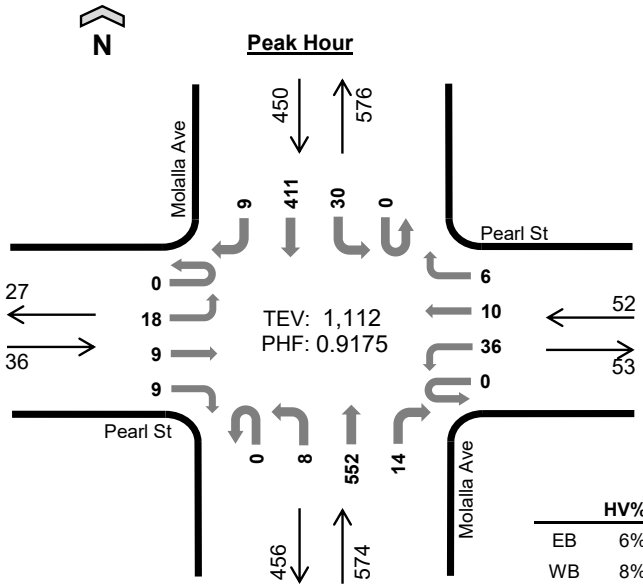
- **Site Access** – Access to and from the site will be provided via the new roadway constructed between the existing signalized intersections of Molalla Avenue/Shared Business (Safeway) Driveway Shared Business (South Ridge) Driveway/Beavercreek Road.
    - The two signalized intersections are forecast to operate acceptably.
    - The 95th percentile queues of the westbound approach at the Molalla Avenue signal and the southbound approach at the Beavercreek Road signal (i.e. the approaches of the new roadway added with the project) are forecast to be approximately 3 vehicles or less. Additionally, the queues of the other approaches at the two signalized intersections are anticipated to have minimal change with the project relative to without project conditions (i.e. approximately 1 car length or less increase in 95th percentile queues with the project compared to without the project).
    - The proposed road section is three-lane through the commercial area and then transitions to a two-lane section further east. This proposed section was confirmed through a warrant analysis for current uses. Any future development and associated need for widening to accommodate turn lanes would be assessed and could be provided to the south of the proposed road.

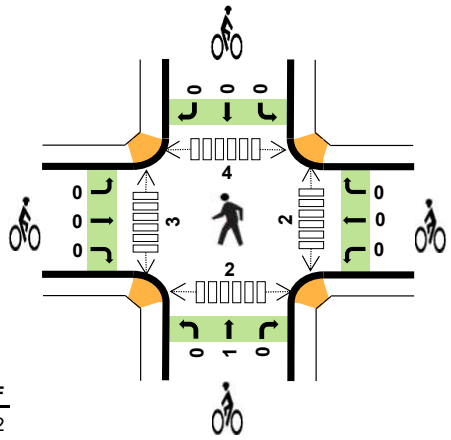
- **Mitigation** – The total TSDC associated with the land uses of the proposed project will be determined by the City of Oregon City following the submittal of the *System Development Charges Request Form*. Additionally, the project would contribute its pro-rata share at the Beavercreek Road/OR-213 intersection toward TSP project #D95, Beavercreek Road/OR-213 added westbound right turn merge lane.

Appendix A: Traffic Counts

Molalla Ave
Pearl St

Date: 9/9/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM





	HV%	PHF
EB	6%	0.82
WB	8%	0.76
NB	4%	0.91
SB	4%	0.92
TOTAL	4%	0.92

Peak Hour Count Summaries

Peak Hour Interval Start		Pearl St Eastbound				Pearl St Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:45 AM		**0**	**3**	**4**	**4**	**0**	**11**	**1**	**2**	**0**	**3**	**147**	**7**	**0**	**11**	**108**	**2**	**303**	**0**
8:00 AM		**0**	**4**	**3**	**1**	**0**	**8**	**6**	**1**	**0**	**1**	**125**	**2**	**0**	**14**	**105**	**3**	**273**	**0**
8:15 AM		**0**	**6**	**0**	**1**	**0**	**4**	**2**	**0**	**0**	**2**	**137**	**2**	**0**	**4**	**87**	**3**	**248**	**0**
8:30 AM		**0**	**5**	**2**	**3**	**0**	**13**	**1**	**3**	**0**	**2**	**143**	**3**	**0**	**1**	**111**	**1**	**288**	**1,112**
Pk Hr	All	**0**	**18**	**9**	**9**	**0**	**36**	**10**	**6**	**0**	**8**	**552**	**14**	**0**	**30**	**411**	**9**	**1,112**	
	HV	**0**	**1**	**0**	**1**	**0**	**2**	**2**	**0**	**0**	**0**	**22**	**0**	**0**	**0**	**16**	**1**	**45**	
	HV%	-	**6%**	**0%**	**11%**	-	**6%**	**20%**	**0%**	-	**0%**	**4%**	**0%**	-	**0%**	**4%**	**11%**	**4%**	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:45 AM	**1**	**1**	**5**	**4**	***11***	**0**	**0**	**0**	**0**	***0***	**1**	**1**	**0**	**2**	***4***
8:00 AM	**0**	**2**	**5**	**6**	***13***	**0**	**0**	**0**	**0**	***0***	**1**	**2**	**1**	**0**	***4***
8:15 AM	**1**	**0**	**6**	**2**	***9***	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**1**	**0**	***1***
8:30 AM	**0**	**1**	**6**	**5**	***12***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**2**	**0**	***2***
Peak Hour	**2**	**4**	**22**	**17**	***45***	**0**	**0**	**1**	**0**	***1***	**2**	**3**	**4**	**2**	***11***

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Count Summaries - All Vehicles

Interval Start	Pearl St				Pearl St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	7	4	2	0	4	1	0	0	1	140	2	0	0	46	2	209	0
7:15 AM	0	2	1	2	0	5	0	0	0	2	158	3	0	2	66	3	244	0
7:30 AM	0	4	7	3	0	3	0	1	0	4	161	3	0	5	79	0	270	0
7:45 AM	**0**	**3**	**4**	**4**	**0**	**11**	**1**	**2**	**0**	**3**	**147**	**7**	**0**	**11**	**108**	**2**	**303**	**1,026**
8:00 AM	**0**	**4**	**3**	**1**	**0**	**8**	**6**	**1**	**0**	**1**	**125**	**2**	**0**	**14**	**105**	**3**	**273**	**1,090**
8:15 AM	**0**	**6**	**0**	**1**	**0**	**4**	**2**	**0**	**0**	**2**	**137**	**2**	**0**	**4**	**87**	**3**	**248**	**1,094**
8:30 AM	**0**	**5**	**2**	**3**	**0**	**13**	**1**	**3**	**0**	**2**	**143**	**3**	**0**	**1**	**111**	**1**	**288**	**1,112**
8:45 AM	0	4	1	6	0	14	2	1	0	3	131	5	0	1	130	1	299	1,108
Count Total	0	35	22	22	0	62	13	8	0	18	1,142	27	0	38	732	15	2,134	
Pk Hr All	**0**	**18**	**9**	**9**	**0**	**36**	**10**	**6**	**0**	**8**	**552**	**14**	**0**	**30**	**411**	**9**	**1,112**	
Pk Hr HV	**0**	**1**	**0**	**1**	**0**	**2**	**2**	**0**	**0**	**0**	**22**	**0**	**0**	**0**	**16**	**1**	**45**	
Pk Hr HV%	**-**	**6%**	**0%**	**11%**	**-**	**6%**	**20%**	**0%**	**-**	**0%**	**4%**	**0%**	**-**	**0%**	**4%**	**11%**	**4%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	1	0	7	3	*11*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	0	0	7	2	*9*	0	0	2	1	*3*	1	0	1	0	*2*
7:30 AM	0	0	3	4	*7*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	**1**	**1**	**5**	**4**	**11**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**2**	**4**
8:00 AM	**0**	**2**	**5**	**6**	**13**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**1**	**0**	**4**
8:15 AM	**1**	**0**	**6**	**2**	**9**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**1**	**0**	**1**
8:30 AM	**0**	**1**	**6**	**5**	**12**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**
8:45 AM	1	1	6	2	*10*	0	0	0	1	*1*	0	2	0	0	*2*
Count Total	4	5	45	28	*82*	0	0	3	2	*5*	3	5	5	2	*15*
Peak Hour	**2**	**4**	**22**	**17**	***45***	**0**	**0**	**1**	**0**	***1***	**2**	**3**	**4**	**2**	**11**

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Count Summaries - Heavy Vehicles

Interval Start	Pearl St				Pearl St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	1	0	0	0	0	0	1	5	1	0	0	3	0	11	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	7	0	0	0	2	0	9	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	4	0	7	0
7:45 AM	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**4**	**0**	**11**	**38**
8:00 AM	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**6**	**0**	**13**	**40**
8:15 AM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**2**	**0**	**9**	**40**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**4**	**1**	**12**	**45**
8:45 AM	0	1	0	0	0	0	1	0	0	1	5	0	0	0	2	0	10	44
Count Total	0	2	0	2	0	2	3	0	0	2	42	1	0	0	27	1	82	
Pk Hr Heavy	**0**	**1**	**0**	**1**	**0**	**2**	**2**	**0**	**0**	**0**	**22**	**0**	**0**	**0**	**16**	**1**	**45**	

Count Summaries - Bikes

Interval Start	Pearl St				Pearl St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	3	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**1**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
Count Total	0	0	0	0	0	0	0	0	0	0	3	0	0	0	2	0	5	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	

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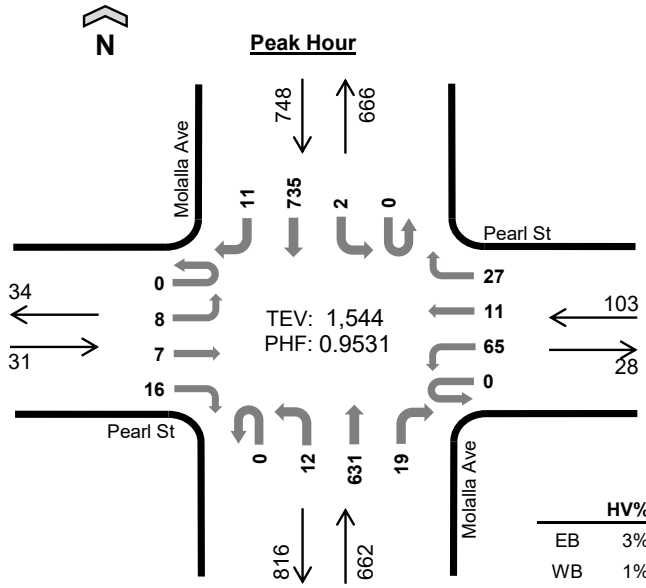
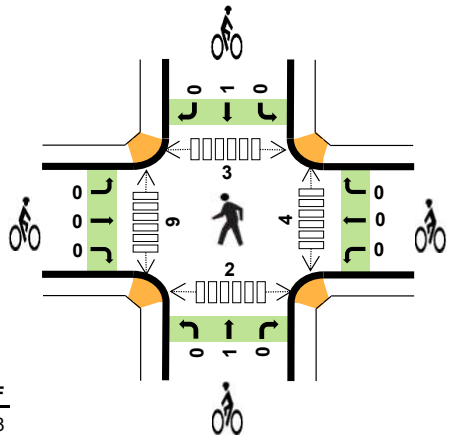
Molalla Ave
Pearl St

Date: 9/9/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM





	HV%	PHF
EB	3%	0.78
WB	1%	0.74
NB	2%	0.93
SB	1%	0.87
TOTAL	1%	0.95

Peak Hour Count Summaries

Peak Hour Interval Start		Pearl St Eastbound				Pearl St Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:30 PM		**0**	**3**	**2**	**3**	**0**	**14**	**4**	**5**	**0**	**3**	**151**	**6**	**0**	**2**	**207**	**5**	**405**	**0**
4:45 PM		**0**	**0**	**4**	**3**	**0**	**18**	**2**	**3**	**0**	**6**	**148**	**3**	**0**	**0**	**204**	**4**	**395**	**0**
5:00 PM		**0**	**1**	**1**	**4**	**0**	**16**	**5**	**14**	**0**	**2**	**170**	**6**	**0**	**0**	**166**	**0**	**385**	**0**
5:15 PM		**0**	**4**	**0**	**6**	**0**	**17**	**0**	**5**	**0**	**1**	**162**	**4**	**0**	**0**	**158**	**2**	**359**	**1,544**
Pk Hr	All	**0**	**8**	**7**	**16**	**0**	**65**	**11**	**27**	**0**	**12**	**631**	**19**	**0**	**2**	**735**	**11**	**1,544**	
	HV	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**10**	**0**	**0**	**0**	**8**	**0**	**20**	
	HV%	-	**0%**	**0%**	**6%**	-	**0%**	**9%**	**0%**	-	**0%**	**2%**	**0%**	-	**0%**	**1%**	**0%**	**1%**	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:30 PM	**0**	**1**	**3**	**1**	***5***	**0**	**0**	**1**	**0**	***1***	**1**	**3**	**0**	**2**	***6***
4:45 PM	**0**	**0**	**5**	**2**	***7***	**0**	**0**	**0**	**1**	***1***	**1**	**3**	**0**	**0**	***4***
5:00 PM	**1**	**0**	**1**	**3**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**3**	**3**	**0**	***6***
5:15 PM	**0**	**0**	**1**	**2**	***3***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**0**	**0**	***2***
Peak Hour	**1**	**1**	**10**	**8**	***20***	**0**	**0**	**1**	**1**	**2**	**4**	**9**	**3**	**2**	***18***

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Count Summaries - All Vehicles

Interval Start	Pearl St Eastbound				Pearl St Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	3	3	0	23	1	2	0	3	158	2	0	0	189	4	388	0
4:15 PM	0	0	2	6	0	17	3	2	0	1	144	1	0	0	138	5	319	0
4:30 PM	**0**	**3**	**2**	**3**	**0**	**14**	**4**	**5**	**0**	**3**	**151**	**6**	**0**	**2**	**207**	**5**	**405**	**0**
4:45 PM	**0**	**0**	**4**	**3**	**0**	**18**	**2**	**3**	**0**	**6**	**148**	**3**	**0**	**0**	**204**	**4**	**395**	**1,507**
5:00 PM	**0**	**1**	**1**	**4**	**0**	**16**	**5**	**14**	**0**	**2**	**170**	**6**	**0**	**0**	**166**	**0**	**385**	**1,504**
5:15 PM	**0**	**4**	**0**	**6**	**0**	**17**	**0**	**5**	**0**	**1**	**162**	**4**	**0**	**0**	**158**	**2**	**359**	**1,544**
5:30 PM	0	6	3	2	0	14	0	8	0	2	153	6	0	1	141	2	338	1,477
5:45 PM	0	3	0	4	0	9	2	3	0	2	126	3	0	1	149	1	303	1,385
Count Total	0	17	15	31	0	128	17	42	0	20	1,212	31	0	4	1,352	23	2,892	
Pk Hr All	**0**	**8**	**7**	**16**	**0**	**65**	**11**	**27**	**0**	**12**	**631**	**19**	**0**	**2**	**735**	**11**	**1,544**	
Pk Hr HV	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**10**	**0**	**0**	**0**	**8**	**0**	**20**	
Pk Hr HV%	**-**	**0%**	**0%**	**6%**	**-**	**0%**	**9%**	**0%**	**-**	**0%**	**2%**	**0%**	**-**	**0%**	**1%**	**0%**	**1%**	

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) E	W	N	S	Total
4:00 PM	1	0	2	3	*6*	0	0	1	0	*1*	1	1	0	0	*2*
4:15 PM	0	0	3	4	*7*	0	0	1	2	*3*	3	0	4	0	*7*
4:30 PM	**0**	**1**	**3**	**1**	**5**	**0**	**0**	**1**	**0**	**1**	**1**	**3**	**0**	**2**	**6**
4:45 PM	**0**	**0**	**5**	**2**	**7**	**0**	**0**	**0**	**1**	**1**	**1**	**3**	**0**	**0**	**4**
5:00 PM	**1**	**0**	**1**	**3**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**3**	**0**	**6**
5:15 PM	**0**	**0**	**1**	**2**	**3**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**2**
5:30 PM	1	0	0	1	*2*	0	0	1	1	*2*	2	0	1	4	*7*
5:45 PM	0	0	2	0	*2*	0	0	0	0	*0*	0	2	0	0	*2*
Count Total	3	1	17	16	*37*	0	0	4	4	*8*	10	12	8	6	*36*
Peak Hour	**1**	**1**	**10**	**8**	***20***	**0**	**0**	**1**	**1**	***2***	**4**	**9**	**3**	**2**	**18**

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Count Summaries - Heavy Vehicles

Interval Start	Pearl St				Pearl St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	1	0	0	0	0	0	0	0	2	0	0	0	3	0	6	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	1	7	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**1**	**0**	**5**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**2**	**0**	**7**	**25**
5:00 PM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**3**	**0**	**5**	**24**
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**3**	**20**
5:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	17
5:45 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	12
Count Total	0	1	1	1	0	0	1	0	0	0	17	0	0	0	15	1	37	
Pk Hr Heavy	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**10**	**0**	**0**	**0**	**8**	**0**	**20**	

Count Summaries - Bikes

Interval Start	Pearl St				Pearl St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	3	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**6**
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
5:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2	3
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Count Total	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	0	8	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**2**	

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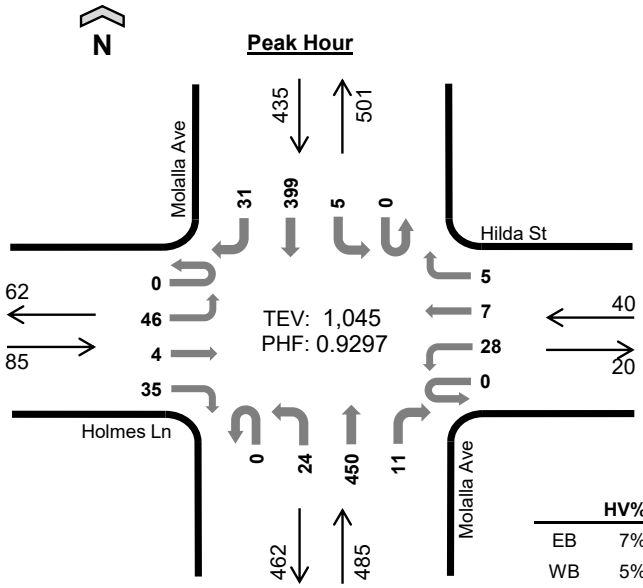
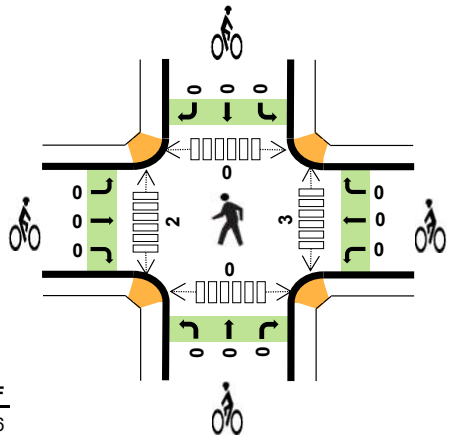
Molalla Ave
Holmes Ln

Date: 9/9/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 8:00 AM to 9:00 AM





	HV%	PHF
EB	7%	0.76
WB	5%	0.63
NB	4%	0.90
SB	4%	0.81
TOTAL	4%	0.93

Peak Hour Count Summaries

Peak Hour Interval Start		Holmes Ln Eastbound				Hilda St Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
8:00 AM		0	8	0	9	0	6	2	2	0	6	102	3	0	3	97	10	248	0
8:15 AM		0	10	2	7	0	12	3	1	0	5	115	2	0	0	77	5	239	0
8:30 AM		0	19	0	9	0	5	1	1	0	10	122	2	0	2	98	8	277	0
8:45 AM		0	9	2	10	0	5	1	1	0	3	111	4	0	0	127	8	281	1,045
Pk Hr	All	0	46	4	35	0	28	7	5	0	24	450	11	0	5	399	31	1,045	
	HV	0	3	0	3	0	2	0	0	0	3	16	0	0	0	12	4	43	
	HV%	-	7%	0%	9%	-	7%	0%	0%	-	13%	4%	0%	-	0%	3%	13%	4%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
8:00 AM	3	2	3	7	*15*	0	0	0	0	*0*	0	1	0	0	*1*
8:15 AM	2	0	6	2	*10*	0	0	0	0	*0*	1	0	0	0	*1*
8:30 AM	1	0	7	3	*11*	0	0	0	0	*0*	1	1	0	0	*2*
8:45 AM	0	0	3	4	*7*	0	0	0	0	*0*	1	0	0	0	*1*
Peak Hour	6	2	19	16	*43*	0	0	0	0	*0*	3	2	0	0	*5*

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Count Summaries - All Vehicles

Interval Start	Holmes Ln				Hilda St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	10	0	9	0	2	0	3	0	2	92	3	0	0	31	4	156	0
7:15 AM	0	16	0	3	0	2	3	7	0	2	107	1	0	1	65	4	211	0
7:30 AM	0	15	2	4	0	7	3	2	0	2	118	2	0	1	76	4	236	0
7:45 AM	0	23	5	7	0	9	1	3	0	3	106	2	0	2	99	2	262	865
8:00 AM	**0**	**8**	**0**	**9**	**0**	**6**	**2**	**2**	**0**	**6**	**102**	**3**	**0**	**3**	**97**	**10**	**248**	**957**
8:15 AM	**0**	**10**	**2**	**7**	**0**	**12**	**3**	**1**	**0**	**5**	**115**	**2**	**0**	**0**	**77**	**5**	**239**	**985**
8:30 AM	**0**	**19**	**0**	**9**	**0**	**5**	**1**	**1**	**0**	**10**	**122**	**2**	**0**	**2**	**98**	**8**	**277**	**1,026**
8:45 AM	**0**	**9**	**2**	**10**	**0**	**5**	**1**	**1**	**0**	**3**	**111**	**4**	**0**	**0**	**127**	**8**	**281**	**1,045**
Count Total	0	110	11	58	0	48	14	20	0	33	873	19	0	9	670	45	1,910	
Pk Hr All	**0**	**46**	**4**	**35**	**0**	**28**	**7**	**5**	**0**	**24**	**450**	**11**	**0**	**5**	**399**	**31**	**1,045**	
Pk Hr HV	**0**	**3**	**0**	**3**	**0**	**2**	**0**	**0**	**0**	**3**	**16**	**0**	**0**	**0**	**12**	**4**	**43**	
Pk Hr HV%	**-**	**7%**	**0%**	**9%**	**-**	**7%**	**0%**	**0%**	**-**	**13%**	**4%**	**0%**	**-**	**0%**	**3%**	**13%**	**4%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	5	0	3	2	*10*	0	0	0	0	*0*	1	1	0	0	*2*
7:15 AM	1	0	7	1	*9*	0	0	0	1	*1*	0	1	0	1	*2*
7:30 AM	0	0	2	2	*4*	0	0	0	0	*0*	1	0	0	0	*1*
7:45 AM	1	1	6	3	*11*	0	0	0	0	*0*	1	0	0	0	*1*
8:00 AM	**3**	**2**	**3**	**7**	**15**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**
8:15 AM	**2**	**0**	**6**	**2**	**10**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**
8:30 AM	**1**	**0**	**7**	**3**	**11**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**2**
8:45 AM	**0**	**0**	**3**	**4**	**7**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**
Count Total	13	3	37	24	*77*	0	0	0	1	*1*	6	4	0	1	*11*
Peak Hour	**6**	**2**	**19**	**16**	***43***	**0**	**0**	**0**	**0**	***0***	**3**	**2**	**0**	**0**	**5**

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Count Summaries - Heavy Vehicles

Interval Start	Holmes Ln				Hilda St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	1	0	4	0	0	0	0	0	1	2	0	0	0	2	0	10	0
7:15 AM	0	0	0	1	0	0	0	0	0	0	7	0	0	0	1	0	9	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	4	0
7:45 AM	0	0	0	1	0	1	0	0	0	2	4	0	0	0	3	0	11	34
8:00 AM	**0**	**1**	**0**	**2**	**0**	**2**	**0**	**0**	**0**	**1**	**2**	**0**	**0**	**0**	**6**	**1**	**15**	**39**
8:15 AM	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**2**	**0**	**10**	**40**
8:30 AM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**2**	**5**	**0**	**0**	**0**	**1**	**2**	**11**	**47**
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**3**	**1**	**7**	**43**
Count Total	0	4	0	9	0	3	0	0	0	6	31	0	0	0	20	4	77	
Pk Hr Heavy	**0**	**3**	**0**	**3**	**0**	**2**	**0**	**0**	**0**	**3**	**16**	**0**	**0**	**0**	**12**	**4**	**43**	

Count Summaries - Bikes

Interval Start	Holmes Ln				Hilda St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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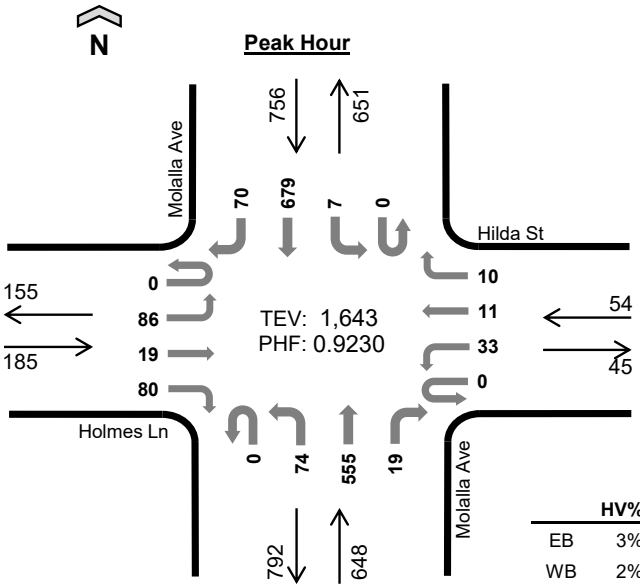
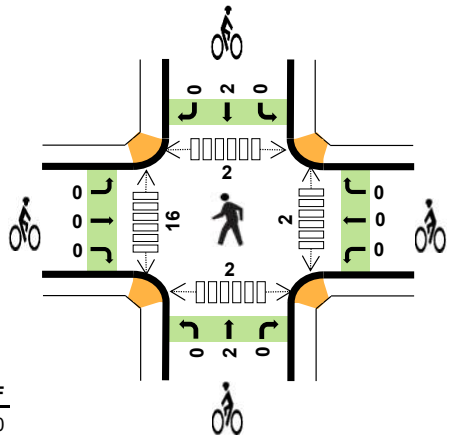
Molalla Ave
Holmes Ln

Date: 9/9/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM





	HV%	PHF
EB	3%	0.70
WB	2%	0.84
NB	2%	0.90
SB	1%	0.94
TOTAL	2%	0.92

Peak Hour Count Summaries

Peak Hour Interval Start		Holmes Ln Eastbound				Hilda St Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		**0**	**29**	**4**	**33**	**0**	**10**	**3**	**3**	**0**	**14**	**142**	**5**	**0**	**3**	**178**	**21**	**445**	**0**
4:15 PM		**0**	**20**	**5**	**18**	**0**	**11**	**2**	**3**	**0**	**24**	**126**	**7**	**0**	**2**	**144**	**9**	**371**	**0**
4:30 PM		**0**	**15**	**7**	**16**	**0**	**4**	**4**	**1**	**0**	**22**	**156**	**3**	**0**	**0**	**182**	**19**	**429**	**0**
4:45 PM		**0**	**22**	**3**	**13**	**0**	**8**	**2**	**3**	**0**	**14**	**131**	**4**	**0**	**2**	**175**	**21**	**398**	**1,643**
Pk Hr	All	**0**	**86**	**19**	**80**	**0**	**33**	**11**	**10**	**0**	**74**	**555**	**19**	**0**	**7**	**679**	**70**	**1,643**	
	HV	**0**	**2**	**0**	**3**	**0**	**1**	**0**	**0**	**0**	**3**	**10**	**0**	**0**	**0**	**8**	**3**	**30**	
	HV%	-	**2%**	**0%**	**4%**	-	**3%**	**0%**	**0%**	-	**4%**	**2%**	**0%**	-	**0%**	**1%**	**4%**	**2%**	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	**0**	**1**	**2**	**7**	***10***	**0**	**0**	**1**	**0**	***1***	**0**	**4**	**0**	**1**	***5***
4:15 PM	**1**	**0**	**2**	**1**	***4***	**0**	**0**	**1**	**1**	***2***	**1**	**2**	**0**	**1**	***4***
4:30 PM	**2**	**0**	**5**	**2**	***9***	**0**	**0**	**0**	**1**	***1***	**0**	**7**	**0**	**0**	***7***
4:45 PM	**2**	**0**	**4**	**1**	***7***	**0**	**0**	**0**	**0**	***0***	**1**	**3**	**2**	**0**	***6***
Peak Hour	**5**	**1**	**13**	**11**	***30***	**0**	**0**	**2**	**2**	***4***	**2**	**16**	**2**	**2**	***22***

Kyle Campbell
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Count Summaries - All Vehicles

Interval Start	Holmes Ln				Hilda St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**29**	**4**	**33**	**0**	**10**	**3**	**3**	**0**	**14**	**142**	**5**	**0**	**3**	**178**	**21**	**445**	0
4:15 PM	**0**	**20**	**5**	**18**	**0**	**11**	**2**	**3**	**0**	**24**	**126**	**7**	**0**	**2**	**144**	**9**	**371**	**0**
4:30 PM	**0**	**15**	**7**	**16**	**0**	**4**	**4**	**1**	**0**	**22**	**156**	**3**	**0**	**0**	**182**	**19**	**429**	**0**
4:45 PM	**0**	**22**	**3**	**13**	**0**	**8**	**2**	**3**	**0**	**14**	**131**	**4**	**0**	**2**	**175**	**21**	**398**	**1,643**
5:00 PM	0	17	3	8	0	10	3	4	0	16	145	5	0	0	163	19	393	1,591
5:15 PM	0	19	2	19	0	7	1	4	0	16	139	8	0	2	128	20	365	1,585
5:30 PM	0	13	3	18	0	8	1	0	0	17	132	6	0	2	129	17	346	1,502
5:45 PM	0	13	1	13	0	6	4	2	0	20	128	4	0	1	125	17	334	1,438
Count Total	0	148	28	138	0	64	20	20	0	143	1,099	42	0	12	1,224	143	3,081	
Pk Hr All	**0**	**86**	**19**	**80**	**0**	**33**	**11**	**10**	**0**	**74**	**555**	**19**	**0**	**7**	**679**	**70**	**1,643**	
Pk Hr HV	**0**	**2**	**0**	**3**	**0**	**1**	**0**	**0**	**0**	**3**	**10**	**0**	**0**	**0**	**8**	**3**	**30**	
Pk Hr HV%	**-**	**2%**	**0%**	**4%**	**-**	**3%**	**0%**	**0%**	**-**	**4%**	**2%**	**0%**	**-**	**0%**	**1%**	**4%**	**2%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	**0**	**1**	**2**	**7**	**10**	**0**	**0**	**1**	**0**	**1**	**0**	**4**	**0**	**1**	**5**
4:15 PM	**1**	**0**	**2**	**1**	**4**	**0**	**0**	**1**	**1**	**2**	**1**	**2**	**0**	**1**	**4**
4:30 PM	**2**	**0**	**5**	**2**	**9**	**0**	**0**	**0**	**1**	**1**	**0**	**7**	**0**	**0**	**7**
4:45 PM	**2**	**0**	**4**	**1**	**7**	**0**	**0**	**0**	**0**	**0**	**1**	**3**	**2**	**0**	**6**
5:00 PM	0	0	1	1	*2*	0	0	0	1	*1*	1	0	1	0	*2*
5:15 PM	0	0	0	3	*3*	0	0	0	0	*0*	0	2	0	1	*3*
5:30 PM	0	0	0	0	*0*	0	0	1	1	*2*	3	2	0	0	*5*
5:45 PM	0	0	1	1	*2*	0	0	0	0	*0*	3	1	1	1	*6*
Count Total	5	1	15	16	*37*	0	0	3	4	*7*	9	21	4	4	*38*
Peak Hour	**5**	**1**	**13**	**11**	***30***	**0**	**0**	**2**	**2**	***4***	**2**	**16**	**2**	**2**	**22**

Kyle Campbell
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Count Summaries - Heavy Vehicles

Interval Start	Holmes Ln				Hilda St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**5**	**2**	**10**	0
4:15 PM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**4**	**0**
4:30 PM	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**1**	**4**	**0**	**0**	**0**	**1**	**1**	**9**	**0**
4:45 PM	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**1**	**0**	**7**	**30**
5:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2	22
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	3	21
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
5:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2	7
Count Total	0	2	0	3	0	1	0	0	0	3	12	0	0	0	12	4	37	
Pk Hr Heavy	**0**	**2**	**0**	**3**	**0**	**1**	**0**	**0**	**0**	**3**	**10**	**0**	**0**	**0**	**8**	**3**	**30**	

Count Summaries - Bikes

Interval Start	Holmes Ln				Hilda St				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**2**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	4
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2	3
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Count Total	0	0	0	0	0	0	0	0	0	0	3	0	0	0	4	0	7	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**2**	**0**	**4**	

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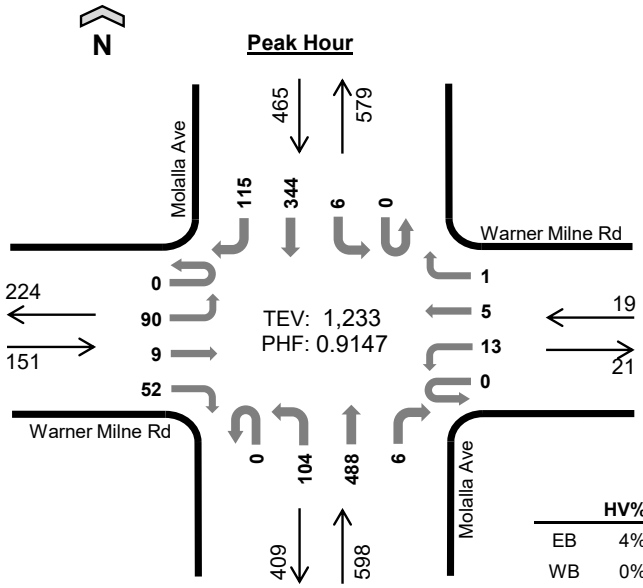
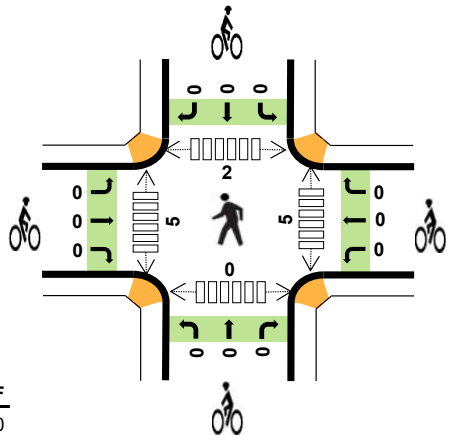
Molalla Ave
Warner Milne Rd

Date: 9/9/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 8:00 AM to 9:00 AM





	HV%	PHF
EB	4%	0.80
WB	0%	0.79
NB	5%	0.94
SB	4%	0.87
TOTAL	4%	0.91

Peak Hour Count Summaries

Peak Hour Interval Start		Warner Milne Rd Eastbound				Warner Milne Rd Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
8:00 AM		0	19	2	16	0	4	0	0	0	21	110	1	0	1	82	28	284	0
8:15 AM		0	17	3	7	0	2	2	1	0	25	123	2	0	1	72	34	289	0
8:30 AM		0	25	2	20	0	2	2	0	0	24	134	1	0	3	85	25	323	0
8:45 AM		0	29	2	9	0	5	1	0	0	34	121	2	0	1	105	28	337	1,233
Pk Hr	All	0	90	9	52	0	13	5	1	0	104	488	6	0	6	344	115	1,233	
	HV	0	2	0	4	0	0	0	0	0	1	25	1	0	0	17	3	53	
	HV%	-	2%	0%	8%	-	0%	0%	0%	-	1%	5%	17%	-	0%	5%	3%	4%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
8:00 AM	3	0	7	9	*19*	0	0	0	0	*0*	0	1	0	0	*1*
8:15 AM	2	0	7	2	*11*	0	0	0	0	*0*	1	1	0	0	*2*
8:30 AM	0	0	6	3	*9*	0	0	0	0	*0*	1	2	0	0	*3*
8:45 AM	1	0	7	6	*14*	0	0	0	0	*0*	3	1	2	0	*6*
Peak Hour	6	0	27	20	*53*	0	0	0	0	*0*	5	5	2	0	*12*

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Count Summaries - All Vehicles

Interval Start	Warner Milne Rd Eastbound				Warner Milne Rd Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	22	2	4	0	1	2	2	0	14	81	1	0	1	32	13	175	0
7:15 AM	0	29	0	15	0	3	0	1	0	15	89	0	0	0	51	19	222	0
7:30 AM	0	14	1	10	0	6	0	0	0	22	113	0	0	0	67	14	247	0
7:45 AM	0	21	2	19	0	5	0	1	0	29	103	1	0	0	75	25	281	925
8:00 AM	**0**	**19**	**2**	**16**	**0**	**4**	**0**	**0**	**0**	**21**	**110**	**1**	**0**	**1**	**82**	**28**	**284**	**1,034**
8:15 AM	**0**	**17**	**3**	**7**	**0**	**2**	**2**	**1**	**0**	**25**	**123**	**2**	**0**	**1**	**72**	**34**	**289**	**1,101**
8:30 AM	**0**	**25**	**2**	**20**	**0**	**2**	**2**	**0**	**0**	**24**	**134**	**1**	**0**	**3**	**85**	**25**	**323**	**1,177**
8:45 AM	**0**	**29**	**2**	**9**	**0**	**5**	**1**	**0**	**0**	**34**	**121**	**2**	**0**	**1**	**105**	**28**	**337**	**1,233**
Count Total	0	176	14	100	0	28	7	5	0	184	874	8	0	7	569	186	2,158	
Pk Hr All	**0**	**90**	**9**	**52**	**0**	**13**	**5**	**1**	**0**	**104**	**488**	**6**	**0**	**6**	**344**	**115**	**1,233**	
Pk Hr HV	**0**	**2**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**1**	**25**	**1**	**0**	**0**	**17**	**3**	**53**	
Pk Hr HV%	**-**	**2%**	**0%**	**8%**	**-**	**0%**	**0%**	**0%**	**-**	**1%**	**5%**	**17%**	**-**	**0%**	**5%**	**3%**	**4%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	0	0	4	6	*10*	1	0	0	0	*1*	2	1	1	1	*5*
7:15 AM	2	0	5	3	*10*	0	0	0	0	*0*	0	2	0	1	*3*
7:30 AM	1	0	5	3	*9*	0	0	0	1	*1*	0	0	0	1	*1*
7:45 AM	1	0	1	3	*5*	0	0	0	0	*0*	0	0	0	0	*0*
8:00 AM	**3**	**0**	**7**	**9**	**19**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**
8:15 AM	**2**	**0**	**7**	**2**	**11**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**2**
8:30 AM	**0**	**0**	**6**	**3**	**9**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**0**	**0**	**3**
8:45 AM	**1**	**0**	**7**	**6**	**14**	**0**	**0**	**0**	**0**	**0**	**3**	**1**	**2**	**0**	**6**
Count Total	10	0	42	35	*87*	1	0	0	1	*2*	7	8	3	3	*21*
Peak Hour	**6**	**0**	**27**	**20**	***53***	**0**	**0**	**0**	**0**	***0***	**5**	**5**	**2**	**0**	**12**

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Count Summaries - Heavy Vehicles

Interval Start	Warner Milne Rd				Warner Milne Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	3	1	0	0	6	0	10	0
7:15 AM	0	1	0	1	0	0	0	0	0	0	5	0	0	0	3	0	10	0
7:30 AM	0	0	0	1	0	0	0	0	0	0	5	0	0	0	3	0	9	0
7:45 AM	0	1	0	0	0	0	0	0	0	0	0	1	0	0	3	0	5	34
8:00 AM	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**1**	**6**	**0**	**0**	**0**	**7**	**2**	**19**	**43**
8:15 AM	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**2**	**0**	**11**	**44**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**1**	**0**	**0**	**3**	**0**	**9**	**44**
8:45 AM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**5**	**1**	**14**	**53**
Count Total	0	4	0	6	0	0	0	0	0	1	38	3	0	0	32	3	87	
Pk Hr Heavy	**0**	**2**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**1**	**25**	**1**	**0**	**0**	**17**	**3**	**53**	

Count Summaries - Bikes

Interval Start	Warner Milne Rd				Warner Milne Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	2	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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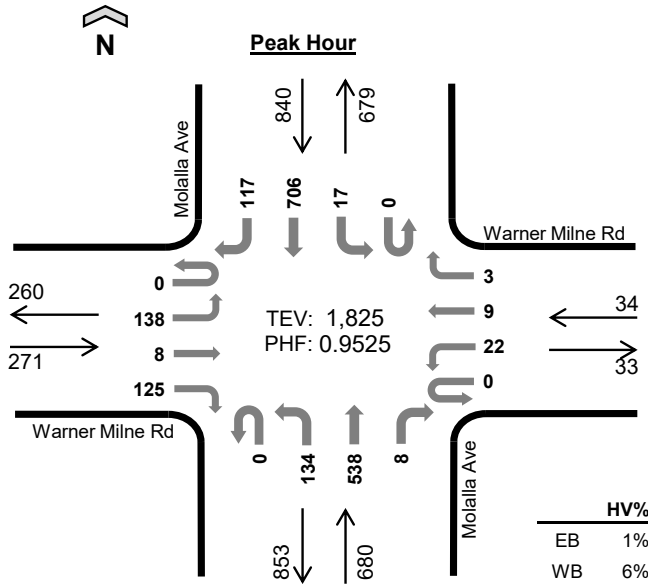
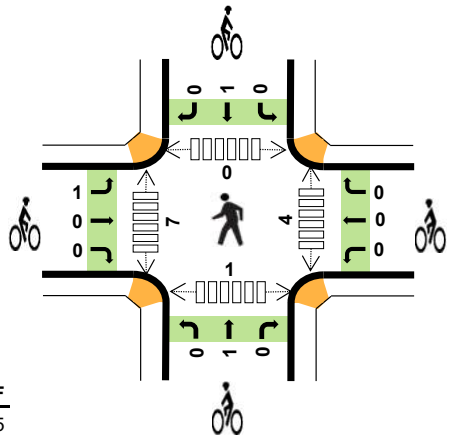
Molalla Ave
Warner Milne Rd

Date: 9/9/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM





	HV%	PHF
EB	1%	0.95
WB	6%	0.85
NB	2%	0.89
SB	2%	0.88
TOTAL	2%	0.95

Peak Hour Count Summaries

Peak Hour Interval Start		Warner Milne Rd Eastbound				Warner Milne Rd Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		**0**	**36**	**1**	**34**	**0**	**9**	**1**	**0**	**0**	**27**	**132**	**0**	**0**	**3**	**203**	**33**	**479**	**0**
4:15 PM		**0**	**38**	**0**	**24**	**0**	**6**	**2**	**2**	**0**	**36**	**118**	**5**	**0**	**3**	**164**	**32**	**430**	**0**
4:30 PM		**0**	**33**	**3**	**32**	**0**	**2**	**4**	**1**	**0**	**41**	**149**	**2**	**0**	**5**	**159**	**32**	**463**	**0**
4:45 PM		**0**	**31**	**4**	**35**	**0**	**5**	**2**	**0**	**0**	**30**	**139**	**1**	**0**	**6**	**180**	**20**	**453**	**1,825**
Pk Hr	All	**0**	**138**	**8**	**125**	**0**	**22**	**9**	**3**	**0**	**134**	**538**	**8**	**0**	**17**	**706**	**117**	**1,825**	
	HV	**0**	**2**	**1**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**12**	**1**	**0**	**0**	**16**	**0**	**35**	
	HV%	**-**	**1%**	**13%**	**1%**	**-**	**9%**	**0%**	**0%**	**-**	**0%**	**2%**	**13%**	**-**	**0%**	**2%**	**0%**	**2%**	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	**1**	**1**	**3**	**8**	***13***	**0**	**0**	**1**	**0**	***1***	**1**	**4**	**0**	**1**	***6***
4:15 PM	**2**	**0**	**3**	**4**	***9***	**0**	**0**	**0**	**1**	***1***	**3**	**3**	**0**	**0**	***6***
4:30 PM	**0**	**0**	**3**	**3**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
4:45 PM	**1**	**1**	**4**	**1**	***7***	**1**	**0**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***
Peak Hour	**4**	**2**	**13**	**16**	***35***	**1**	**0**	**1**	**1**	***3***	**4**	**7**	**0**	**1**	***12***

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Count Summaries - All Vehicles

Interval Start	Warner Milne Rd Eastbound				Warner Milne Rd Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**36**	**1**	**34**	**0**	**9**	**1**	**0**	**0**	**27**	**132**	**0**	**0**	**3**	**203**	**33**	**479**	0
4:15 PM	**0**	**38**	**0**	**24**	**0**	**6**	**2**	**2**	**0**	**36**	**118**	**5**	**0**	**3**	**164**	**32**	**430**	**0**
4:30 PM	**0**	**33**	**3**	**32**	**0**	**2**	**4**	**1**	**0**	**41**	**149**	**2**	**0**	**5**	**159**	**32**	**463**	**0**
4:45 PM	**0**	**31**	**4**	**35**	**0**	**5**	**2**	**0**	**0**	**30**	**139**	**1**	**0**	**6**	**180**	**20**	**453**	**1,825**
5:00 PM	0	36	1	45	0	9	0	1	0	31	116	1	0	4	165	33	442	1,788
5:15 PM	0	32	2	19	0	4	5	2	0	18	128	5	0	1	135	28	379	1,737
5:30 PM	0	33	1	31	0	9	4	2	0	34	110	2	0	1	137	16	380	1,654
5:45 PM	0	31	1	36	0	4	4	2	0	35	119	6	0	5	135	23	401	1,602
Count Total	0	270	13	256	0	48	22	10	0	252	1,011	22	0	28	1,278	217	3,427	
Pk Hr All	**0**	**138**	**8**	**125**	**0**	**22**	**9**	**3**	**0**	**134**	**538**	**8**	**0**	**17**	**706**	**117**	**1,825**	
Pk Hr HV	**0**	**2**	**1**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**12**	**1**	**0**	**0**	**16**	**0**	**35**	
Pk Hr HV%	**-**	**1%**	**13%**	**1%**	**-**	**9%**	**0%**	**0%**	**-**	**0%**	**2%**	**13%**	**-**	**0%**	**2%**	**0%**	**2%**	

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) E	W	N	S	Total
4:00 PM	**1**	**1**	**3**	**8**	**13**	**0**	**0**	**1**	**0**	**1**	**1**	**4**	**0**	**1**	**6**
4:15 PM	**2**	**0**	**3**	**4**	**9**	**0**	**0**	**0**	**1**	**1**	**3**	**3**	**0**	**0**	**6**
4:30 PM	**0**	**0**	**3**	**3**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:45 PM	**1**	**1**	**4**	**1**	**7**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**
5:00 PM	0	0	0	1	*1*	0	0	0	1	*1*	0	1	2	3	*6*
5:15 PM	0	0	0	2	*2*	0	0	0	0	*0*	0	2	0	4	*6*
5:30 PM	0	0	0	0	*0*	0	1	0	0	*1*	1	0	2	1	*4*
5:45 PM	1	0	1	1	*3*	0	0	0	1	*1*	6	1	0	4	*11*
Count Total	5	2	14	20	*41*	1	1	1	3	*6*	11	11	4	13	*39*
Peak Hour	**4**	**2**	**13**	**16**	***35***	**1**	**0**	**1**	**1**	***3***	**4**	**7**	**0**	**1**	**12**

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Count Summaries - Heavy Vehicles

Interval Start	Warner Milne Rd				Warner Milne Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**8**	**0**	**13**	0
4:15 PM	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**0**	**4**	**0**	**9**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**3**	**0**	**6**	**0**
4:45 PM	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**1**	**0**	**7**	**35**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	23
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	16
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
5:45 PM	0	0	0	1	0	0	0	0	0	0	1	0	0	0	1	0	3	6
Count Total	0	2	1	2	0	2	0	0	0	0	13	1	0	0	20	0	41	
Pk Hr Heavy	**0**	**2**	**1**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**12**	**1**	**0**	**0**	**16**	**0**	**35**	

Count Summaries - Bikes

Interval Start	Warner Milne Rd				Warner Milne Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:45 PM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**3**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	3
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3
Count Total	0	1	0	0	0	0	0	1	0	0	1	0	0	0	2	1	6	
Pk Hr Bike	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**3**	

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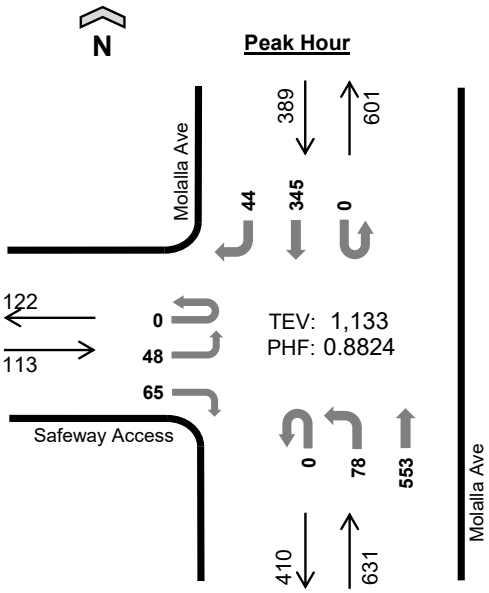
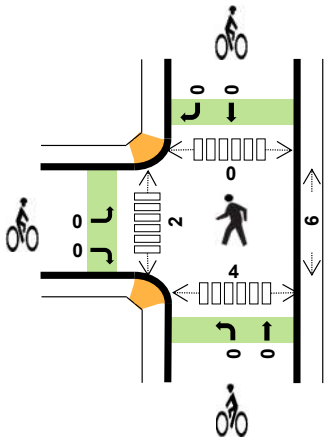
Molalla Ave
Safeway Access

Date: 9/9/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 8:00 AM to 9:00 AM





	HV%	PHF
EB	1%	0.71
WB	--	--
NB	3%	0.91
SB	4%	0.79
TOTAL	4%	0.88

Peak Hour Count Summaries

Peak Hour Interval Start		Safeway Access				n/a				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
8:00 AM		0	11	0	16	0	0	0	0	0	17	126	0	0	0	87	9	266	0
8:15 AM		0	10	0	11	0	0	0	0	0	21	141	0	0	0	66	12	261	0
8:30 AM		0	20	0	20	0	0	0	0	0	15	138	0	0	0	83	9	285	0
8:45 AM		0	7	0	18	0	0	0	0	0	25	148	0	0	0	109	14	321	1,133
Pk Hr	All	0	48	0	65	0	0	0	0	0	78	553	0	0	0	345	44	1,133	
	HV	0	0	0	1	0	0	0	0	0	0	22	0	0	0	16	1	40	
	HV%	-	0%	-	2%	-	-	-	-	-	0%	4%	-	-	-	5%	2%	4%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
8:00 AM	1	0	4	8	*13*	0	0	0	0	*0*	0	0	0	0	*0*
8:15 AM	0	0	6	2	*8*	0	0	0	0	*0*	1	1	0	2	*4*
8:30 AM	0	0	5	2	*7*	0	0	0	0	*0*	3	1	0	2	*6*
8:45 AM	0	0	7	5	*12*	0	0	0	0	*0*	2	0	0	0	*2*
Peak Hour	1	0	22	17	*40*	0	0	0	0	*0*	6	2	0	4	*12*

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Count Summaries - All Vehicles

Interval Start	Safeway Access				n/a				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	8	0	6	0	0	0	0	0	8	88	0	0	0	29	5	144	0
7:15 AM	0	1	0	14	0	0	0	0	0	9	107	0	0	0	68	3	202	0
7:30 AM	0	9	0	17	0	0	0	0	0	20	127	0	0	0	79	7	259	0
7:45 AM	0	7	0	17	0	0	0	0	0	12	124	0	0	0	90	9	259	864
8:00 AM	**0**	**11**	**0**	**16**	**0**	**0**	**0**	**0**	**0**	**17**	**126**	**0**	**0**	**0**	**87**	**9**	**266**	**986**
8:15 AM	**0**	**10**	**0**	**11**	**0**	**0**	**0**	**0**	**0**	**21**	**141**	**0**	**0**	**0**	**66**	**12**	**261**	**1,045**
8:30 AM	**0**	**20**	**0**	**20**	**0**	**0**	**0**	**0**	**0**	**15**	**138**	**0**	**0**	**0**	**83**	**9**	**285**	**1,071**
8:45 AM	**0**	**7**	**0**	**18**	**0**	**0**	**0**	**0**	**0**	**25**	**148**	**0**	**0**	**0**	**109**	**14**	**321**	**1,133**
Count Total	0	73	0	119	0	0	0	0	0	127	999	0	0	0	611	68	1,997	
Pk Hr All	**0**	**48**	**0**	**65**	**0**	**0**	**0**	**0**	**0**	**78**	**553**	**0**	**0**	**0**	**345**	**44**	**1,133**	
Pk Hr HV	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**22**	**0**	**0**	**0**	**16**	**1**	**40**	
Pk Hr HV%	**-**	**0%**	**-**	**2%**	**-**	**-**	**-**	**-**	**-**	**0%**	**4%**	**-**	**-**	**-**	**5%**	**2%**	**4%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	0	0	4	6	*10*	0	0	0	0	*0*	1	0	2	0	*3*
7:15 AM	1	0	8	2	*11*	0	0	0	0	*0*	0	0	2	2	*4*
7:30 AM	1	0	6	4	*11*	0	0	0	0	*0*	0	0	2	0	*2*
7:45 AM	1	0	2	2	*5*	0	0	0	1	*1*	0	0	0	0	*0*
8:00 AM	**1**	**0**	**4**	**8**	**13**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	**0**	**0**	**6**	**2**	**8**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**2**	**4**
8:30 AM	**0**	**0**	**5**	**2**	**7**	**0**	**0**	**0**	**0**	**0**	**3**	**1**	**0**	**2**	**6**
8:45 AM	**0**	**0**	**7**	**5**	**12**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**2**
Count Total	4	0	42	31	*77*	0	0	0	1	*1*	7	2	6	6	*21*
Peak Hour	**1**	**0**	**22**	**17**	***40***	**0**	**0**	**0**	**0**	***0***	**6**	**2**	**0**	**4**	**12**

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Count Summaries - Heavy Vehicles

Interval Start	Safeway Access				n/a				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	6	0	10	0
7:15 AM	0	0	0	1	0	0	0	0	0	0	8	0	0	0	2	0	11	0
7:30 AM	0	0	0	1	0	0	0	0	0	0	6	0	0	0	3	1	11	0
7:45 AM	0	0	0	1	0	0	0	0	0	1	1	0	0	0	2	0	5	37
8:00 AM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**7**	**1**	**13**	**40**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**2**	**0**	**8**	**37**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**2**	**0**	**7**	**33**
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**5**	**0**	**12**	**40**
Count Total	0	0	0	4	0	0	0	0	0	1	41	0	0	0	29	2	77	
Pk Hr Heavy	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**22**	**0**	**0**	**0**	**16**	**1**	**40**	

Count Summaries - Bikes

Interval Start	Safeway Access				n/a				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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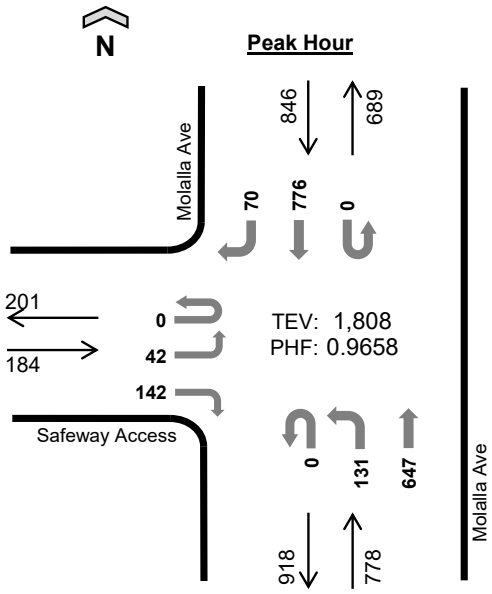
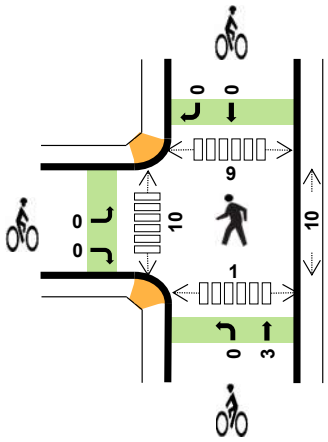
Molalla Ave
Safeway Access

Date: 9/9/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM





	HV%	PHF
EB	0%	0.79
WB	--	--
NB	1%	0.89
SB	2%	0.90
TOTAL	1%	0.97

Peak Hour Count Summaries

Peak Hour Interval Start		Safeway Access Eastbound				n/a Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	11	0	27	0	0	0	0	0	28	148	0	0	0	213	21	448	0
4:15 PM		0	13	0	42	0	0	0	0	0	37	155	0	0	0	187	12	446	0
4:30 PM		0	3	0	30	0	0	0	0	0	29	189	0	0	0	177	18	446	0
4:45 PM		0	15	0	43	0	0	0	0	0	37	155	0	0	0	199	19	468	1,808
Pk Hr	All	0	42	0	142	0	0	0	0	0	131	647	0	0	0	776	70	1,808	
	HV	0	0	0	0	0	0	0	0	0	0	11	0	0	0	15	0	26	
	HV%	-	0%	-	0%	-	-	-	-	-	0%	2%	-	-	-	2%	0%	1%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) E	W	N	S	Total
4:00 PM	0	0	2	8	*10*	0	0	3	0	*3*	2	1	0	0	*3*
4:15 PM	0	0	1	3	*4*	0	0	0	0	*0*	4	1	2	0	*7*
4:30 PM	0	0	4	3	*7*	0	0	0	0	*0*	1	5	2	1	*9*
4:45 PM	0	0	4	1	*5*	0	0	0	0	*0*	3	3	5	0	*11*
Peak Hour	0	0	11	15	*26*	0	0	3	0	*3*	10	10	9	1	*30*

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Count Summaries - All Vehicles

Interval Start	Safeway Access				n/a				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**11**	**0**	**27**	**0**	**0**	**0**	**0**	**0**	**28**	**148**	**0**	**0**	**0**	**213**	**21**	**448**	0
4:15 PM	**0**	**13**	**0**	**42**	**0**	**0**	**0**	**0**	**0**	**37**	**155**	**0**	**0**	**0**	**187**	**12**	**446**	**0**
4:30 PM	**0**	**3**	**0**	**30**	**0**	**0**	**0**	**0**	**0**	**29**	**189**	**0**	**0**	**0**	**177**	**18**	**446**	**0**
4:45 PM	**0**	**15**	**0**	**43**	**0**	**0**	**0**	**0**	**0**	**37**	**155**	**0**	**0**	**0**	**199**	**19**	**468**	**1,808**
5:00 PM	0	13	0	23	0	0	0	0	0	35	141	0	0	0	211	18	441	1,801
5:15 PM	0	21	0	32	0	0	0	0	0	34	145	0	0	0	150	14	396	1,751
5:30 PM	0	7	0	34	0	0	0	0	0	29	148	0	0	0	169	16	403	1,708
5:45 PM	0	15	0	28	0	0	0	0	0	29	155	0	0	0	153	18	398	1,638
Count Total	0	98	0	259	0	0	0	0	0	258	1,236	0	0	0	1,459	136	3,446	
Pk Hr All	**0**	**42**	**0**	**142**	**0**	**0**	**0**	**0**	**0**	**131**	**647**	**0**	**0**	**0**	**776**	**70**	**1,808**	
Pk Hr HV	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**11**	**0**	**0**	**0**	**15**	**0**	**26**	
Pk Hr HV%	**-**	**0%**	**-**	**0%**	**-**	**-**	**-**	**-**	**-**	**0%**	**2%**	**-**	**-**	**-**	**2%**	**0%**	**1%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	**0**	**0**	**2**	**8**	**10**	**0**	**0**	**3**	**0**	**3**	**2**	**1**	**0**	**0**	**3**
4:15 PM	**0**	**0**	**1**	**3**	**4**	**0**	**0**	**0**	**0**	**0**	**4**	**1**	**2**	**0**	**7**
4:30 PM	**0**	**0**	**4**	**3**	**7**	**0**	**0**	**0**	**0**	**0**	**1**	**5**	**2**	**1**	**9**
4:45 PM	**0**	**0**	**4**	**1**	**5**	**0**	**0**	**0**	**0**	**0**	**3**	**3**	**5**	**0**	**11**
5:00 PM	0	0	0	3	*3*	0	0	0	0	*0*	0	7	0	0	*7*
5:15 PM	1	0	0	2	*3*	0	0	1	0	*1*	1	0	0	0	*1*
5:30 PM	0	0	0	0	*0*	0	0	0	0	*0*	3	0	3	1	*7*
5:45 PM	0	0	1	2	*3*	0	0	0	0	*0*	5	1	3	1	*10*
Count Total	1	0	12	22	*35*	0	0	4	0	*4*	19	18	15	3	*55*
Peak Hour	**0**	**0**	**11**	**15**	***26***	**0**	**0**	**3**	**0**	***3***	**10**	**10**	**9**	**1**	**30**

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Count Summaries - Heavy Vehicles

Interval Start	Safeway Access				n/a				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**8**	**0**	**10**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**3**	**0**	**4**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**3**	**0**	**7**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**1**	**0**	**5**	**26**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	19
5:15 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	3	18
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
5:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	3	9
Count Total	0	0	0	1	0	0	0	0	0	0	12	0	0	0	22	0	35	
Pk Hr Heavy	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**11**	**0**	**0**	**0**	**15**	**0**	**26**	

Count Summaries - Bikes

Interval Start	Safeway Access				n/a				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**3**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	4	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**3**	

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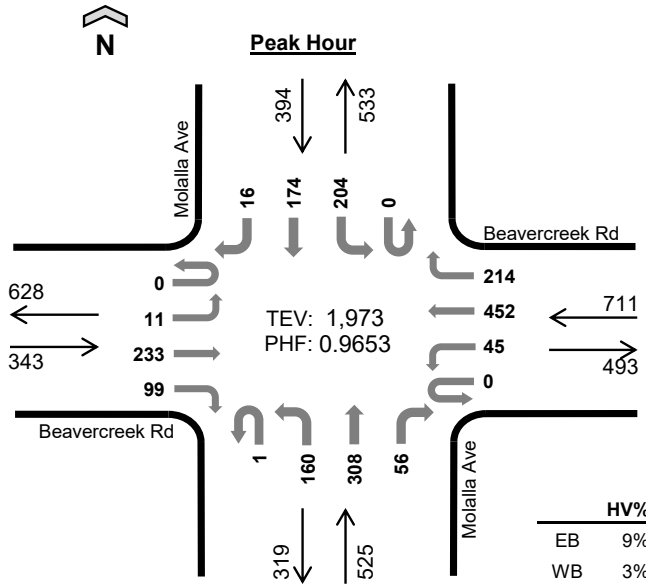
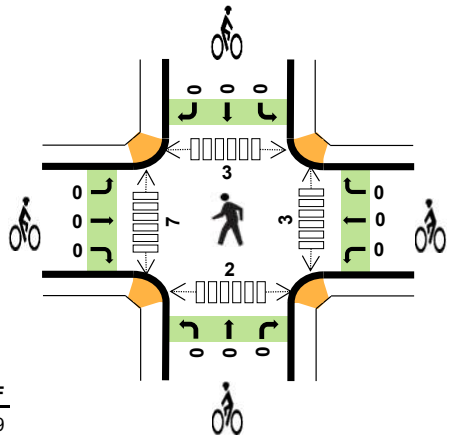
Molalla Ave
Beavercreek Rd

Date: 9/9/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM





	HV%	PHF
EB	9%	0.89
WB	3%	0.94
NB	3%	0.97
SB	4%	0.90
TOTAL	4%	0.97

Peak Hour Count Summaries

Peak Hour Interval Start		Beavercreek Rd Eastbound				Beavercreek Rd Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:45 AM		0	2	60	21	0	10	123	57	0	36	69	22	0	56	48	5	509	0
8:00 AM		0	2	63	31	0	19	122	42	0	40	79	16	0	57	37	3	511	0
8:15 AM		0	4	56	21	0	9	105	56	1	40	83	8	0	38	40	5	466	0
8:30 AM		0	3	54	26	0	7	102	59	0	44	77	10	0	53	49	3	487	1,973
Pk Hr	All	0	11	233	99	0	45	452	214	1	160	308	56	0	204	174	16	1,973	
	HV	0	0	25	6	0	5	13	6	0	6	5	4	0	11	4	0	85	
	HV%	-	0%	11%	6%	-	11%	3%	3%	0%	4%	2%	7%	-	5%	2%	0%	4%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:45 AM	8	6	2	4	*20*	0	0	0	0	*0*	0	2	0	0	*2*
8:00 AM	14	3	6	6	*29*	0	0	0	0	*0*	0	2	0	1	*3*
8:15 AM	5	6	4	2	*17*	0	0	0	0	*0*	3	3	1	1	*8*
8:30 AM	4	9	3	3	*19*	0	0	0	0	*0*	0	0	2	0	*2*
Peak Hour	31	24	15	15	*85*	0	0	0	0	*0*	3	7	3	2	*15*

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Count Summaries - All Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	10	48	25	0	9	100	28	0	20	54	14	0	21	21	2	352	0
7:15 AM	0	5	49	22	0	9	109	47	0	26	61	12	0	37	41	1	419	0
7:30 AM	0	7	64	20	0	6	93	72	0	42	57	15	0	41	48	5	470	0
7:45 AM	**0**	**2**	**60**	**21**	**0**	**10**	**123**	**57**	**0**	**36**	**69**	**22**	**0**	**56**	**48**	**5**	**509**	**1,750**
8:00 AM	**0**	**2**	**63**	**31**	**0**	**19**	**122**	**42**	**0**	**40**	**79**	**16**	**0**	**57**	**37**	**3**	**511**	**1,909**
8:15 AM	**0**	**4**	**56**	**21**	**0**	**9**	**105**	**56**	**1**	**40**	**83**	**8**	**0**	**38**	**40**	**5**	**466**	**1,956**
8:30 AM	**0**	**3**	**54**	**26**	**0**	**7**	**102**	**59**	**0**	**44**	**77**	**10**	**0**	**53**	**49**	**3**	**487**	**1,973**
8:45 AM	0	2	41	25	0	12	106	75	0	44	49	15	0	60	66	5	500	1,964
Count Total	0	35	435	191	0	81	860	436	1	292	529	112	0	363	350	29	3,714	
Pk Hr All	**0**	**11**	**233**	**99**	**0**	**45**	**452**	**214**	**1**	**160**	**308**	**56**	**0**	**204**	**174**	**16**	**1,973**	
Pk Hr HV	**0**	**0**	**25**	**6**	**0**	**5**	**13**	**6**	**0**	**6**	**5**	**4**	**0**	**11**	**4**	**0**	**85**	
Pk Hr HV%	**-**	**0%**	**11%**	**6%**	**-**	**11%**	**3%**	**3%**	**0%**	**4%**	**2%**	**7%**	**-**	**5%**	**2%**	**0%**	**4%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	4	4	7	6	*21*	0	0	0	0	*0*	1	4	1	2	*8*
7:15 AM	3	7	3	3	*16*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	12	3	4	3	*22*	0	0	0	0	*0*	0	1	0	0	*1*
7:45 AM	**8**	**6**	**2**	**4**	**20**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**2**
8:00 AM	**14**	**3**	**6**	**6**	**29**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**3**
8:15 AM	**5**	**6**	**4**	**2**	**17**	**0**	**0**	**0**	**0**	**0**	**3**	**3**	**1**	**1**	**8**
8:30 AM	**4**	**9**	**3**	**3**	**19**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**
8:45 AM	1	4	5	5	*15*	0	0	0	0	*0*	0	5	1	0	*6*
Count Total	51	42	34	32	*159*	0	0	0	0	*0*	4	17	5	4	*30*
Peak Hour	**31**	**24**	**15**	**15**	***85***	**0**	**0**	**0**	**0**	***0***	**3**	**7**	**3**	**2**	**15**

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Count Summaries - Heavy Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	3	1	0	3	1	0	0	3	3	1	0	3	1	2	21	0
7:15 AM	0	1	2	0	0	2	3	2	0	1	0	2	0	1	2	0	16	0
7:30 AM	0	1	9	2	0	0	2	1	0	3	1	0	0	1	2	0	22	0
7:45 AM	**0**	**0**	**8**	**0**	**0**	**3**	**2**	**1**	**0**	**0**	**0**	**2**	**0**	**4**	**0**	**0**	**20**	**79**
8:00 AM	**0**	**0**	**11**	**3**	**0**	**0**	**2**	**1**	**0**	**2**	**2**	**2**	**0**	**5**	**1**	**0**	**29**	**87**
8:15 AM	**0**	**0**	**3**	**2**	**0**	**1**	**4**	**1**	**0**	**3**	**1**	**0**	**0**	**2**	**0**	**0**	**17**	**88**
8:30 AM	**0**	**0**	**3**	**1**	**0**	**1**	**5**	**3**	**0**	**1**	**2**	**0**	**0**	**0**	**3**	**0**	**19**	**85**
8:45 AM	0	0	1	0	0	1	0	3	0	3	2	0	0	2	3	0	15	80
Count Total	0	2	40	9	0	11	19	12	0	16	11	7	0	18	12	2	159	
Pk Hr Heavy	**0**	**0**	**25**	**6**	**0**	**5**	**13**	**6**	**0**	**6**	**5**	**4**	**0**	**11**	**4**	**0**	**85**	

Count Summaries - Bikes

Interval Start	Beavercreek Rd				Beavercreek Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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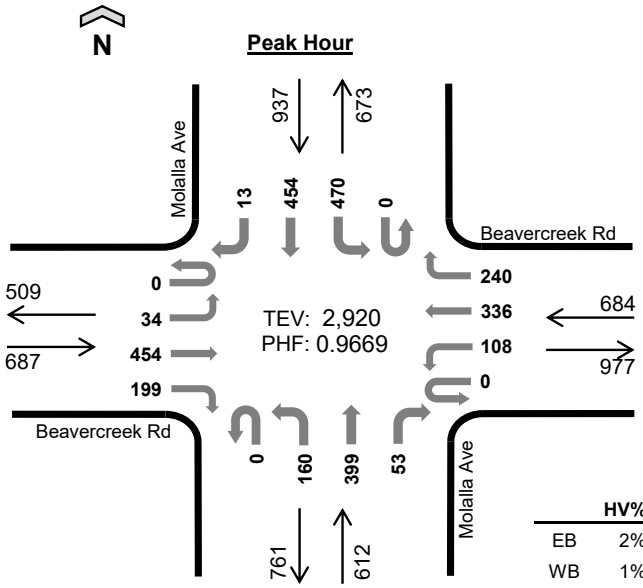
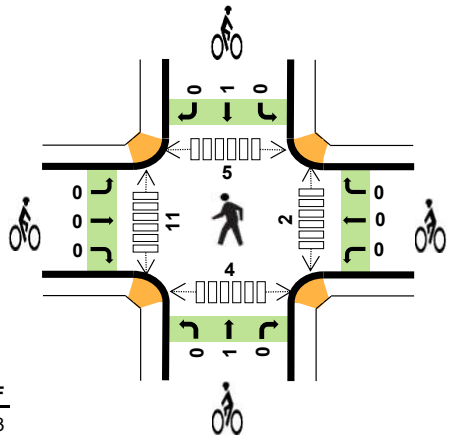
Molalla Ave
Beavercreek Rd

Date: 9/9/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:15 PM to 5:15 PM





	HV%	PHF
EB	2%	0.73
WB	1%	0.98
NB	2%	0.86
SB	1%	0.90
TOTAL	2%	0.97

Peak Hour Count Summaries

Peak Hour Interval Start		Beavercreek Rd Eastbound				Beavercreek Rd Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:15 PM		0	7	87	44	0	26	79	62	0	38	97	13	0	110	128	7	698	0
4:30 PM		0	10	113	46	0	22	97	55	0	42	123	13	0	102	108	2	733	0
4:45 PM		0	9	96	41	0	30	72	68	0	45	100	13	0	138	121	1	734	0
5:00 PM		0	8	158	68	0	30	88	55	0	35	79	14	0	120	97	3	755	2,920
Pk Hr	All	0	34	454	199	0	108	336	240	0	160	399	53	0	470	454	13	2,920	
	HV	0	1	7	7	0	1	5	4	0	8	2	0	0	5	8	0	48	
	HV%	-	3%	2%	4%	-	1%	1%	2%	-	5%	1%	0%	-	1%	2%	0%	2%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:15 PM	5	3	2	5	*15*	0	0	1	1	*2*	1	1	1	0	*3*
4:30 PM	2	5	3	4	*14*	0	0	0	0	*0*	0	2	1	0	*3*
4:45 PM	7	0	4	2	*13*	0	0	0	0	*0*	1	2	1	0	*4*
5:00 PM	1	2	1	2	*6*	0	0	0	0	*0*	0	6	2	4	*12*
Peak Hour	15	10	10	13	*48*	0	0	1	1	2	2	11	5	4	*22*

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Count Summaries - All Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	13	114	52	0	24	73	60	0	43	85	21	0	122	113	1	721	0
4:15 PM	**0**	**7**	**87**	**44**	**0**	**26**	**79**	**62**	**0**	**38**	**97**	**13**	**0**	**110**	**128**	**7**	**698**	**0**
4:30 PM	**0**	**10**	**113**	**46**	**0**	**22**	**97**	**55**	**0**	**42**	**123**	**13**	**0**	**102**	**108**	**2**	**733**	**0**
4:45 PM	**0**	**9**	**96**	**41**	**0**	**30**	**72**	**68**	**0**	**45**	**100**	**13**	**0**	**138**	**121**	**1**	**734**	**2,886**
5:00 PM	**0**	**8**	**158**	**68**	**0**	**30**	**88**	**55**	**0**	**35**	**79**	**14**	**0**	**120**	**97**	**3**	**755**	**2,920**
5:15 PM	0	5	104	33	0	30	60	69	0	37	86	25	0	100	104	3	656	2,878
5:30 PM	0	5	139	56	0	20	85	67	0	36	85	18	0	99	96	1	707	2,852
5:45 PM	0	5	72	28	0	26	72	68	0	37	90	15	0	100	100	3	616	2,734
Count Total	0	62	883	368	0	208	626	504	0	313	745	132	0	891	867	21	5,620	
Pk Hr All	**0**	**34**	**454**	**199**	**0**	**108**	**336**	**240**	**0**	**160**	**399**	**53**	**0**	**470**	**454**	**13**	**2,920**	
Pk Hr HV	**0**	**1**	**7**	**7**	**0**	**1**	**5**	**4**	**0**	**8**	**2**	**0**	**0**	**5**	**8**	**0**	**48**	
Pk Hr HV%	**-**	**3%**	**2%**	**4%**	**-**	**1%**	**1%**	**2%**	**-**	**5%**	**1%**	**0%**	**-**	**1%**	**2%**	**0%**	**2%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	6	7	3	9	*25*	0	0	0	0	*0*	2	4	2	2	*10*
4:15 PM	**5**	**3**	**2**	**5**	**15**	**0**	**0**	**1**	**1**	**2**	**1**	**1**	**1**	**0**	**3**
4:30 PM	**2**	**5**	**3**	**4**	**14**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**3**
4:45 PM	**7**	**0**	**4**	**2**	**13**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**1**	**0**	**4**
5:00 PM	**1**	**2**	**1**	**2**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**2**	**4**	**12**
5:15 PM	1	2	2	2	*7*	0	0	1	0	*1*	1	5	0	1	*7*
5:30 PM	2	2	1	1	*6*	0	0	0	0	*0*	1	4	0	1	*6*
5:45 PM	1	2	1	1	*5*	0	0	0	0	*0*	5	4	1	3	*13*
Count Total	25	23	17	26	*91*	0	0	2	1	*3*	11	28	8	11	*58*
Peak Hour	**15**	**10**	**10**	**13**	***48***	**0**	**0**	**1**	**1**	**2**	**2**	**11**	**5**	**4**	**22**

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Count Summaries - Heavy Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	2	4	0	1	6	0	0	3	0	0	0	4	5	0	25	0
4:15 PM	**0**	**0**	**5**	**0**	**0**	**1**	**1**	**1**	**0**	**2**	**0**	**0**	**0**	**3**	**2**	**0**	**15**	**0**
4:30 PM	**0**	**0**	**0**	**2**	**0**	**0**	**2**	**3**	**0**	**3**	**0**	**0**	**0**	**1**	**3**	**0**	**14**	**0**
4:45 PM	**0**	**1**	**2**	**4**	**0**	**0**	**0**	**0**	**0**	**2**	**2**	**0**	**0**	**1**	**1**	**0**	**13**	**67**
5:00 PM	**0**	**0**	**0**	**1**	**0**	**0**	**2**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**2**	**0**	**6**	**48**
5:15 PM	0	0	0	1	0	0	2	0	0	1	0	1	0	1	1	0	7	40
5:30 PM	0	0	1	1	0	1	1	0	0	1	0	0	0	1	0	0	6	32
5:45 PM	0	0	0	1	0	1	1	0	0	1	0	0	0	1	0	0	5	24
Count Total	0	1	10	14	0	4	15	4	0	14	2	1	0	12	14	0	91	
Pk Hr Heavy	**0**	**1**	**7**	**7**	**0**	**1**	**5**	**4**	**0**	**8**	**2**	**0**	**0**	**5**	**8**	**0**	**48**	

Count Summaries - Bikes

Interval Start	Beavercreek Rd				Beavercreek Rd				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**2**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	3	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**2**	

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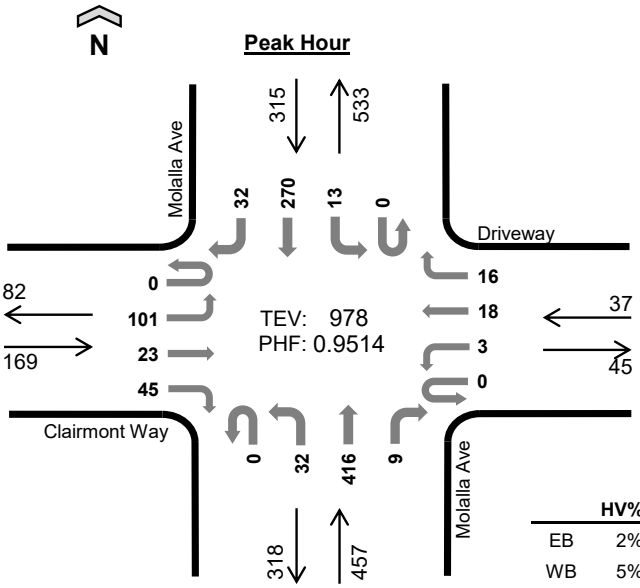
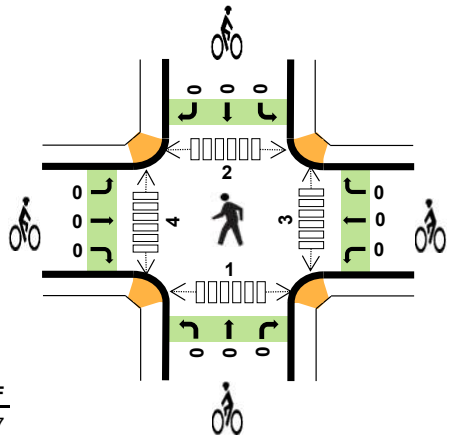
Molalla Ave
Clairmont Way

Date: 9/9/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 8:00 AM to 9:00 AM





	HV%	PHF
EB	2%	0.77
WB	5%	0.58
NB	4%	0.94
SB	5%	0.87
TOTAL	4%	0.95

Peak Hour Count Summaries

Peak Hour Interval Start		Clairmont Way (Eastbound)				Driveway (Westbound)				Molalla Ave (Northbound)				Molalla Ave (Southbound)				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
8:00 AM		0	29	9	17	0	1	3	1	0	5	93	2	0	2	70	12	244	0
8:15 AM		0	21	7	12	0	1	8	7	0	9	105	4	0	3	58	8	243	0
8:30 AM		0	26	4	7	0	1	3	4	0	9	108	1	0	4	63	4	234	0
8:45 AM		0	25	3	9	0	0	4	4	0	9	110	2	0	4	79	8	257	978
Pk Hr	All	0	101	23	45	0	3	18	16	0	32	416	9	0	13	270	32	978	
	HV	0	2	0	1	0	0	0	2	0	3	16	0	0	1	13	1	39	
	HV%	-	2%	0%	2%	-	0%	0%	13%	-	9%	4%	0%	-	8%	5%	3%	4%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
8:00 AM	2	0	6	4	*12*	0	0	0	0	*0*	0	1	0	0	*1*
8:15 AM	0	1	4	2	*7*	0	0	0	0	*0*	2	0	1	0	*3*
8:30 AM	0	1	3	6	*10*	0	0	0	0	*0*	0	0	1	0	*1*
8:45 AM	1	0	6	3	*10*	0	0	0	0	*0*	1	3	0	1	*5*
Peak Hour	3	2	19	15	*39*	0	0	0	0	*0*	3	4	2	1	*10*

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Count Summaries - All Vehicles

Interval Start	Clairmont Way				Driveway				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	30	2	6	0	0	1	2	0	4	58	0	0	0	48	1	152	0
7:15 AM	0	34	7	5	0	1	0	1	0	2	58	1	0	0	47	11	167	0
7:30 AM	0	31	11	11	0	1	4	3	0	4	77	1	0	1	61	12	217	0
7:45 AM	0	44	11	16	0	0	2	0	0	2	95	1	0	1	58	12	242	778
8:00 AM	**0**	**29**	**9**	**17**	**0**	**1**	**3**	**1**	**0**	**5**	**93**	**2**	**0**	**2**	**70**	**12**	**244**	**870**
8:15 AM	**0**	**21**	**7**	**12**	**0**	**1**	**8**	**7**	**0**	**9**	**105**	**4**	**0**	**3**	**58**	**8**	**243**	**946**
8:30 AM	**0**	**26**	**4**	**7**	**0**	**1**	**3**	**4**	**0**	**9**	**108**	**1**	**0**	**4**	**63**	**4**	**234**	**963**
8:45 AM	**0**	**25**	**3**	**9**	**0**	**0**	**4**	**4**	**0**	**9**	**110**	**2**	**0**	**4**	**79**	**8**	**257**	**978**
Count Total	0	240	54	83	0	5	25	22	0	44	704	12	0	15	484	68	1,756	
Pk Hr All	**0**	**101**	**23**	**45**	**0**	**3**	**18**	**16**	**0**	**32**	**416**	**9**	**0**	**13**	**270**	**32**	**978**	
Pk Hr HV	**0**	**2**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**3**	**16**	**0**	**0**	**1**	**13**	**1**	**39**	
Pk Hr HV%	**-**	**2%**	**0%**	**2%**	**-**	**0%**	**0%**	**13%**	**-**	**9%**	**4%**	**0%**	**-**	**8%**	**5%**	**3%**	**4%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	3	0	9	2	*14*	0	0	0	0	*0*	1	1	2	0	*4*
7:15 AM	2	0	2	0	*4*	0	0	0	0	*0*	2	1	2	0	*5*
7:30 AM	1	0	5	5	*11*	0	0	0	0	*0*	1	1	4	1	*7*
7:45 AM	1	0	0	4	*5*	0	0	0	0	*0*	0	2	0	1	*3*
8:00 AM	**2**	**0**	**6**	**4**	**12**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**
8:15 AM	**0**	**1**	**4**	**2**	**7**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**0**	**3**
8:30 AM	**0**	**1**	**3**	**6**	**10**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**
8:45 AM	**1**	**0**	**6**	**3**	**10**	**0**	**0**	**0**	**0**	**0**	**1**	**3**	**0**	**1**	**5**
Count Total	10	2	35	26	*73*	0	0	0	0	*0*	7	9	10	3	*29*
Peak Hour	**3**	**2**	**19**	**15**	***39***	**0**	**0**	**0**	**0**	***0***	**3**	**4**	**2**	**1**	**10**

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Count Summaries - Heavy Vehicles

Interval Start	Clairmont Way				Driveway				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	2	0	1	0	0	0	0	0	3	6	0	0	0	2	0	14	0
7:15 AM	0	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	4	0
7:30 AM	0	0	0	1	0	0	0	0	0	0	5	0	0	1	3	1	11	0
7:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	3	1	5	34
8:00 AM	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**4**	**0**	**12**	**32**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**3**	**0**	**0**	**0**	**2**	**0**	**7**	**35**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**3**	**0**	**0**	**0**	**5**	**1**	**10**	**34**
8:45 AM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**4**	**0**	**0**	**1**	**2**	**0**	**10**	**39**
Count Total	0	7	0	3	0	0	0	2	0	6	29	0	0	2	21	3	73	
Pk Hr Heavy	**0**	**2**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**3**	**16**	**0**	**0**	**1**	**13**	**1**	**39**	

Count Summaries - Bikes

Interval Start	Clairmont Way				Driveway				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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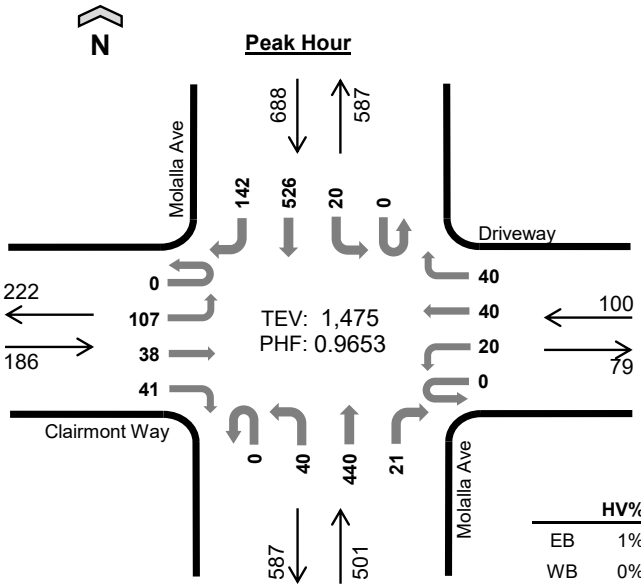
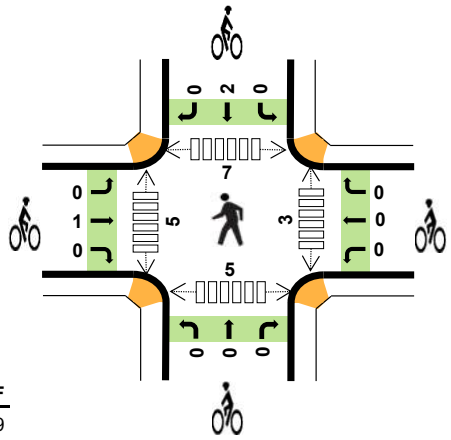
Molalla Ave
Clairmont Way

Date: 9/9/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM





	HV%	PHF
EB	1%	0.79
WB	0%	0.89
NB	3%	0.86
SB	3%	0.93
TOTAL	3%	0.97

Peak Hour Count Summaries

Peak Hour Interval Start		Clairmont Way Eastbound				Driveway Westbound				Molalla Ave Northbound				Molalla Ave Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		**0**	**29**	**4**	**4**	**0**	**6**	**10**	**12**	**0**	**9**	**120**	**8**	**0**	**8**	**131**	**41**	**382**	**0**
4:15 PM		**0**	**19**	**5**	**15**	**0**	**4**	**11**	**9**	**0**	**11**	**88**	**2**	**0**	**3**	**140**	**41**	**348**	**0**
4:30 PM		**0**	**29**	**13**	**9**	**0**	**3**	**8**	**11**	**0**	**13**	**126**	**6**	**0**	**6**	**117**	**30**	**371**	**0**
4:45 PM		**0**	**30**	**16**	**13**	**0**	**7**	**11**	**8**	**0**	**7**	**106**	**5**	**0**	**3**	**138**	**30**	**374**	**1,475**
Pk Hr	All	**0**	**107**	**38**	**41**	**0**	**20**	**40**	**40**	**0**	**40**	**440**	**21**	**0**	**20**	**526**	**142**	**1,475**	
	HV	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**12**	**0**	**0**	**1**	**18**	**5**	**38**	
	HV%	-	**0%**	**0%**	**2%**	-	**0%**	**0%**	**0%**	-	**3%**	**3%**	**0%**	-	**5%**	**3%**	**4%**	**3%**	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	**0**	**0**	**3**	**8**	***11***	**0**	**0**	**0**	**0**	***0***	**1**	**2**	**5**	**0**	***8***
4:15 PM	**1**	**0**	**3**	**4**	***8***	**0**	**0**	**0**	**1**	***1***	**0**	**0**	**1**	**3**	***4***
4:30 PM	**0**	**0**	**4**	**6**	***10***	**0**	**0**	**0**	**1**	***1***	**1**	**2**	**0**	**1**	***4***
4:45 PM	**0**	**0**	**3**	**6**	***9***	**1**	**0**	**0**	**0**	***1***	**1**	**1**	**1**	**1**	***4***
Peak Hour	**1**	**0**	**13**	**24**	***38***	**1**	**0**	**0**	**2**	***3***	**3**	**5**	**7**	**5**	***20***

Kyle Campbell
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Count Summaries - All Vehicles

Interval Start	Clairmont Way				Driveway				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**29**	**4**	**4**	**0**	**6**	**10**	**12**	**0**	**9**	**120**	**8**	**0**	**8**	**131**	**41**	**382**	0
4:15 PM	**0**	**19**	**5**	**15**	**0**	**4**	**11**	**9**	**0**	**11**	**88**	**2**	**0**	**3**	**140**	**41**	**348**	**0**
4:30 PM	**0**	**29**	**13**	**9**	**0**	**3**	**8**	**11**	**0**	**13**	**126**	**6**	**0**	**6**	**117**	**30**	**371**	**0**
4:45 PM	**0**	**30**	**16**	**13**	**0**	**7**	**11**	**8**	**0**	**7**	**106**	**5**	**0**	**3**	**138**	**30**	**374**	**1,475**
5:00 PM	0	22	9	11	0	3	17	7	0	15	105	4	0	2	140	38	373	1,466
5:15 PM	0	23	9	11	0	6	6	10	0	7	83	2	0	5	120	43	325	1,443
5:30 PM	0	26	7	14	0	2	10	8	0	14	97	4	0	2	108	32	324	1,396
5:45 PM	0	23	7	13	0	5	16	9	0	14	94	3	0	3	106	44	337	1,359
Count Total	0	201	70	90	0	36	89	74	0	90	819	34	0	32	1,000	299	2,834	
Pk Hr All	**0**	**107**	**38**	**41**	**0**	**20**	**40**	**40**	**0**	**40**	**440**	**21**	**0**	**20**	**526**	**142**	**1,475**	
Pk Hr HV	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**12**	**0**	**0**	**1**	**18**	**5**	**38**	
Pk Hr HV%	**-**	**0%**	**0%**	**2%**	**-**	**0%**	**0%**	**0%**	**-**	**3%**	**3%**	**0%**	**-**	**5%**	**3%**	**4%**	**3%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	**0**	**0**	**3**	**8**	**11**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**5**	**0**	**8**
4:15 PM	**1**	**0**	**3**	**4**	**8**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**1**	**3**	**4**
4:30 PM	**0**	**0**	**4**	**6**	**10**	**0**	**0**	**0**	**1**	**1**	**1**	**2**	**0**	**1**	**4**
4:45 PM	**0**	**0**	**3**	**6**	**9**	**1**	**0**	**0**	**0**	**1**	**1**	**1**	**1**	**1**	**4**
5:00 PM	0	0	1	3	*4*	0	0	0	0	*0*	5	1	5	1	*12*
5:15 PM	0	0	1	2	*3*	0	0	0	0	*0*	1	1	0	0	*2*
5:30 PM	1	0	1	2	*4*	0	0	0	0	*0*	2	1	5	1	*9*
5:45 PM	1	0	1	1	*3*	0	0	0	0	*0*	4	1	0	1	*6*
Count Total	3	0	17	32	*52*	1	0	0	2	*3*	15	9	17	8	*49*
Peak Hour	**1**	**0**	**13**	**24**	***38***	**1**	**0**	**0**	**2**	***3***	**3**	**5**	**7**	**5**	**20**

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Count Summaries - Heavy Vehicles

Interval Start	Clairmont Way				Driveway				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**1**	**6**	**1**	**11**	0
4:15 PM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**0**	**0**	**0**	**2**	**2**	**8**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**5**	**1**	**10**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**5**	**1**	**9**	**38**
5:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0	4	31
5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	3	26
5:30 PM	0	0	0	1	0	0	0	0	0	0	1	0	0	0	2	0	4	20
5:45 PM	0	0	0	1	0	0	0	0	0	0	1	0	0	0	1	0	3	14
Count Total	0	0	0	3	0	0	0	0	0	1	16	0	0	1	26	5	52	
Pk Hr Heavy	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**12**	**0**	**0**	**1**	**18**	**5**	**38**	

Count Summaries - Bikes

Interval Start	Clairmont Way				Driveway				Molalla Ave				Molalla Ave				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**
4:45 PM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**3**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	3	
Pk Hr Bike	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**3**	

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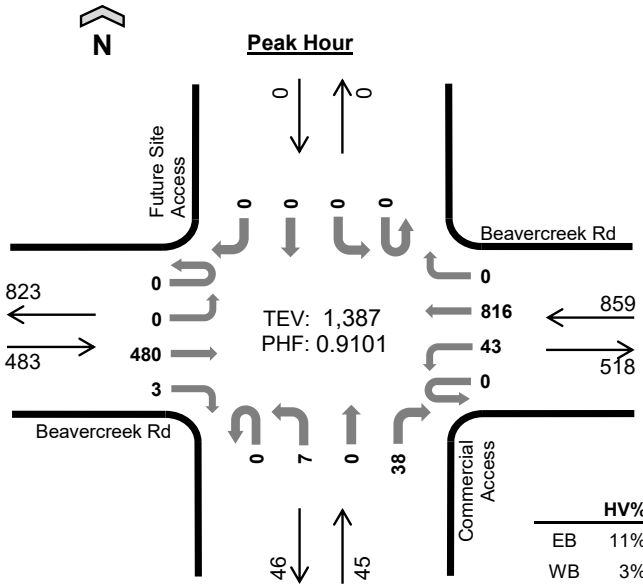
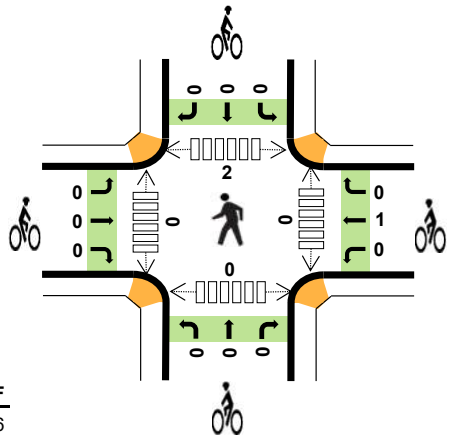
Commercial Access
Beavercreek Rd

Date: 9/9/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM





	HV%	PHF
EB	11%	0.86
WB	3%	0.94
NB	0%	0.70
SB	--	--
TOTAL	6%	0.91

Peak Hour Count Summaries

Peak Hour Interval Start		Beavercreek Rd Eastbound				Beavercreek Rd Westbound				Commercial Access Northbound				Future Site Access Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:30 AM		0	0	111	1	0	12	203	0	0	3	0	8	0	0	0	0	338	0
7:45 AM		0	0	130	1	0	12	197	0	0	1	0	15	0	0	0	0	356	0
8:00 AM		0	0	140	0	0	12	217	0	0	2	0	10	0	0	0	0	381	0
8:15 AM		0	0	99	1	0	7	199	0	0	1	0	5	0	0	0	0	312	1,387
Pk Hr	All	0	0	480	3	0	43	816	0	0	7	0	38	0	0	0	0	1,387	
	HV	0	0	52	0	0	0	27	0	0	0	0	0	0	0	0	0	79	
	HV%	-	-	11%	0%	-	0%	3%	-	-	0%	-	0%	-	-	-	-	6%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:30 AM	9	8	0	0	*17*	0	1	0	0	*1*	0	0	0	0	*0*
7:45 AM	15	5	0	0	*20*	0	0	0	0	*0*	0	0	0	0	*0*
8:00 AM	22	5	0	0	*27*	0	0	0	0	*0*	0	0	0	0	*0*
8:15 AM	6	9	0	0	*15*	0	0	0	0	*0*	0	0	2	0	*2*
Peak Hour	52	27	0	0	*79*	0	1	0	0	*1*	0	0	2	0	*2*

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Count Summaries - All Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				Commercial Access				Future Site Access				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	86	0	0	8	148	0	0	2	0	5	0	0	0	0	249	0
7:15 AM	0	0	101	0	0	7	179	0	0	0	0	3	0	0	0	0	290	0
7:30 AM	**0**	**0**	**111**	**1**	**0**	**12**	**203**	**0**	**0**	**3**	**0**	**8**	**0**	**0**	**0**	**0**	**338**	**0**
7:45 AM	**0**	**0**	**130**	**1**	**0**	**12**	**197**	**0**	**0**	**1**	**0**	**15**	**0**	**0**	**0**	**0**	**356**	**1,233**
8:00 AM	**0**	**0**	**140**	**0**	**0**	**12**	**217**	**0**	**0**	**2**	**0**	**10**	**0**	**0**	**0**	**0**	**381**	**1,365**
8:15 AM	**0**	**0**	**99**	**1**	**0**	**7**	**199**	**0**	**0**	**1**	**0**	**5**	**0**	**0**	**0**	**0**	**312**	**1,387**
8:30 AM	0	0	115	2	0	8	187	0	0	1	0	3	0	0	0	0	316	1,365
8:45 AM	0	0	107	4	0	16	210	0	0	2	0	7	0	0	0	0	346	1,355
Count Total	0	0	889	9	0	82	1,540	0	0	12	0	56	0	0	0	0	2,588	
Pk Hr All	**0**	**0**	**480**	**3**	**0**	**43**	**816**	**0**	**0**	**7**	**0**	**38**	**0**	**0**	**0**	**0**	**1,387**	
Pk Hr HV	**0**	**0**	**52**	**0**	**0**	**0**	**27**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**79**	
Pk Hr HV%	**-**	**-**	**11%**	**0%**	**-**	**0%**	**3%**	**-**	**-**	**0%**	**-**	**0%**	**-**	**-**	**-**	**-**	**6%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	7	6	0	0	*13*	0	0	0	0	*0*	0	0	2	1	*3*
7:15 AM	5	7	0	0	*12*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	**9**	**8**	**0**	**0**	**17**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**
7:45 AM	**15**	**5**	**0**	**0**	**20**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:00 AM	**22**	**5**	**0**	**0**	**27**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	**6**	**9**	**0**	**0**	**15**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**
8:30 AM	3	9	0	0	*12*	0	2	0	0	*2*	0	0	1	0	*1*
8:45 AM	3	7	0	0	*10*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	70	56	0	0	*126*	0	3	0	0	*3*	0	0	5	1	*6*
Peak Hour	**52**	**27**	**0**	**0**	***79***	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**2**	**0**	**2**

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Count Summaries - Heavy Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				Commercial Access				Future Site Access				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	7	0	0	0	6	0	0	0	0	0	0	0	0	0	13	0
7:15 AM	0	0	5	0	0	0	7	0	0	0	0	0	0	0	0	0	12	0
7:30 AM	**0**	**0**	**9**	**0**	**0**	**0**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**17**	**0**
7:45 AM	**0**	**0**	**15**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**20**	**62**
8:00 AM	**0**	**0**	**22**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**27**	**76**
8:15 AM	**0**	**0**	**6**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**15**	**79**
8:30 AM	0	0	3	0	0	0	9	0	0	0	0	0	0	0	0	0	12	74
8:45 AM	0	0	3	0	0	0	7	0	0	0	0	0	0	0	0	0	10	64
Count Total	0	0	70	0	0	0	56	0	0	0	0	0	0	0	0	0	126	
Pk Hr Heavy	**0**	**0**	**52**	**0**	**0**	**0**	**27**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**79**	

Count Summaries - Bikes

Interval Start	Beavercreek Rd				Beavercreek Rd				Commercial Access				Future Site Access				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:30 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	2
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Count Total	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	

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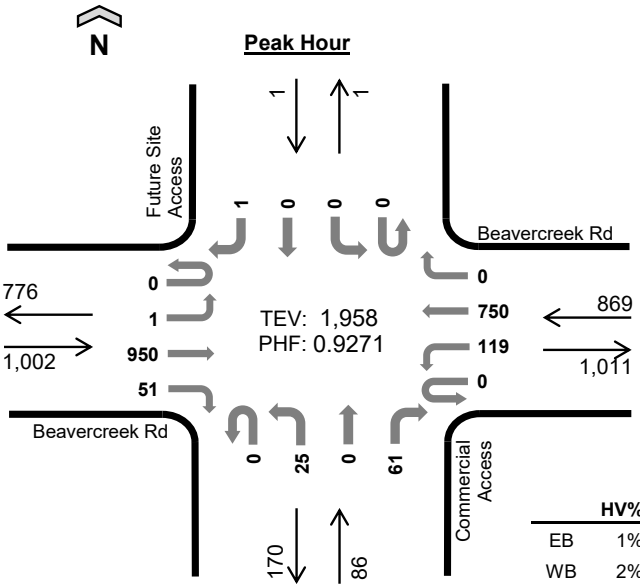
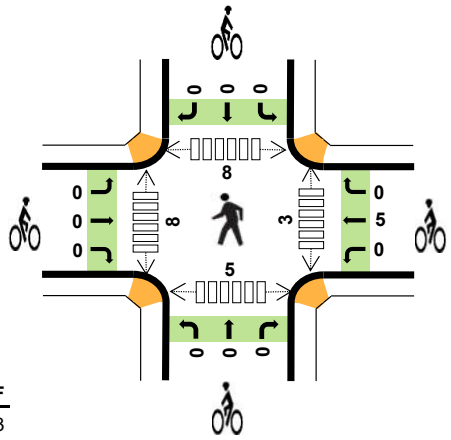
Commercial Access
Beavercreek Rd

Date: 9/9/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:15 PM to 5:15 PM





	HV%	PHF
EB	1%	0.83
WB	2%	0.97
NB	0%	0.65
SB	0%	0.25
TOTAL	1%	0.93

Peak Hour Count Summaries

Peak Hour Interval Start		Beavercreek Rd Eastbound				Beavercreek Rd Westbound				Commercial Access Northbound				Future Site Access Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:15 PM		0	0	202	13	0	27	196	0	0	7	0	26	0	0	0	0	471	0
4:30 PM		0	1	220	12	0	40	182	0	0	6	0	1	0	0	0	0	462	0
4:45 PM		0	0	238	14	0	26	191	0	0	8	0	19	0	0	0	1	497	0
5:00 PM		0	0	290	12	0	26	181	0	0	4	0	15	0	0	0	0	528	1,958
Pk Hr	All	0	1	950	51	0	119	750	0	0	25	0	61	0	0	0	1	1,958	
	HV	0	0	12	0	0	2	13	0	0	0	0	0	0	0	0	0	27	
	HV%	-	0%	1%	0%	-	2%	2%	-	-	0%	-	0%	-	-	-	0%	1%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:15 PM	9	4	0	0	*13*	0	1	0	0	*1*	2	4	3	0	*9*
4:30 PM	1	4	0	0	*5*	0	0	0	0	*0*	0	2	3	0	*5*
4:45 PM	2	3	0	0	*5*	0	2	0	0	*2*	1	2	1	0	*4*
5:00 PM	0	4	0	0	*4*	0	2	0	0	*2*	0	0	1	5	*6*
Peak Hour	12	15	0	0	*27*	0	5	0	0	*5*	3	8	8	5	*24*

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Count Summaries - All Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				Commercial Access				Future Site Access				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	1	230	10	0	32	170	0	0	7	0	23	0	0	0	1	474	0
4:15 PM	**0**	**0**	**202**	**13**	**0**	**27**	**196**	**0**	**0**	**7**	**0**	**26**	**0**	**0**	**0**	**0**	**471**	**0**
4:30 PM	**0**	**1**	**220**	**12**	**0**	**40**	**182**	**0**	**0**	**6**	**0**	**1**	**0**	**0**	**0**	**0**	**462**	**0**
4:45 PM	**0**	**0**	**238**	**14**	**0**	**26**	**191**	**0**	**0**	**8**	**0**	**19**	**0**	**0**	**0**	**1**	**497**	**1,904**
5:00 PM	**0**	**0**	**290**	**12**	**0**	**26**	**181**	**0**	**0**	**4**	**0**	**15**	**0**	**0**	**0**	**0**	**528**	**1,958**
5:15 PM	0	0	228	10	0	26	167	0	0	9	0	11	0	0	0	0	451	1,938
5:30 PM	0	0	240	13	0	16	184	0	0	7	0	14	0	0	0	0	474	1,950
5:45 PM	0	0	190	12	0	27	185	0	0	5	0	9	0	0	0	0	428	1,881
Count Total	0	2	1,838	96	0	220	1,456	0	0	53	0	118	0	0	0	2	3,785	
Pk Hr All	**0**	**1**	**950**	**51**	**0**	**119**	**750**	**0**	**0**	**25**	**0**	**61**	**0**	**0**	**0**	**1**	**1,958**	
Pk Hr HV	**0**	**0**	**12**	**0**	**0**	**2**	**13**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**27**	
Pk Hr HV%	**-**	**0%**	**1%**	**0%**	**-**	**2%**	**2%**	**-**	**-**	**0%**	**-**	**0%**	**-**	**-**	**-**	**0%**	**1%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	4	7	1	0	*12*	0	3	0	0	*3*	0	0	2	0	*2*
4:15 PM	**9**	**4**	**0**	**0**	**13**	**0**	**1**	**0**	**0**	**1**	**2**	**4**	**3**	**0**	**9**
4:30 PM	**1**	**4**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**3**	**0**	**5**
4:45 PM	**2**	**3**	**0**	**0**	**5**	**0**	**2**	**0**	**0**	**2**	**1**	**2**	**1**	**0**	**4**
5:00 PM	**0**	**4**	**0**	**0**	**4**	**0**	**2**	**0**	**0**	**2**	**0**	**0**	**1**	**5**	**6**
5:15 PM	2	3	0	0	*5*	0	0	0	0	*0*	1	0	1	0	*2*
5:30 PM	2	2	0	0	*4*	0	1	0	0	*1*	0	0	0	0	*0*
5:45 PM	2	2	0	0	*4*	0	0	0	0	*0*	0	1	2	0	*3*
Count Total	22	29	1	0	*52*	0	9	0	0	*9*	4	9	13	5	*31*
Peak Hour	**12**	**15**	**0**	**0**	***27***	**0**	**5**	**0**	**0**	***5***	**3**	**8**	**8**	**5**	**24**

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Count Summaries - Heavy Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				Commercial Access				Future Site Access				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	4	0	0	0	7	0	0	0	0	1	0	0	0	0	12	0
4:15 PM	**0**	**0**	**9**	**0**	**0**	**1**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**13**	**0**
4:30 PM	**0**	**0**	**1**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**
4:45 PM	**0**	**0**	**2**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**35**
5:00 PM	**0**	**0**	**0**	**0**	**0**	**1**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**27**
5:15 PM	0	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	5	19
5:30 PM	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	4	18
5:45 PM	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	4	17
Count Total	0	0	22	0	0	2	27	0	0	0	0	1	0	0	0	0	52	
Pk Hr Heavy	**0**	**0**	**12**	**0**	**0**	**2**	**13**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**27**	

Count Summaries - Bikes

Interval Start	Beavercreek Rd				Beavercreek Rd				Commercial Access				Future Site Access				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**6**
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**5**
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
5:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	5
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Count Total	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	9	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	

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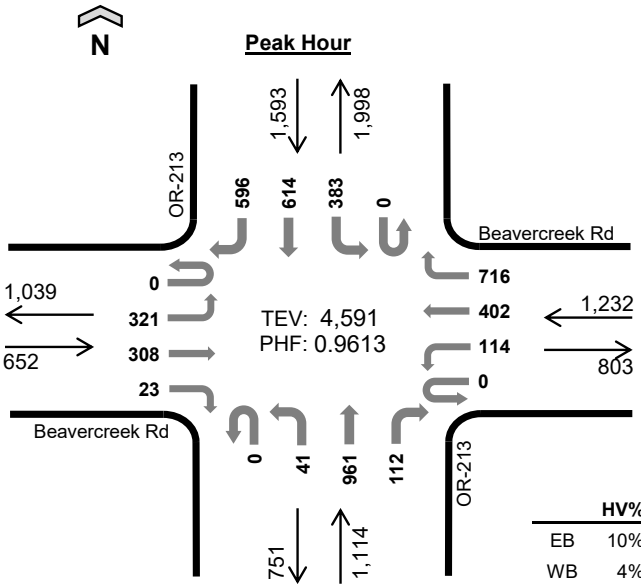
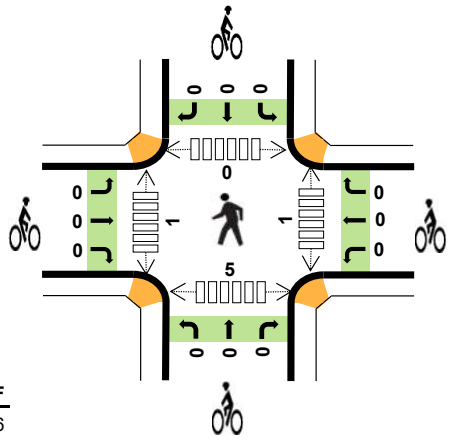
OR-213
Beavercreek Rd

Date: 9/9/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM



	HV%	PHF
EB	10%	0.76
WB	4%	0.88
NB	6%	0.90
SB	5%	0.88
TOTAL	6%	0.96



Peak Hour Count Summaries

Peak Hour Interval Start		Beavercreek Rd Eastbound				Beavercreek Rd Westbound				OR-213 Northbound				OR-213 Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:30 AM		0	88	54	3	0	22	116	180	0	8	282	20	0	80	122	126	1,101	0
7:45 AM		0	87	81	8	0	39	108	203	0	7	224	14	0	86	164	160	1,181	0
8:00 AM		0	86	125	3	0	30	82	164	0	10	199	42	0	122	170	161	1,194	0
8:15 AM		0	60	48	9	0	23	96	169	0	16	256	36	0	95	158	149	1,115	4,591
Pk Hr	All	0	321	308	23	0	114	402	716	0	41	961	112	0	383	614	596	4,591	
	HV	0	39	26	1	0	4	11	34	0	1	58	11	0	14	48	21	268	
	HV%	-	12%	8%	4%	-	4%	3%	5%	-	2%	6%	10%	-	4%	8%	4%	6%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:30 AM	18	14	18	16	*66*	0	0	0	0	*0*	0	1	0	0	*1*
7:45 AM	14	10	18	15	*57*	0	0	0	0	*0*	1	0	0	1	*2*
8:00 AM	26	9	18	28	*81*	0	0	0	0	*0*	0	0	0	2	*2*
8:15 AM	8	16	16	24	*64*	0	0	0	0	*0*	0	0	0	2	*2*
Peak Hour	66	49	70	83	*268*	0	0	0	0	*0*	1	1	0	5	*7*

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Count Summaries - All Vehicles

Interval Start	Beavercreek Rd Eastbound				Beavercreek Rd Westbound				OR-213 Northbound				OR-213 Southbound				15-min Total	Rolling Hour Total
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	65	36	1	0	17	72	192	0	11	284	24	0	72	112	105	991	0
7:15 AM	0	81	51	3	0	22	93	207	0	3	249	16	0	93	115	132	1,065	0
7:30 AM	**0**	**88**	**54**	**3**	**0**	**22**	**116**	**180**	**0**	**8**	**282**	**20**	**0**	**80**	**122**	**126**	**1,101**	**0**
7:45 AM	**0**	**87**	**81**	**8**	**0**	**39**	**108**	**203**	**0**	**7**	**224**	**14**	**0**	**86**	**164**	**160**	**1,181**	**4,338**
8:00 AM	**0**	**86**	**125**	**3**	**0**	**30**	**82**	**164**	**0**	**10**	**199**	**42**	**0**	**122**	**170**	**161**	**1,194**	**4,541**
8:15 AM	**0**	**60**	**48**	**9**	**0**	**23**	**96**	**169**	**0**	**16**	**256**	**36**	**0**	**95**	**158**	**149**	**1,115**	**4,591**
8:30 AM	0	83	68	11	0	29	109	168	0	8	221	29	0	82	124	146	1,078	4,568
8:45 AM	0	80	78	15	0	24	118	148	1	15	176	31	0	92	135	142	1,055	4,442
Count Total	0	630	541	53	0	206	794	1,431	1	78	1,891	212	0	722	1,100	1,121	8,780	
Pk Hr All	**0**	**321**	**308**	**23**	**0**	**114**	**402**	**716**	**0**	**41**	**961**	**112**	**0**	**383**	**614**	**596**	**4,591**	
Pk Hr HV	**0**	**39**	**26**	**1**	**0**	**4**	**11**	**34**	**0**	**1**	**58**	**11**	**0**	**14**	**48**	**21**	**268**	
Pk Hr HV%	**-**	**12%**	**8%**	**4%**	**-**	**4%**	**3%**	**5%**	**-**	**2%**	**6%**	**10%**	**-**	**4%**	**8%**	**4%**	**6%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	6	13	18	14	*51*	0	1	0	0	*1*	0	0	0	1	*1*
7:15 AM	9	11	15	18	*53*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	**18**	**14**	**18**	**16**	**66**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**
7:45 AM	**14**	**10**	**18**	**15**	**57**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**2**
8:00 AM	**26**	**9**	**18**	**28**	**81**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**2**
8:15 AM	**8**	**16**	**16**	**24**	**64**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**2**
8:30 AM	12	14	29	23	*78*	0	0	0	0	*0*	0	0	0	0	*0*
8:45 AM	10	8	14	29	*61*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	103	95	146	167	*511*	0	1	0	0	*1*	1	1	0	6	*8*
Peak Hour	**66**	**49**	**70**	**83**	***268***	**0**	**0**	**0**	**0**	***0***	**1**	**1**	**0**	**5**	**7**

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Count Summaries - Heavy Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	3	3	0	0	1	4	8	0	0	16	2	0	0	12	2	51	0
7:15 AM	0	7	1	1	0	0	5	6	0	0	14	1	0	3	11	4	53	0
7:30 AM	**0**	**15**	**3**	**0**	**0**	**0**	**4**	**10**	**0**	**0**	**17**	**1**	**0**	**1**	**9**	**6**	**66**	**0**
7:45 AM	**0**	**10**	**4**	**0**	**0**	**2**	**1**	**7**	**0**	**0**	**16**	**2**	**0**	**2**	**11**	**2**	**57**	**227**
8:00 AM	**0**	**8**	**18**	**0**	**0**	**2**	**1**	**6**	**0**	**1**	**12**	**5**	**0**	**10**	**12**	**6**	**81**	**257**
8:15 AM	**0**	**6**	**1**	**1**	**0**	**0**	**5**	**11**	**0**	**0**	**13**	**3**	**0**	**1**	**16**	**7**	**64**	**268**
8:30 AM	0	11	1	0	0	2	6	6	0	0	26	3	0	8	12	3	78	280
8:45 AM	0	8	2	0	0	1	3	4	0	2	10	2	0	8	17	4	61	284
Count Total	0	68	33	2	0	8	29	58	0	3	124	19	0	33	100	34	511	
Pk Hr Heavy	**0**	**39**	**26**	**1**	**0**	**4**	**11**	**34**	**0**	**1**	**58**	**11**	**0**	**14**	**48**	**21**	**268**	

Count Summaries - Bikes

Interval Start	Beavercreek Rd				Beavercreek Rd				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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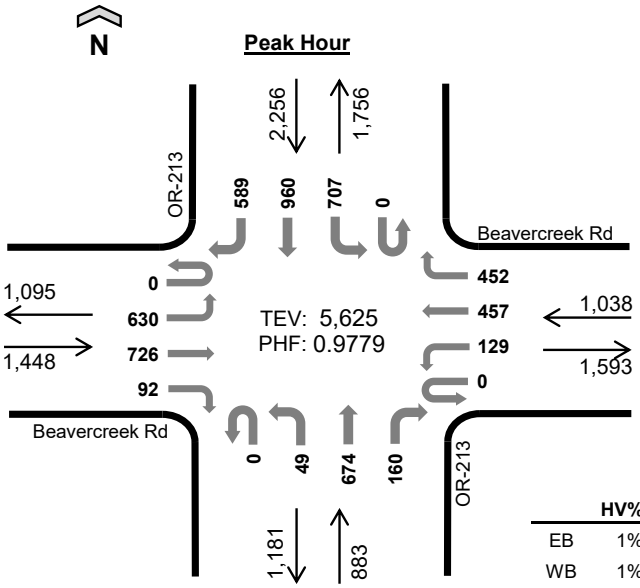
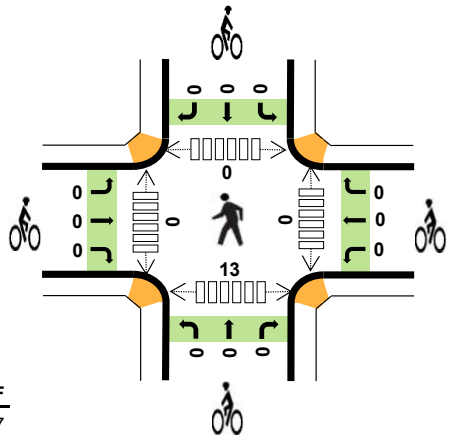
OR-213
Beavercreek Rd

Date: 9/9/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM





	HV%	PHF
EB	1%	0.87
WB	1%	0.83
NB	3%	0.93
SB	2%	0.97
TOTAL	2%	0.98

Peak Hour Count Summaries

Peak Hour Interval Start		Beavercreek Rd Eastbound				Beavercreek Rd Westbound				OR-213 Northbound				OR-213 Southbound				15-min Total	Rolling Hour Total
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:30 PM		0	156	174	27	0	48	148	115	0	10	151	34	0	173	242	148	1,426	0
4:45 PM		0	139	168	22	0	28	100	125	0	17	146	49	0	195	233	152	1,374	0
5:00 PM		0	142	182	20	0	22	118	118	0	14	181	43	0	162	241	144	1,387	0
5:15 PM		0	193	202	23	0	31	91	94	0	8	196	34	0	177	244	145	1,438	5,625
Pk Hr	All	0	630	726	92	0	129	457	452	0	49	674	160	0	707	960	589	5,625	
	HV	0	6	8	0	0	0	4	5	0	1	26	2	0	25	24	7	108	
	HV%	-	1%	1%	0%	-	0%	1%	1%	-	2%	4%	1%	-	4%	3%	1%	2%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:30 PM	8	2	7	19	*36*	0	0	0	0	*0*	0	0	0	3	*3*
4:45 PM	2	2	13	10	*27*	0	0	0	0	*0*	0	0	0	4	*4*
5:00 PM	0	1	5	17	*23*	0	0	0	0	*0*	0	0	0	5	*5*
5:15 PM	4	4	4	10	*22*	0	0	0	0	*0*	0	0	0	1	*1*
Peak Hour	14	9	29	56	*108*	0	0	0	0	*0*	0	0	0	13	*13*

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Count Summaries - All Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	189	134	14	0	31	107	110	0	14	182	35	0	162	231	159	1,368	0
4:15 PM	0	131	136	15	0	22	103	146	0	13	170	36	0	182	263	162	1,379	0
4:30 PM	**0**	**156**	**174**	**27**	**0**	**48**	**148**	**115**	**0**	**10**	**151**	**34**	**0**	**173**	**242**	**148**	**1,426**	**0**
4:45 PM	**0**	**139**	**168**	**22**	**0**	**28**	**100**	**125**	**0**	**17**	**146**	**49**	**0**	**195**	**233**	**152**	**1,374**	**5,547**
5:00 PM	**0**	**142**	**182**	**20**	**0**	**22**	**118**	**118**	**0**	**14**	**181**	**43**	**0**	**162**	**241**	**144**	**1,387**	**5,566**
5:15 PM	**0**	**193**	**202**	**23**	**0**	**31**	**91**	**94**	**0**	**8**	**196**	**34**	**0**	**177**	**244**	**145**	**1,438**	**5,625**
5:30 PM	0	143	141	21	0	30	109	142	0	12	149	47	0	197	259	136	1,386	5,585
5:45 PM	0	138	154	14	0	28	116	113	0	12	176	30	0	148	199	123	1,251	5,462
Count Total	0	1,231	1,291	156	0	240	892	963	0	100	1,351	308	0	1,396	1,912	1,169	11,009	
Pk Hr All	**0**	**630**	**726**	**92**	**0**	**129**	**457**	**452**	**0**	**49**	**674**	**160**	**0**	**707**	**960**	**589**	**5,625**	
Pk Hr HV	**0**	**6**	**8**	**0**	**0**	**0**	**4**	**5**	**0**	**1**	**26**	**2**	**0**	**25**	**24**	**7**	**108**	
Pk Hr HV%	**-**	**1%**	**1%**	**0%**	**-**	**0%**	**1%**	**1%**	**-**	**2%**	**4%**	**1%**	**-**	**4%**	**3%**	**1%**	**2%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	7	5	6	25	*43*	0	0	0	0	*0*	1	0	0	1	*2*
4:15 PM	8	5	8	23	*44*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	**8**	**2**	**7**	**19**	**36**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**3**
4:45 PM	**2**	**2**	**13**	**10**	**27**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**4**
5:00 PM	**0**	**1**	**5**	**17**	**23**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**5**
5:15 PM	**4**	**4**	**4**	**10**	**22**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**
5:30 PM	4	3	3	16	*26*	0	0	0	0	*0*	0	0	0	3	*3*
5:45 PM	5	1	6	12	*24*	0	0	0	0	*0*	0	0	0	6	*6*
Count Total	38	23	52	132	*245*	0	0	0	0	*0*	1	0	0	23	*24*
Peak Hour	**14**	**9**	**29**	**56**	***108***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**13**	**13**

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Count Summaries - Heavy Vehicles

Interval Start	Beavercreek Rd				Beavercreek Rd				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	3	4	0	0	0	2	3	0	0	6	0	0	5	12	8	43	0
4:15 PM	0	4	3	1	0	1	2	2	0	0	8	0	0	11	10	2	44	0
4:30 PM	**0**	**2**	**6**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**7**	**0**	**0**	**10**	**7**	**2**	**36**	**0**
4:45 PM	**0**	**2**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**11**	**2**	**0**	**3**	**6**	**1**	**27**	**150**
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**4**	**0**	**0**	**9**	**5**	**3**	**23**	**130**
5:15 PM	**0**	**2**	**2**	**0**	**0**	**0**	**2**	**2**	**0**	**0**	**4**	**0**	**0**	**3**	**6**	**1**	**22**	**108**
5:30 PM	0	4	0	0	0	0	1	2	0	0	3	0	0	6	4	6	26	98
5:45 PM	0	3	2	0	0	0	1	0	0	0	6	0	0	8	2	2	24	95
Count Total	0	20	17	1	0	1	10	12	0	1	49	2	0	55	52	25	245	
Pk Hr Heavy	**0**	**6**	**8**	**0**	**0**	**0**	**4**	**5**	**0**	**1**	**26**	**2**	**0**	**25**	**24**	**7**	**108**	

Count Summaries - Bikes

Interval Start	Beavercreek Rd				Beavercreek Rd				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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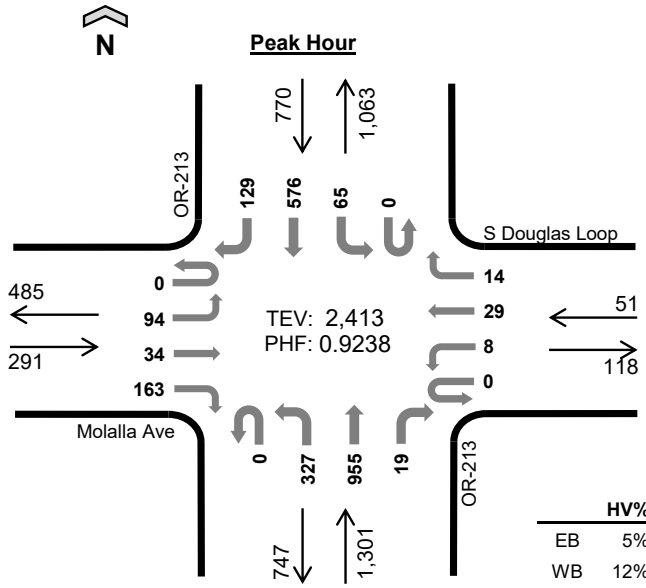
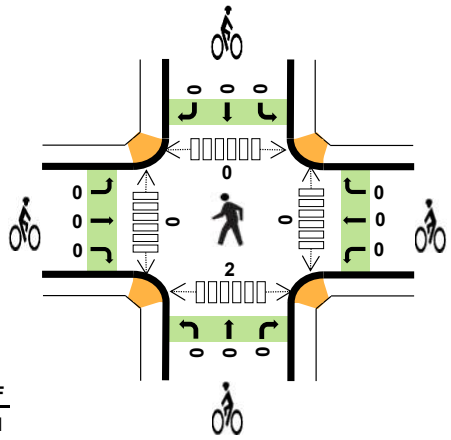
OR-213
Molalla Ave

Date: 9/9/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM





	HV%	PHF
EB	5%	0.71
WB	12%	0.64
NB	6%	0.91
SB	8%	0.86
TOTAL	6%	0.92

Peak Hour Count Summaries

Peak Hour Interval Start		Molalla Ave				S Douglas Loop				OR-213				OR-213				15-min Total	Rolling Hour Total
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:30 AM		0	21	6	31	0	0	6	2	0	64	250	4	0	17	121	24	546	0
7:45 AM		0	18	7	39	0	1	4	0	0	82	233	7	0	18	138	39	586	0
8:00 AM		0	36	12	55	0	4	11	5	0	82	220	3	0	15	173	37	653	0
8:15 AM		0	19	9	38	0	3	8	7	0	99	252	5	0	15	144	29	628	2,413
Pk Hr	All	0	94	34	163	0	8	29	14	0	327	955	19	0	65	576	129	2,413	
	HV	0	4	4	7	0	2	4	0	0	8	65	3	0	1	54	3	155	
	HV%	-	4%	12%	4%	-	25%	14%	0%	-	2%	7%	16%	-	2%	9%	2%	6%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:30 AM	3	1	16	11	*31*	0	0	0	0	*0*	0	0	0	1	*1*
7:45 AM	4	1	22	8	*35*	0	0	0	0	*0*	0	0	0	1	*1*
8:00 AM	6	1	16	20	*43*	0	0	0	0	*0*	0	0	0	0	*0*
8:15 AM	2	3	22	19	*46*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	15	6	76	58	*155*	0	0	0	0	*0*	0	0	0	2	*2*

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Count Summaries - All Vehicles

Interval Start	Molalla Ave				S Douglas Loop				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	25	5	22	0	1	5	3	0	60	275	1	0	6	121	23	547	0
7:15 AM	0	17	0	33	0	3	5	3	0	59	271	1	0	14	110	31	547	0
7:30 AM	**0**	**21**	**6**	**31**	**0**	**0**	**6**	**2**	**0**	**64**	**250**	**4**	**0**	**17**	**121**	**24**	**546**	**0**
7:45 AM	**0**	**18**	**7**	**39**	**0**	**1**	**4**	**0**	**0**	**82**	**233**	**7**	**0**	**18**	**138**	**39**	**586**	**2,226**
8:00 AM	**0**	**36**	**12**	**55**	**0**	**4**	**11**	**5**	**0**	**82**	**220**	**3**	**0**	**15**	**173**	**37**	**653**	**2,332**
8:15 AM	**0**	**19**	**9**	**38**	**0**	**3**	**8**	**7**	**0**	**99**	**252**	**5**	**0**	**15**	**144**	**29**	**628**	**2,413**
8:30 AM	0	20	8	45	0	3	14	3	0	73	218	2	0	10	115	33	544	2,411
8:45 AM	0	22	2	47	0	1	9	4	0	82	210	3	0	13	151	30	574	2,399
Count Total	0	178	49	310	0	16	62	27	0	601	1,929	26	0	108	1,073	246	4,625	
Pk Hr All	**0**	**94**	**34**	**163**	**0**	**8**	**29**	**14**	**0**	**327**	**955**	**19**	**0**	**65**	**576**	**129**	**2,413**	
Pk Hr HV	**0**	**4**	**4**	**7**	**0**	**2**	**4**	**0**	**0**	**8**	**65**	**3**	**0**	**1**	**54**	**3**	**155**	
Pk Hr HV%	**-**	**4%**	**12%**	**4%**	**-**	**25%**	**14%**	**0%**	**-**	**2%**	**7%**	**16%**	**-**	**2%**	**9%**	**2%**	**6%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:00 AM	3	2	25	13	*43*	0	0	0	0	*0*	0	0	0	1	*1*
7:15 AM	0	1	17	10	*28*	0	0	0	0	*0*	12	0	0	1	*13*
7:30 AM	**3**	**1**	**16**	**11**	**31**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**
7:45 AM	**4**	**1**	**22**	**8**	**35**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**
8:00 AM	**6**	**1**	**16**	**20**	**43**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	**2**	**3**	**22**	**19**	**46**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	4	1	25	15	*45*	0	0	0	0	*0*	0	0	1	0	*1*
8:45 AM	4	1	21	17	*43*	0	0	0	0	*0*	0	0	3	0	*3*
Count Total	26	11	164	113	*314*	0	0	0	0	*0*	12	0	4	4	*20*
Peak Hour	**15**	**6**	**76**	**58**	***155***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**2**	**2**

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Count Summaries - Heavy Vehicles

Interval Start	Molalla Ave				S Douglas Loop				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	1	1	1	0	0	2	0	0	6	18	1	0	1	12	0	43	0
7:15 AM	0	0	0	0	0	1	0	0	0	0	17	0	0	0	9	1	28	0
7:30 AM	**0**	**1**	**1**	**1**	**0**	**0**	**1**	**0**	**0**	**1**	**14**	**1**	**0**	**0**	**11**	**0**	**31**	**0**
7:45 AM	**0**	**0**	**1**	**3**	**0**	**1**	**0**	**0**	**0**	**2**	**20**	**0**	**0**	**0**	**7**	**1**	**35**	**137**
8:00 AM	**0**	**2**	**1**	**3**	**0**	**0**	**1**	**0**	**0**	**1**	**15**	**0**	**0**	**0**	**19**	**1**	**43**	**137**
8:15 AM	**0**	**1**	**1**	**0**	**0**	**1**	**2**	**0**	**0**	**4**	**16**	**2**	**0**	**1**	**17**	**1**	**46**	**155**
8:30 AM	0	1	0	3	0	0	1	0	0	0	25	0	0	0	15	0	45	169
8:45 AM	0	1	0	3	0	0	1	0	0	4	16	1	0	1	14	2	43	177
Count Total	0	7	5	14	0	3	8	0	0	18	141	5	0	3	104	6	314	
Pk Hr Heavy	**0**	**4**	**4**	**7**	**0**	**2**	**4**	**0**	**0**	**8**	**65**	**3**	**0**	**1**	**54**	**3**	**155**	

Count Summaries - Bikes

Interval Start	Molalla Ave				S Douglas Loop				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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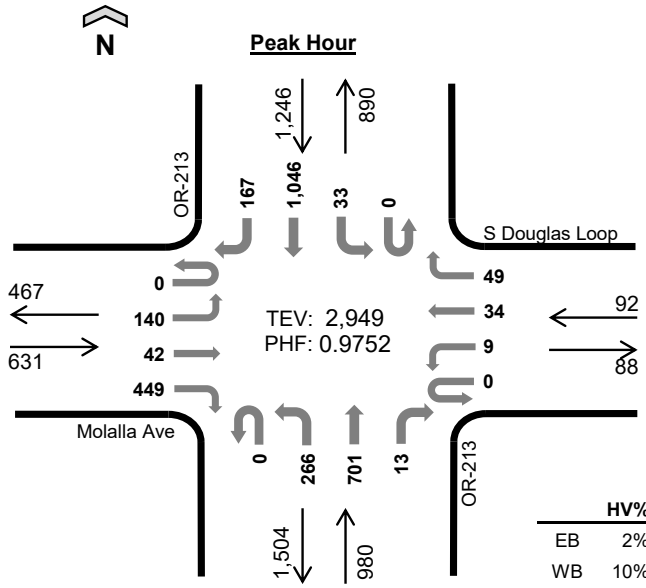
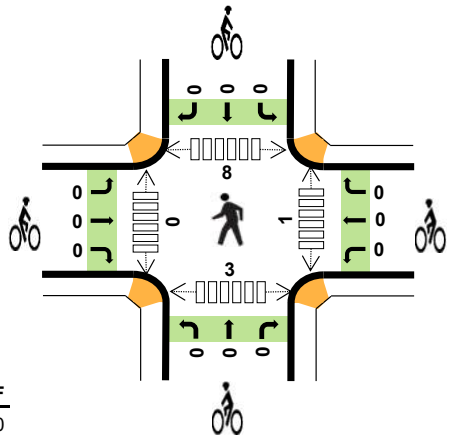
OR-213
Molalla Ave

Date: 9/9/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM



	HV%	PHF
EB	2%	0.90
WB	10%	0.70
NB	3%	0.92
SB	2%	0.96
TOTAL	3%	0.98



Peak Hour Count Summaries

Peak Hour Interval Start		Molalla Ave				S Douglas Loop				OR-213				OR-213				15-min Total	Rolling Hour Total
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:45 PM		0	31	14	104	0	3	11	9	0	65	167	1	0	8	265	51	729	0
5:00 PM		0	41	8	126	0	2	10	21	0	56	167	3	0	10	227	44	715	0
5:15 PM		0	28	10	118	0	4	10	15	0	65	189	2	0	8	280	27	756	0
5:30 PM		0	40	10	101	0	0	3	4	0	80	178	7	0	7	274	45	749	2,949
Pk Hr	All	0	140	42	449	0	9	34	49	0	266	701	13	0	33	1,046	167	2,949	
	HV	0	2	5	4	0	2	5	2	0	4	23	2	0	1	20	4	74	
	HV%	-	1%	12%	1%	-	22%	15%	4%	-	2%	3%	15%	-	3%	2%	2%	3%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:45 PM	6	4	9	6	*25*	0	0	0	0	*0*	0	0	6	0	*6*
5:00 PM	3	1	7	7	*18*	0	0	0	0	*0*	1	0	1	1	*3*
5:15 PM	1	3	6	8	*18*	0	0	0	0	*0*	0	0	1	1	*2*
5:30 PM	1	1	7	4	*13*	0	0	0	0	*0*	0	0	0	1	*1*
Peak Hour	11	9	29	25	*74*	0	0	0	0	*0*	1	0	8	3	*12*

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Count Summaries - All Vehicles

Interval Start	Molalla Ave				S Douglas Loop				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	23	5	108	0	3	10	18	0	82	152	1	0	7	273	51	733	0
4:15 PM	0	26	9	108	0	4	8	12	0	63	162	0	0	1	277	41	711	0
4:30 PM	0	24	7	107	0	1	7	15	0	79	174	2	0	5	263	42	726	0
4:45 PM	**0**	**31**	**14**	**104**	**0**	**3**	**11**	**9**	**0**	**65**	**167**	**1**	**0**	**8**	**265**	**51**	**729**	**2,899**
5:00 PM	**0**	**41**	**8**	**126**	**0**	**2**	**10**	**21**	**0**	**56**	**167**	**3**	**0**	**10**	**227**	**44**	**715**	**2,881**
5:15 PM	**0**	**28**	**10**	**118**	**0**	**4**	**10**	**15**	**0**	**65**	**189**	**2**	**0**	**8**	**280**	**27**	**756**	**2,926**
5:30 PM	**0**	**40**	**10**	**101**	**0**	**0**	**3**	**4**	**0**	**80**	**178**	**7**	**0**	**7**	**274**	**45**	**749**	**2,949**
5:45 PM	0	28	11	106	0	4	11	5	0	63	152	3	0	15	234	31	663	2,883
Count Total	0	241	74	878	0	21	70	99	0	553	1,341	19	0	61	2,093	332	5,782	
Pk Hr All	**0**	**140**	**42**	**449**	**0**	**9**	**34**	**49**	**0**	**266**	**701**	**13**	**0**	**33**	**1,046**	**167**	**2,949**	
Pk Hr HV	**0**	**2**	**5**	**4**	**0**	**2**	**5**	**2**	**0**	**4**	**23**	**2**	**0**	**1**	**20**	**4**	**74**	
Pk Hr HV%	**-**	**1%**	**12%**	**1%**	**-**	**22%**	**15%**	**4%**	**-**	**2%**	**3%**	**15%**	**-**	**3%**	**2%**	**2%**	**3%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	2	2	6	10	*20*	0	0	0	0	*0*	0	0	1	1	*2*
4:15 PM	3	1	10	13	*27*	0	0	0	0	*0*	0	0	2	0	*2*
4:30 PM	2	1	10	12	*25*	1	0	0	0	*1*	0	0	2	0	*2*
4:45 PM	**6**	**4**	**9**	**6**	**25**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**6**
5:00 PM	**3**	**1**	**7**	**7**	**18**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**1**	**3**
5:15 PM	**1**	**3**	**6**	**8**	**18**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**2**
5:30 PM	**1**	**1**	**7**	**4**	**13**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**
5:45 PM	3	2	6	3	*14*	0	0	0	0	*0*	0	0	0	1	*1*
Count Total	21	15	61	63	*160*	1	0	0	0	*1*	1	0	13	5	*19*
Peak Hour	**11**	**9**	**29**	**25**	***74***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**8**	**3**	**12**

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Count Summaries - Heavy Vehicles

Interval Start	Molalla Ave				S Douglas Loop				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	1	0	1	0	0	2	0	0	0	5	1	0	0	9	1	20	0
4:15 PM	0	0	1	2	0	1	0	0	0	2	8	0	0	0	11	2	27	0
4:30 PM	0	0	0	2	0	0	1	0	0	0	9	1	0	0	12	0	25	0
4:45 PM	**0**	**0**	**3**	**3**	**0**	**1**	**2**	**1**	**0**	**1**	**8**	**0**	**0**	**0**	**6**	**0**	**25**	**97**
5:00 PM	**0**	**1**	**1**	**1**	**0**	**0**	**1**	**0**	**0**	**1**	**5**	**1**	**0**	**0**	**7**	**0**	**18**	**95**
5:15 PM	**0**	**0**	**1**	**0**	**0**	**1**	**1**	**1**	**0**	**1**	**5**	**0**	**0**	**0**	**5**	**3**	**18**	**86**
5:30 PM	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**5**	**1**	**0**	**1**	**2**	**1**	**13**	**74**
5:45 PM	0	1	1	1	0	1	1	0	0	1	5	0	0	1	2	0	14	63
Count Total	0	4	7	10	0	4	9	2	0	7	50	4	0	2	54	7	160	
Pk Hr Heavy	**0**	**2**	**5**	**4**	**0**	**2**	**5**	**2**	**0**	**4**	**23**	**2**	**0**	**1**	**20**	**4**	**74**	

Count Summaries - Bikes

Interval Start	Molalla Ave				S Douglas Loop				OR-213				OR-213				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

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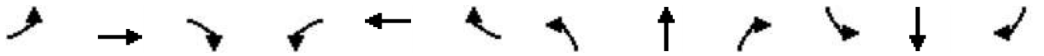
Appendix B: Operations Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	10	10	35	10	5	10	550	15	30	410	10
Future Volume (veh/h)	20	10	10	35	10	5	10	550	15	30	410	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1811	1811	1781	1781	1781	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	22	11	11	38	11	5	11	598	16	33	446	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	8	8	8	4	4	4	4	4	4
Cap, veh/h	264	76	51	327	62	18	667	1050	28	554	1054	26
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.59	0.59	0.59	0.59	0.59	0.59
Sat Flow, veh/h	575	575	383	855	468	135	919	1783	48	795	1789	44
Grp Volume(v), veh/h	44	0	0	54	0	0	11	0	614	33	0	457
Grp Sat Flow(s),veh/h/ln	1533	0	0	1457	0	0	919	0	1831	795	0	1833
Q Serve(g_s), s	0.0	0.0	0.0	0.2	0.0	0.0	0.2	0.0	5.9	0.8	0.0	3.9
Cycle Q Clear(g_c), s	0.7	0.0	0.0	0.8	0.0	0.0	4.1	0.0	5.9	6.7	0.0	3.9
Prop In Lane	0.50		0.25	0.70		0.09	1.00		0.03	1.00		0.02
Lane Grp Cap(c), veh/h	391	0	0	406	0	0	667	0	1079	554	0	1080
V/C Ratio(X)	0.11	0.00	0.00	0.13	0.00	0.00	0.02	0.00	0.57	0.06	0.00	0.42
Avail Cap(c_a), veh/h	1277	0	0	1245	0	0	1918	0	3574	1637	0	3577
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.1	0.0	0.0	11.2	0.0	0.0	4.4	0.0	3.6	5.7	0.0	3.2
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.8	0.1	0.0	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.6	0.1	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	11.2	0.0	0.0	11.3	0.0	0.0	4.4	0.0	4.5	5.8	0.0	3.7
LnGrp LOS	B			B			A		A	A		A
Approach Vol, veh/h		44			54			625			490	
Approach Delay, s/veh		11.2			11.3			4.5			3.8	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	20.9	7.8	20.9	7.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	56.0	21.0	56.0	21.0
Max Q Clear Time (g_c+I1), s	8.7	2.8	7.9	2.7
Green Ext Time (p_c), s	6.3	0.2	9.0	0.1

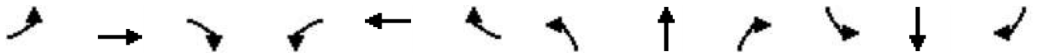
Intersection Summary	
HCM 7th Control Delay, s/veh	4.7
HCM 7th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	4	35	30	5	5	25	450	10	5	400	30
Future Volume (veh/h)	45	4	35	30	5	5	25	450	10	5	400	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1826	1826	1826	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	48	4	38	32	5	5	27	484	11	5	430	32
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	7	7	7	5	5	5	4	4	4	4	4	4
Cap, veh/h	409	238	202	411	111	111	517	808	18	466	790	667
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.03	0.45	0.45	0.01	0.43	0.43
Sat Flow, veh/h	1349	1796	1522	1332	838	838	1753	1792	41	1753	1841	1554
Grp Volume(v), veh/h	48	4	38	32	0	10	27	0	495	5	430	32
Grp Sat Flow(s),veh/h/ln	1349	1796	1522	1332	0	1675	1753	0	1833	1753	1841	1554
Q Serve(g_s), s	1.0	0.1	0.7	0.7	0.0	0.2	0.3	0.0	6.2	0.0	5.3	0.4
Cycle Q Clear(g_c), s	1.1	0.1	0.7	0.7	0.0	0.2	0.3	0.0	6.2	0.0	5.3	0.4
Prop In Lane	1.00		1.00	1.00		0.50	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	409	238	202	411	0	222	517	0	826	466	790	667
V/C Ratio(X)	0.12	0.02	0.19	0.08	0.00	0.05	0.05	0.00	0.60	0.01	0.54	0.05
Avail Cap(c_a), veh/h	1162	1241	1052	1155	0	1157	1105	0	2443	1091	2453	2072
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.0	11.5	11.7	11.8	0.0	11.5	5.0	0.0	6.3	5.4	6.5	5.1
Incr Delay (d2), s/veh	0.1	0.0	0.3	0.1	0.0	0.1	0.0	0.0	1.1	0.0	0.9	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.2	0.2	0.0	0.1	0.0	0.0	1.4	0.0	1.3	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	12.1	11.5	12.1	11.8	0.0	11.6	5.1	0.0	7.4	5.4	7.4	5.1
LnGrp LOS	B	B	B	B		B	A		A	A	A	A
Approach Vol, veh/h		90			42			522			467	
Approach Delay, s/veh		12.0			11.8			7.2			7.2	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.8	17.5		8.0	4.2	18.2		8.0				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	11.0	40.5		21.0	11.0	40.5		21.0				
Max Q Clear Time (g_c+I1), s	2.3	7.3		2.7	2.0	8.2		3.1				
Green Ext Time (p_c), s	0.0	4.8		0.1	0.0	5.5		0.2				

Intersection Summary												
HCM 7th Control Delay, s/veh			7.8									
HCM 7th LOS			A									



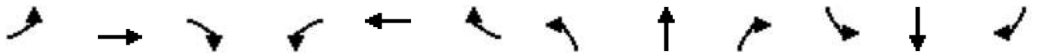
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	10	50	15	5	1	105	490	5	5	345	115
Future Volume (veh/h)	90	10	50	15	5	1	105	490	5	5	345	115
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1900	1900	1900	1826	1826	1826	1841	1841	1841
Adj Flow Rate, veh/h	99	11	55	16	5	1	115	538	5	5	379	126
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	4	4	4	0	0	0	5	5	5	4	4	4
Cap, veh/h	637	80	399	545	383	77	396	1276	12	388	936	307
Arrive On Green	0.07	0.30	0.30	0.02	0.25	0.25	0.36	0.36	0.36	0.36	0.36	0.36
Sat Flow, veh/h	1753	266	1332	1810	1537	307	870	3522	33	847	2583	847
Grp Volume(v), veh/h	99	0	66	16	0	6	115	265	278	5	255	250
Grp Sat Flow(s),veh/h/ln	1753	0	1598	1810	0	1844	870	1735	1820	847	1749	1681
Q Serve(g_s), s	1.7	0.0	1.2	0.3	0.0	0.1	4.6	4.6	4.6	0.2	4.4	4.5
Cycle Q Clear(g_c), s	1.7	0.0	1.2	0.3	0.0	0.1	9.1	4.6	4.6	4.8	4.4	4.5
Prop In Lane	1.00		0.83	1.00		0.17	1.00		0.02	1.00		0.50
Lane Grp Cap(c), veh/h	637	0	479	545	0	460	396	628	659	388	633	609
V/C Ratio(X)	0.16	0.00	0.14	0.03	0.00	0.01	0.29	0.42	0.42	0.01	0.40	0.41
Avail Cap(c_a), veh/h	1432	0	2176	1457	0	2510	641	1116	1171	626	1126	1082
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.0	0.0	10.3	11.0	0.0	11.4	13.1	9.7	9.7	11.5	9.6	9.7
Incr Delay (d2), s/veh	0.1	0.0	0.2	0.0	0.0	0.0	0.3	0.3	0.3	0.0	0.3	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.4	0.1	0.0	0.0	0.8	1.4	1.5	0.0	1.3	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	10.1	0.0	10.5	11.0	0.0	11.4	13.4	10.0	10.0	11.5	9.9	10.0
LnGrp LOS	B		B	B		B	B	B	B	B	A	A
Approach Vol, veh/h		165			22			658			510	
Approach Delay, s/veh		10.3			11.1			10.6			10.0	
Approach LOS		B			B			B			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.7	17.1		18.6	6.7	15.1		18.6				
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	21.0	55.0		26.0	21.0	55.0		26.0				
Max Q Clear Time (g_c+I1), s	2.3	3.2		6.8	3.7	2.1		11.1				
Green Ext Time (p_c), s	0.0	0.6		2.5	0.1	0.0		2.9				

Intersection Summary			
HCM 7th Control Delay, s/veh		10.3	
HCM 7th LOS		B	

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	0	65	0	0	0	80	555	0	0	345	45
Future Volume (veh/h)	50	0	65	0	0	0	80	555	0	0	345	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1870	1856	1856	1856	1841	1841	1841
Adj Flow Rate, veh/h	57	0	74	0	0	0	91	631	0	0	392	51
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	1	1	1	2	2	2	3	3	3	4	4	4
Cap, veh/h	441	0	221	192	261	0	116	1623	0	192	897	116
Arrive On Green	0.14	0.00	0.14	0.00	0.00	0.00	0.07	0.46	0.00	0.00	0.29	0.29
Sat Flow, veh/h	1780	0	1586	1326	1870	0	1767	3618	0	783	3110	402
Grp Volume(v), veh/h	57	0	74	0	0	0	91	631	0	0	219	224
Grp Sat Flow(s),veh/h/ln	1780	0	1586	1326	1870	0	1767	1763	0	783	1749	1763
Q Serve(g_s), s	1.1	0.0	1.6	0.0	0.0	0.0	1.9	4.4	0.0	0.0	3.8	3.9
Cycle Q Clear(g_c), s	1.1	0.0	1.6	0.0	0.0	0.0	1.9	4.4	0.0	0.0	3.8	3.9
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		0.23
Lane Grp Cap(c), veh/h	441	0	221	192	261	0	116	1623	0	192	504	508
V/C Ratio(X)	0.13	0.00	0.33	0.00	0.00	0.00	0.79	0.39	0.00	0.00	0.43	0.44
Avail Cap(c_a), veh/h	1283	0	972	820	1147	0	989	4887	0	1114	2564	2585
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	14.3	0.0	14.6	0.0	0.0	0.0	17.3	6.6	0.0	0.0	10.9	10.9
Incr Delay (d2), s/veh	0.1	0.0	0.5	0.0	0.0	0.0	7.0	0.2	0.0	0.0	0.9	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.5	0.0	0.0	0.0	0.9	1.1	0.0	0.0	1.3	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.4	0.0	15.1	0.0	0.0	0.0	24.2	6.9	0.0	0.0	11.8	11.8
LnGrp LOS	B		B				C	A			B	B
Approach Vol, veh/h		131			0			722			443	
Approach Delay, s/veh		14.8			0.0			9.1			11.8	
Approach LOS		B						A			B	

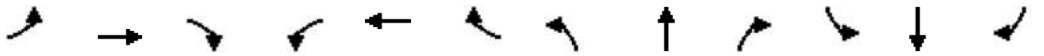
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	6.5	18.8		12.2		25.3		12.2				
Change Period (Y+Rc), s	4.0	* 8		7.0		8.0		7.0				
Max Green Setting (Gmax), s	21.0	* 55		23.0		52.0		23.0				
Max Q Clear Time (g_c+I1), s	3.9	5.9		3.6		6.4		0.0				
Green Ext Time (p_c), s	0.1	4.7		0.4		7.8		0.0				

Intersection Summary												
HCM 7th Control Delay, s/veh			10.6									
HCM 7th LOS			B									

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



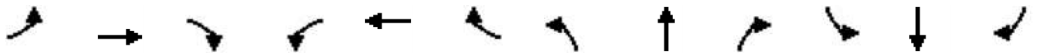
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	235	100	45	450	215	161	310	55	205	175	15
Future Volume (veh/h)	10	235	100	45	450	215	161	310	55	205	175	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1767	1767	1856	1856	1856	1856	1856	1856	1841	1841	1841
Adj Flow Rate, veh/h	10	242	103	46	464	222	166	320	57	211	180	15
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	9	9	9	3	3	3	3	3	3	4	4	4
Cap, veh/h	18	543	423	102	737	518	217	710	125	412	395	33
Arrive On Green	0.01	0.16	0.16	0.06	0.21	0.21	0.12	0.24	0.24	0.12	0.24	0.24
Sat Flow, veh/h	1682	3357	1483	1767	3526	1566	1767	2991	526	3401	1675	140
Grp Volume(v), veh/h	10	242	103	46	464	222	166	187	190	211	0	195
Grp Sat Flow(s),veh/h/ln	1682	1678	1483	1767	1763	1566	1767	1763	1755	1700	0	1814
Q Serve(g_s), s	0.3	3.0	2.5	1.2	5.5	5.1	4.2	4.2	4.3	2.7	0.0	4.3
Cycle Q Clear(g_c), s	0.3	3.0	2.5	1.2	5.5	5.1	4.2	4.2	4.3	2.7	0.0	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.30	1.00		0.08
Lane Grp Cap(c), veh/h	18	543	423	102	737	518	217	418	416	412	0	428
V/C Ratio(X)	0.57	0.45	0.24	0.45	0.63	0.43	0.77	0.45	0.46	0.51	0.00	0.46
Avail Cap(c_a), veh/h	382	1090	665	402	1144	699	765	1144	1140	2208	0	1178
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.8	17.5	12.7	21.1	16.6	12.1	19.6	15.0	15.1	19.0	0.0	15.1
Incr Delay (d2), s/veh	16.5	0.4	0.2	1.9	0.7	0.4	3.5	1.1	1.2	0.6	0.0	1.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	1.0	0.7	0.5	1.9	1.5	1.7	1.6	1.6	1.0	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	39.3	17.9	12.9	22.9	17.3	12.5	23.1	16.2	16.3	19.6	0.0	16.3
LnGrp LOS	D	B	B	C	B	B	C	B	B	B		B
Approach Vol, veh/h		355			732			543			406	
Approach Delay, s/veh		17.1			16.2			18.3			18.0	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.7	15.9	5.0	14.7	10.6	16.0	7.2	12.5
Change Period (Y+Rc), s	5.0	5.0	4.5	5.0	5.0	5.0	4.5	5.0
Max Green Setting (Gmax), s	20.0	30.0	10.5	15.0	30.0	30.0	10.5	15.0
Max Q Clear Time (g_c+I1), s	6.2	6.3	2.3	7.5	4.7	6.3	3.2	5.0
Green Ext Time (p_c), s	0.2	1.6	0.0	1.9	0.5	3.4	0.0	1.0

Intersection Summary	
HCM 7th Control Delay, s/veh	17.3
HCM 7th LOS	B

Notes

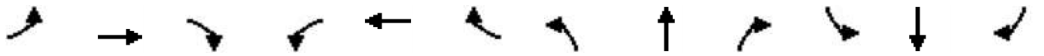
User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	25	45	3	20	15	30	415	10	15	270	30
Future Volume (veh/h)	100	25	45	3	20	15	30	415	10	15	270	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.98		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1826	1826	1826	1841	1841	1841	1826	1826	1826
Adj Flow Rate, veh/h	105	26	47	3	21	16	32	437	11	16	284	32
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	5	5	5	4	4	4	5	5	5
Cap, veh/h	411	78	140	305	55	42	459	594	15	361	512	58
Arrive On Green	0.08	0.13	0.13	0.00	0.06	0.06	0.03	0.33	0.33	0.02	0.32	0.32
Sat Flow, veh/h	1781	595	1075	1739	960	731	1753	1787	45	1739	1610	181
Grp Volume(v), veh/h	105	0	73	3	0	37	32	0	448	16	0	316
Grp Sat Flow(s),veh/h/ln	1781	0	1670	1739	0	1691	1753	0	1832	1739	0	1792
Q Serve(g_s), s	1.7	0.0	1.3	0.1	0.0	0.7	0.4	0.0	6.9	0.2	0.0	4.7
Cycle Q Clear(g_c), s	1.7	0.0	1.3	0.1	0.0	0.7	0.4	0.0	6.9	0.2	0.0	4.7
Prop In Lane	1.00		0.64	1.00		0.43	1.00		0.02	1.00		0.10
Lane Grp Cap(c), veh/h	411	0	218	305	0	98	459	0	609	361	0	570
V/C Ratio(X)	0.26	0.00	0.34	0.01	0.00	0.38	0.07	0.00	0.74	0.04	0.00	0.55
Avail Cap(c_a), veh/h	890	0	1100	627	0	1114	1285	0	2039	1205	0	1994
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.4	0.0	12.6	14.1	0.0	14.5	7.2	0.0	9.4	7.8	0.0	9.0
Incr Delay (d2), s/veh	0.1	0.0	0.3	0.0	0.0	0.9	0.0	0.0	0.7	0.0	0.0	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.4	0.0	0.0	0.2	0.1	0.0	1.9	0.0	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	12.6	0.0	12.9	14.1	0.0	15.4	7.3	0.0	10.1	7.8	0.0	9.3
LnGrp LOS	B		B	B		B	A		B	A		A
Approach Vol, veh/h		178			40			480			332	
Approach Delay, s/veh		12.7			15.3			9.9			9.2	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.0	14.6	6.4	5.8	4.5	15.1	4.1	8.2
Change Period (Y+Rc), s	4.0	4.5	4.0	4.0	4.0	4.5	4.0	4.0
Max Green Setting (Gmax), s	16.0	35.5	11.0	21.0	16.0	35.5	6.0	21.0
Max Q Clear Time (g_c+I1), s	2.4	6.7	3.7	2.7	2.2	8.9	2.1	3.3
Green Ext Time (p_c), s	0.0	0.4	0.0	0.0	0.0	0.6	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	10.4
HCM 7th LOS	B



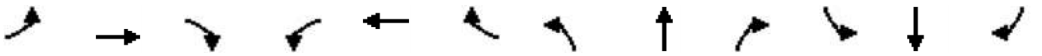
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	35	165	10	30	15	325	955	20	65	575	130
Future Volume (veh/h)	95	35	165	10	30	15	325	955	20	65	575	130
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1722	1722	1722	1811	1811	1811	1781	1781	1781
Adj Flow Rate, veh/h	103	38	179	11	33	16	353	1038	22	71	625	141
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	5	12	12	12	6	6	6	8	8	8
Cap, veh/h	126	218	525	17	98	82	381	2256	1006	90	1652	737
Arrive On Green	0.07	0.12	0.12	0.01	0.06	0.06	0.22	0.66	0.66	0.05	0.49	0.49
Sat Flow, veh/h	1739	1826	1540	1640	1722	1444	1725	3441	1535	1697	3385	1510
Grp Volume(v), veh/h	103	38	179	11	33	16	353	1038	22	71	625	141
Grp Sat Flow(s),veh/h/ln	1739	1826	1540	1640	1722	1444	1725	1721	1535	1697	1692	1510
Q Serve(g_s), s	7.0	2.2	10.4	0.8	2.2	1.3	24.1	17.9	0.6	5.0	13.9	6.3
Cycle Q Clear(g_c), s	7.0	2.2	10.4	0.8	2.2	1.3	24.1	17.9	0.6	5.0	13.9	6.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	126	218	525	17	98	82	381	2256	1006	90	1652	737
V/C Ratio(X)	0.81	0.17	0.34	0.66	0.34	0.19	0.93	0.46	0.02	0.79	0.38	0.19
Avail Cap(c_a), veh/h	203	313	606	164	267	224	489	2256	1006	368	1652	737
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.8	47.5	29.6	59.2	54.4	54.0	45.8	10.2	7.2	56.1	19.3	17.3
Incr Delay (d2), s/veh	5.5	0.1	0.1	23.4	1.2	0.7	19.6	0.7	0.0	8.9	0.7	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	1.0	3.8	0.4	1.0	0.5	11.8	5.8	0.2	2.3	5.2	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	60.4	47.7	29.7	82.6	55.6	54.7	65.4	10.9	7.3	65.1	19.9	17.9
LnGrp LOS	E	D	C	F	E	D	E	B	A	E	B	B
Approach Vol, veh/h		320			60			1413			837	
Approach Delay, s/veh		41.7			60.3			24.4			23.4	
Approach LOS		D			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	30.5	64.6	12.7	12.2	10.4	84.7	5.2	19.7
Change Period (Y+Rc), s	4.0	6.0	4.0	5.4	4.0	6.0	4.0	5.4
Max Green Setting (Gmax), s	34.0	34.0	14.0	18.6	26.0	42.0	12.0	20.6
Max Q Clear Time (g_c+I1), s	26.1	15.9	9.0	4.2	7.0	19.9	2.8	12.4
Green Ext Time (p_c), s	0.4	6.3	0.0	0.1	0.1	10.7	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	27.0
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	480	3	45	815	0	5	0	40	0	0	0
Future Volume (veh/h)	0	480	3	45	815	0	5	0	40	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1737	1737	1737	1856	1856	1856	1900	1900	1900	1870	1870	1870
Adj Flow Rate, veh/h	0	527	3	49	896	0	5	0	44	0	0	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	11	11	11	3	3	3	0	0	0	2	2	2
Cap, veh/h	507	1437	8	652	2244	0	336	0	73	255	85	0
Arrive On Green	0.00	0.43	0.43	0.07	0.64	0.00	0.05	0.00	0.05	0.00	0.00	0.00
Sat Flow, veh/h	1654	3364	19	1767	3618	0	1810	0	1610	1362	1870	0
Grp Volume(v), veh/h	0	258	272	49	896	0	5	0	44	0	0	0
Grp Sat Flow(s),veh/h/ln	1654	1650	1733	1767	1763	0	1810	0	1610	1362	1870	0
Q Serve(g_s), s	0.0	3.0	3.0	0.4	3.5	0.0	0.1	0.0	0.8	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	3.0	3.0	0.4	3.5	0.0	0.1	0.0	0.8	0.0	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	507	705	741	652	2244	0	336	0	73	255	85	0
V/C Ratio(X)	0.00	0.37	0.37	0.08	0.40	0.00	0.01	0.00	0.60	0.00	0.00	0.00
Avail Cap(c_a), veh/h	1145	1780	1870	1220	3803	0	1567	0	1167	458	364	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	5.5	5.5	3.2	2.5	0.0	12.9	0.0	13.3	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.5	0.5	0.0	0.2	0.0	0.0	0.0	5.9	0.0	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.5	0.5	0.0	0.1	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	6.0	6.0	3.2	2.7	0.0	12.9	0.0	19.1	0.0	0.0	0.0
LnGrp LOS		A	A	A	A		B		B			
Approach Vol, veh/h		530			945			49			0	
Approach Delay, s/veh		6.0			2.7			18.5			0.0	
Approach LOS		A			A			B				

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.9	16.6		5.8	0.0	22.5		5.8				
Change Period (Y+Rc), s	4.0	4.5		4.5	4.0	4.5		4.5				
Max Green Setting (Gmax), s	11.0	30.5		5.5	11.0	30.5		20.5				
Max Q Clear Time (g_c+I1), s	2.4	5.0		0.0	0.0	5.5		2.8				
Green Ext Time (p_c), s	0.0	4.9		0.0	0.0	9.7		0.1				

Intersection Summary	
HCM 7th Control Delay, s/veh	4.4
HCM 7th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	320	310	25	115	400	715	40	960	110	385	615	595
Future Volume (veh/h)	320	310	25	115	400	715	40	960	110	385	615	595
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1752	1752	1752	1841	1841	1841	1811	1811	1811	1826	1826	1826
Adj Flow Rate, veh/h	333	323	26	120	417	0	42	1000	0	401	641	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	10	10	10	4	4	4	6	6	6	5	5	5
Cap, veh/h	418	675	54	185	494		52	1149		488	1555	
Arrive On Green	0.13	0.22	0.22	0.05	0.14	0.00	0.03	0.33	0.00	0.14	0.45	0.00
Sat Flow, veh/h	3237	3121	250	3401	3497	1560	1725	3441	1535	3374	3469	1547
Grp Volume(v), veh/h	333	171	178	120	417	0	42	1000	0	401	641	0
Grp Sat Flow(s),veh/h/ln	1618	1664	1707	1700	1749	1560	1725	1721	1535	1687	1735	1547
Q Serve(g_s), s	9.4	8.4	8.5	3.2	10.9	0.0	2.3	25.6	0.0	10.8	11.7	0.0
Cycle Q Clear(g_c), s	9.4	8.4	8.5	3.2	10.9	0.0	2.3	25.6	0.0	10.8	11.7	0.0
Prop In Lane	1.00		0.15	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	418	360	369	185	494		52	1149		488	1555	
V/C Ratio(X)	0.80	0.48	0.48	0.65	0.84		0.80	0.87		0.82	0.41	
Avail Cap(c_a), veh/h	1123	435	446	345	541		175	1212		954	1555	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	39.6	32.1	32.1	43.4	39.2	0.0	45.1	29.3	0.0	38.9	17.5	0.0
Incr Delay (d2), s/veh	2.2	0.6	0.6	2.4	10.3	0.0	15.6	7.4	0.0	2.2	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	3.4	3.5	1.4	5.3	0.0	1.1	10.6	0.0	4.3	4.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	41.8	32.7	32.7	45.8	49.5	0.0	60.7	36.7	0.0	41.1	17.8	0.0
LnGrp LOS	D	C	C	D	D		E	D		D	B	
Approach Vol, veh/h		682			537			1042			1042	
Approach Delay, s/veh		37.1			48.7			37.6			26.8	
Approach LOS		D			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.1	38.3	10.6	25.7	8.3	49.0	17.6	18.7
Change Period (Y+Rc), s	5.5	7.0	5.5	5.5	5.5	7.0	5.5	5.5
Max Green Setting (Gmax), s	26.5	33.0	9.5	24.5	9.5	33.0	32.5	14.5
Max Q Clear Time (g_c+I1), s	12.8	27.6	5.2	10.5	4.3	13.7	11.4	12.9
Green Ext Time (p_c), s	0.8	3.7	0.1	1.2	0.0	6.1	0.7	0.4

Intersection Summary	
HCM 7th Control Delay, s/veh	35.9
HCM 7th LOS	D

Notes

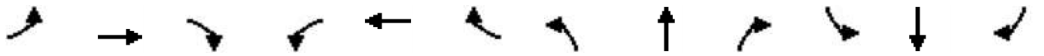
User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	5	15	65	10	25	10	630	20	2	735	10
Future Volume (veh/h)	10	5	15	65	10	25	10	630	20	2	735	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1885	1885	1885	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	11	5	16	68	11	26	11	663	21	2	774	11
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	1	1	1	2	2	2	1	1	1
Cap, veh/h	173	66	108	276	38	51	468	1170	37	533	1203	17
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.65	0.65	0.65	0.65	0.65	0.65
Sat Flow, veh/h	316	487	802	859	280	375	688	1801	57	762	1853	26
Grp Volume(v), veh/h	32	0	0	105	0	0	11	0	684	2	0	785
Grp Sat Flow(s),veh/h/ln	1605	0	0	1514	0	0	688	0	1858	762	0	1880
Q Serve(g_s), s	0.0	0.0	0.0	1.7	0.0	0.0	0.4	0.0	7.6	0.1	0.0	9.3
Cycle Q Clear(g_c), s	0.6	0.0	0.0	2.3	0.0	0.0	9.7	0.0	7.6	7.6	0.0	9.3
Prop In Lane	0.34		0.50	0.65		0.25	1.00		0.03	1.00		0.01
Lane Grp Cap(c), veh/h	347	0	0	364	0	0	468	0	1207	533	0	1221
V/C Ratio(X)	0.09	0.00	0.00	0.29	0.00	0.00	0.02	0.00	0.57	0.00	0.00	0.64
Avail Cap(c_a), veh/h	999	0	0	999	0	0	1059	0	2802	1187	0	2835
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.2	0.0	0.0	14.8	0.0	0.0	6.8	0.0	3.6	5.7	0.0	3.9
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.7	0.0	0.0	1.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.7	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.2	0.0	0.0	15.2	0.0	0.0	6.9	0.0	4.3	5.7	0.0	4.9
LnGrp LOS	B			B			A		A	A		A
Approach Vol, veh/h		32			105			695			787	
Approach Delay, s/veh		14.2			15.2			4.4			4.9	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	28.1	9.0	28.1	9.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	56.0	21.0	56.0	21.0
Max Q Clear Time (g_c+I1), s	11.3	4.3	11.7	2.6
Green Ext Time (p_c), s	12.8	0.4	10.4	0.1

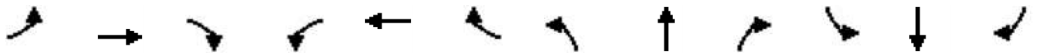
Intersection Summary	
HCM 7th Control Delay, s/veh	5.5
HCM 7th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	20	80	35	10	10	75	555	20	5	680	70
Future Volume (veh/h)	85	20	80	35	10	10	75	555	20	5	680	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.97	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1870	1870	1870	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	92	22	87	38	11	11	82	603	22	5	739	76
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	2	2	2	2	2	2	1	1	1
Cap, veh/h	324	249	209	314	115	115	418	1055	38	472	1015	829
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.06	0.59	0.59	0.01	0.54	0.54
Sat Flow, veh/h	1369	1856	1561	1276	854	854	1781	1791	65	1795	1885	1540
Grp Volume(v), veh/h	92	22	87	38	0	22	82	0	625	5	739	76
Grp Sat Flow(s),veh/h/ln	1369	1856	1561	1276	0	1709	1781	0	1856	1795	1885	1540
Q Serve(g_s), s	2.9	0.5	2.4	1.2	0.0	0.5	0.9	0.0	9.6	0.1	13.7	1.1
Cycle Q Clear(g_c), s	3.4	0.5	2.4	1.7	0.0	0.5	0.9	0.0	9.6	0.1	13.7	1.1
Prop In Lane	1.00		1.00	1.00		0.50	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	324	249	209	314	0	229	418	0	1093	472	1015	829
V/C Ratio(X)	0.28	0.09	0.42	0.12	0.00	0.10	0.20	0.00	0.57	0.01	0.73	0.09
Avail Cap(c_a), veh/h	765	846	711	725	0	779	742	0	1631	891	1657	1354
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.0	17.5	18.3	18.2	0.0	17.5	6.3	0.0	5.9	5.4	8.1	5.2
Incr Delay (d2), s/veh	0.4	0.1	1.0	0.1	0.0	0.1	0.1	0.0	0.7	0.0	1.6	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.2	0.8	0.3	0.0	0.2	0.2	0.0	2.5	0.0	4.1	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	19.4	17.6	19.3	18.4	0.0	17.6	6.4	0.0	6.6	5.4	9.6	5.2
LnGrp LOS	B	B	B	B		B	A		A	A	A	A
Approach Vol, veh/h		201			60			707			820	
Approach Delay, s/veh		19.1			18.1			6.6			9.2	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.6	29.3		10.2	4.2	31.6		10.2				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	11.0	40.5		21.0	11.0	40.5		21.0				
Max Q Clear Time (g_c+I1), s	2.9	15.7		3.7	2.1	11.6		5.4				
Green Ext Time (p_c), s	0.1	9.1		0.1	0.0	7.2		0.4				

Intersection Summary	
HCM 7th Control Delay, s/veh	9.6
HCM 7th LOS	A



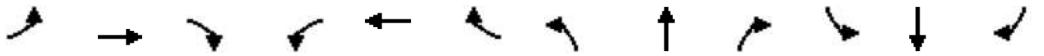
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	10	125	20	10	3	135	540	10	15	705	115
Future Volume (veh/h)	140	10	125	20	10	3	135	540	10	15	705	115
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1811	1811	1811	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	147	11	132	21	11	3	142	568	11	16	742	121
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	6	6	6	2	2	2	2	2	2
Cap, veh/h	574	33	395	412	270	74	321	1627	31	435	1390	227
Arrive On Green	0.09	0.27	0.27	0.02	0.20	0.20	0.46	0.46	0.46	0.46	0.46	0.46
Sat Flow, veh/h	1795	123	1473	1725	1370	374	640	3563	69	832	3045	496
Grp Volume(v), veh/h	147	0	143	21	0	14	142	283	296	16	433	430
Grp Sat Flow(s),veh/h/ln	1795	0	1596	1725	0	1743	640	1777	1856	832	1777	1764
Q Serve(g_s), s	3.1	0.0	3.7	0.5	0.0	0.3	10.5	5.3	5.3	0.6	8.9	8.9
Cycle Q Clear(g_c), s	3.1	0.0	3.7	0.5	0.0	0.3	19.4	5.3	5.3	5.9	8.9	8.9
Prop In Lane	1.00		0.92	1.00		0.21	1.00		0.04	1.00		0.28
Lane Grp Cap(c), veh/h	574	0	428	412	0	343	321	811	847	435	811	806
V/C Ratio(X)	0.26	0.00	0.33	0.05	0.00	0.04	0.44	0.35	0.35	0.04	0.53	0.53
Avail Cap(c_a), veh/h	1149	0	1720	1088	0	1880	355	906	946	480	906	899
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.9	0.0	15.0	15.8	0.0	16.6	16.9	9.0	9.0	10.9	10.0	10.0
Incr Delay (d2), s/veh	0.2	0.0	0.7	0.0	0.0	0.1	0.7	0.2	0.2	0.0	0.4	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	1.3	0.2	0.0	0.1	1.4	1.7	1.7	0.1	2.9	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	13.0	0.0	15.7	15.9	0.0	16.7	17.6	9.1	9.1	10.9	10.4	10.4
LnGrp LOS	B		B	B		B	B	A	A	B	B	B
Approach Vol, veh/h		290			35			721			879	
Approach Delay, s/veh		14.3			16.2			10.8			10.4	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.0	18.7		27.3	8.7	15.1		27.3				
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	21.0	55.0		26.0	21.0	55.0		26.0				
Max Q Clear Time (g_c+I1), s	2.5	5.7		10.9	5.1	2.3		21.4				
Green Ext Time (p_c), s	0.0	1.5		4.2	0.2	0.1		1.7				

Intersection Summary			
HCM 7th Control Delay, s/veh		11.2	
HCM 7th LOS		B	

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	0	140	0	0	0	130	645	0	0	775	70
Future Volume (veh/h)	40	0	140	0	0	0	130	645	0	0	775	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.98		0.98	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1870	1870	1870	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	41	0	144	0	0	0	134	665	0	0	799	72
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	2	2	2	1	1	1	2	2	2
Cap, veh/h	411	0	255	125	301	0	175	2072	0	125	1355	122
Arrive On Green	0.16	0.00	0.16	0.00	0.00	0.00	0.10	0.58	0.00	0.00	0.41	0.41
Sat Flow, veh/h	1779	0	1583	1244	1870	0	1795	3676	0	771	3293	297
Grp Volume(v), veh/h	41	0	144	0	0	0	134	665	0	0	431	440
Grp Sat Flow(s),veh/h/ln	1779	0	1583	1244	1870	0	1795	1791	0	771	1777	1813
Q Serve(g_s), s	1.1	0.0	4.8	0.0	0.0	0.0	4.2	5.5	0.0	0.0	10.9	10.9
Cycle Q Clear(g_c), s	1.1	0.0	4.8	0.0	0.0	0.0	4.2	5.5	0.0	0.0	10.9	10.9
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		0.16
Lane Grp Cap(c), veh/h	411	0	255	125	301	0	175	2072	0	125	731	746
V/C Ratio(X)	0.10	0.00	0.57	0.00	0.00	0.00	0.76	0.32	0.00	0.00	0.59	0.59
Avail Cap(c_a), veh/h	836	0	633	422	747	0	655	3236	0	545	1698	1732
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	20.7	0.0	22.3	0.0	0.0	0.0	25.3	6.3	0.0	0.0	13.2	13.2
Incr Delay (d2), s/veh	0.1	0.0	1.2	0.0	0.0	0.0	4.2	0.1	0.0	0.0	1.2	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	1.8	0.0	0.0	0.0	1.9	1.6	0.0	0.0	3.9	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	20.8	0.0	23.5	0.0	0.0	0.0	29.6	6.4	0.0	0.0	14.3	14.3
LnGrp LOS	C		C				C	A			B	B
Approach Vol, veh/h		185			0			799			871	
Approach Delay, s/veh		22.9			0.0			10.3			14.3	
Approach LOS		C						B			B	

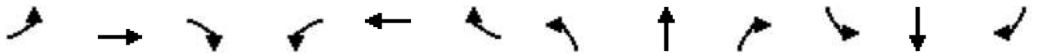
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	9.6	31.7		16.3		41.3		16.3				
Change Period (Y+Rc), s	4.0	* 8		7.0		8.0		7.0				
Max Green Setting (Gmax), s	21.0	* 55		23.0		52.0		23.0				
Max Q Clear Time (g_c+I1), s	6.2	12.9		6.8		7.5		0.0				
Green Ext Time (p_c), s	0.2	10.8		0.6		8.3		0.0				

Intersection Summary												
HCM 7th Control Delay, s/veh			13.4									
HCM 7th LOS			B									

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



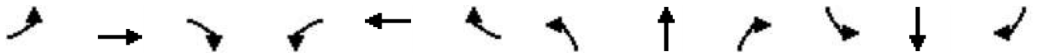
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	455	200	110	335	240	160	400	55	470	455	15
Future Volume (veh/h)	35	455	200	110	335	240	160	400	55	470	455	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1885	1885	1885	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	36	469	206	113	345	247	165	412	57	485	469	15
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	1	1	1	2	2	2	1	1	1
Cap, veh/h	52	639	467	146	830	655	209	836	115	625	598	19
Arrive On Green	0.03	0.18	0.18	0.08	0.23	0.23	0.12	0.27	0.27	0.18	0.33	0.33
Sat Flow, veh/h	1781	3554	1563	1795	3582	1587	1781	3127	429	3483	1815	58
Grp Volume(v), veh/h	36	469	206	113	345	247	165	233	236	485	0	484
Grp Sat Flow(s),veh/h/ln	1781	1777	1563	1795	1791	1587	1781	1777	1780	1742	0	1873
Q Serve(g_s), s	1.3	8.3	7.1	4.1	5.5	7.2	6.0	7.4	7.5	8.9	0.0	15.6
Cycle Q Clear(g_c), s	1.3	8.3	7.1	4.1	5.5	7.2	6.0	7.4	7.5	8.9	0.0	15.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.24	1.00		0.03
Lane Grp Cap(c), veh/h	52	639	467	146	830	655	209	475	476	625	0	617
V/C Ratio(X)	0.69	0.73	0.44	0.78	0.42	0.38	0.79	0.49	0.50	0.78	0.00	0.78
Avail Cap(c_a), veh/h	280	799	538	283	830	655	534	799	800	1566	0	842
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.1	25.9	19.0	30.1	21.8	13.7	28.6	20.6	20.6	26.1	0.0	20.2
Incr Delay (d2), s/veh	9.6	2.3	0.5	5.3	0.2	0.3	4.1	1.2	1.2	1.3	0.0	4.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	3.5	2.4	1.9	2.2	2.3	2.7	3.0	3.1	3.6	0.0	7.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	41.7	28.2	19.5	35.4	22.0	14.0	32.7	21.8	21.9	27.4	0.0	24.6
LnGrp LOS	D	C	B	D	C	B	C	C	C	C		C
Approach Vol, veh/h		711			705			634			969	
Approach Delay, s/veh		26.4			21.4			24.7			26.0	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.8	27.0	6.4	20.5	17.0	22.8	9.9	17.0
Change Period (Y+Rc), s	5.0	5.0	4.5	5.0	5.0	5.0	4.5	5.0
Max Green Setting (Gmax), s	20.0	30.0	10.5	15.0	30.0	30.0	10.5	15.0
Max Q Clear Time (g_c+I1), s	8.0	17.6	3.3	9.2	10.9	9.5	6.1	10.3
Green Ext Time (p_c), s	0.2	3.5	0.0	1.3	1.1	4.1	0.1	1.4

Intersection Summary	
HCM 7th Control Delay, s/veh	24.7
HCM 7th LOS	C

Notes

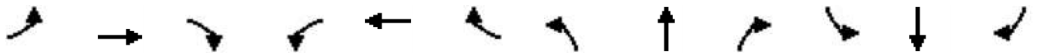
User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	40	40	20	40	40	40	440	20	20	525	140
Future Volume (veh/h)	105	40	40	20	40	40	40	440	20	20	525	140
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.96	0.97		0.98	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1900	1900	1900	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	108	41	41	21	41	41	41	454	21	21	541	144
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	0	0	0	3	3	3	3	3	3
Cap, veh/h	361	128	128	326	87	87	273	780	36	422	600	160
Arrive On Green	0.07	0.15	0.15	0.02	0.10	0.10	0.04	0.44	0.44	0.02	0.43	0.43
Sat Flow, veh/h	1795	843	843	1810	864	864	1767	1759	81	1767	1403	373
Grp Volume(v), veh/h	108	0	82	21	0	82	41	0	475	21	0	685
Grp Sat Flow(s),veh/h/ln	1795	0	1687	1810	0	1728	1767	0	1840	1767	0	1776
Q Serve(g_s), s	2.4	0.0	2.0	0.5	0.0	2.0	0.6	0.0	8.8	0.3	0.0	16.3
Cycle Q Clear(g_c), s	2.4	0.0	2.0	0.5	0.0	2.0	0.6	0.0	8.8	0.3	0.0	16.3
Prop In Lane	1.00		0.50	1.00		0.50	1.00		0.04	1.00		0.21
Lane Grp Cap(c), veh/h	361	0	257	326	0	174	273	0	816	422	0	760
V/C Ratio(X)	0.30	0.00	0.32	0.06	0.00	0.47	0.15	0.00	0.58	0.05	0.00	0.90
Avail Cap(c_a), veh/h	667	0	780	528	0	799	833	0	1439	1008	0	1389
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.3	0.0	17.1	17.7	0.0	19.3	9.8	0.0	9.5	7.7	0.0	12.1
Incr Delay (d2), s/veh	0.2	0.0	0.3	0.0	0.0	0.7	0.1	0.0	0.2	0.0	0.0	1.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.7	0.2	0.0	0.8	0.2	0.0	2.7	0.1	0.0	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	16.5	0.0	17.4	17.8	0.0	20.0	9.9	0.0	9.7	7.7	0.0	13.7
LnGrp LOS	B		B	B		B	A		A	A		B
Approach Vol, veh/h		190			103			516			706	
Approach Delay, s/veh		16.9			19.5			9.7			13.6	
Approach LOS		B			B			A			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.6	23.9	7.3	8.6	4.9	24.6	4.9	10.9
Change Period (Y+Rc), s	4.0	4.5	4.0	4.0	4.0	4.5	4.0	4.0
Max Green Setting (Gmax), s	16.0	35.5	11.0	21.0	16.0	35.5	6.0	21.0
Max Q Clear Time (g_c+I1), s	2.6	18.3	4.4	4.0	2.3	10.8	2.5	4.0
Green Ext Time (p_c), s	0.0	1.1	0.0	0.1	0.0	0.7	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	13.1
HCM 7th LOS	B



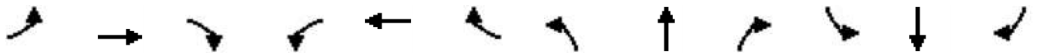
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	40	450	10	35	50	265	700	15	35	1045	165
Future Volume (veh/h)	140	40	450	10	35	50	265	700	15	35	1045	165
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1752	1752	1752	1856	1856	1856	1870	1870	1870
Adj Flow Rate, veh/h	143	41	459	10	36	51	270	714	15	36	1066	168
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	10	10	10	3	3	3	2	2	2
Cap, veh/h	167	304	520	16	137	112	297	2301	1026	46	1815	809
Arrive On Green	0.09	0.16	0.16	0.01	0.08	0.08	0.17	0.65	0.65	0.03	0.51	0.51
Sat Flow, veh/h	1781	1870	1562	1668	1752	1439	1767	3526	1571	1781	3554	1583
Grp Volume(v), veh/h	143	41	459	10	36	51	270	714	15	36	1066	168
Grp Sat Flow(s),veh/h/ln	1781	1870	1562	1668	1752	1439	1767	1763	1571	1781	1777	1583
Q Serve(g_s), s	10.3	2.4	21.2	0.8	2.5	4.4	19.5	11.5	0.4	2.6	27.3	7.5
Cycle Q Clear(g_c), s	10.3	2.4	21.2	0.8	2.5	4.4	19.5	11.5	0.4	2.6	27.3	7.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	167	304	520	16	137	112	297	2301	1026	46	1815	809
V/C Ratio(X)	0.85	0.13	0.88	0.64	0.26	0.45	0.91	0.31	0.01	0.78	0.59	0.21
Avail Cap(c_a), veh/h	219	304	520	205	278	228	421	2301	1026	288	1815	809
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.0	46.6	41.2	64.2	56.4	57.3	53.1	9.8	7.9	62.9	22.2	17.4
Incr Delay (d2), s/veh	17.8	0.1	15.7	23.9	0.6	1.7	16.4	0.4	0.0	15.6	1.4	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	1.1	15.9	0.4	1.1	1.6	9.7	3.9	0.1	1.3	10.7	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	75.8	46.7	56.9	88.1	57.0	59.0	69.5	10.2	7.9	78.6	23.6	18.0
LnGrp LOS	E	D	E	F	E	E	E	B	A	E	C	B
Approach Vol, veh/h		643			97			999			1270	
Approach Delay, s/veh		60.4			61.3			26.2			24.4	
Approach LOS		E			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.8	72.4	16.2	15.5	7.4	90.9	5.2	26.6
Change Period (Y+Rc), s	4.0	6.0	4.0	5.4	4.0	6.0	4.0	5.4
Max Green Setting (Gmax), s	31.0	43.0	16.0	20.6	21.0	53.0	16.0	20.6
Max Q Clear Time (g_c+I1), s	21.5	29.3	12.3	6.4	4.6	13.5	2.8	23.2
Green Ext Time (p_c), s	0.3	8.7	0.0	0.2	0.0	8.5	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	33.9
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	950	50	120	750	0	25	0	60	0	0	1
Future Volume (veh/h)	1	950	50	120	750	0	25	0	60	0	0	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	0.98		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1870	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	1	1022	54	129	806	0	27	0	65	0	0	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	2	2	2	0	0	0	0	0	0
Cap, veh/h	496	1690	89	505	2119	0	308	0	158	167	0	158
Arrive On Green	0.00	0.49	0.49	0.11	0.60	0.00	0.10	0.00	0.10	0.00	0.00	0.10
Sat Flow, veh/h	1795	3459	183	1781	3647	0	1405	0	1572	1358	0	1572
Grp Volume(v), veh/h	1	529	547	129	806	0	27	0	65	0	0	1
Grp Sat Flow(s),veh/h/ln	1795	1791	1851	1781	1777	0	1405	0	1572	1358	0	1572
Q Serve(g_s), s	0.0	9.3	9.3	1.2	5.1	0.0	0.8	0.0	1.7	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	9.3	9.3	1.2	5.1	0.0	0.8	0.0	1.7	0.0	0.0	0.0
Prop In Lane	1.00		0.10	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	496	875	904	505	2119	0	308	0	158	167	0	158
V/C Ratio(X)	0.00	0.60	0.60	0.26	0.38	0.00	0.09	0.00	0.41	0.00	0.00	0.01
Avail Cap(c_a), veh/h	949	1266	1308	764	2512	0	833	0	747	203	0	200
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	5.6	8.0	8.0	4.9	4.5	0.0	17.8	0.0	18.2	0.0	0.0	17.5
Incr Delay (d2), s/veh	0.0	1.0	1.0	0.2	0.2	0.0	0.1	0.0	1.3	0.0	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.5	2.6	0.2	1.0	0.0	0.2	0.0	0.6	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	5.6	9.0	9.0	5.1	4.7	0.0	17.9	0.0	19.5	0.0	0.0	17.5
LnGrp LOS	A	A	A	A	A		B		B			B
Approach Vol, veh/h		1077			935			92			1	
Approach Delay, s/veh		9.0			4.8			19.0			17.5	
Approach LOS		A			A			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.7	25.6		8.8	4.1	30.2		8.8				
Change Period (Y+Rc), s	4.0	4.5		4.5	4.0	4.5		4.5				
Max Green Setting (Gmax), s	11.0	30.5		5.5	11.0	30.5		20.5				
Max Q Clear Time (g_c+I1), s	3.2	11.3		2.0	2.0	7.1		3.7				
Green Ext Time (p_c), s	0.1	9.8		0.0	0.0	8.3		0.3				

Intersection Summary		
HCM 7th Control Delay, s/veh	7.6	
HCM 7th LOS	A	

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	630	725	90	130	455	450	50	675	160	705	960	590
Future Volume (veh/h)	630	725	90	130	455	450	50	675	160	705	960	590
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1856	1856	1856	1870	1870	1870
Adj Flow Rate, veh/h	643	740	92	133	464	0	51	689	0	719	980	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	3	3	3	2	2	2
Cap, veh/h	723	892	111	191	450		66	844		772	1513	
Arrive On Green	0.21	0.28	0.28	0.05	0.13	0.00	0.04	0.24	0.00	0.22	0.43	0.00
Sat Flow, veh/h	3483	3200	398	3483	3582	1598	1767	3526	1572	3456	3554	1585
Grp Volume(v), veh/h	643	414	418	133	464	0	51	689	0	719	980	0
Grp Sat Flow(s),veh/h/ln	1742	1791	1807	1742	1791	1598	1767	1763	1572	1728	1777	1585
Q Serve(g_s), s	20.7	25.0	25.0	4.3	14.5	0.0	3.3	21.3	0.0	23.5	25.2	0.0
Cycle Q Clear(g_c), s	20.7	25.0	25.0	4.3	14.5	0.0	3.3	21.3	0.0	23.5	25.2	0.0
Prop In Lane	1.00		0.22	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	723	499	503	191	450		66	844		772	1513	
V/C Ratio(X)	0.89	0.83	0.83	0.70	1.03		0.78	0.82		0.93	0.65	
Avail Cap(c_a), veh/h	982	499	503	287	450		146	1009		794	1513	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	44.4	39.0	39.0	53.6	50.4	0.0	55.1	41.5	0.0	43.9	26.3	0.0
Incr Delay (d2), s/veh	7.0	10.8	10.8	2.8	50.4	0.0	11.4	5.5	0.0	17.0	1.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.5	12.3	12.4	2.0	9.6	0.0	1.6	9.4	0.0	11.3	10.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	51.4	49.9	49.8	56.4	100.8	0.0	66.5	47.0	0.0	60.9	27.5	0.0
LnGrp LOS	D	D	D	E	F		E	D		E	C	
Approach Vol, veh/h		1475			597			740			1699	
Approach Delay, s/veh		50.5			90.9			48.3			41.6	
Approach LOS		D			F			D			D	

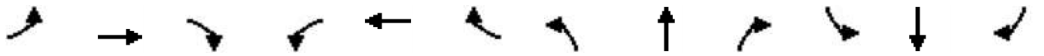
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	31.3	34.6	11.8	37.6	9.8	56.1	29.4	20.0
Change Period (Y+Rc), s	5.5	7.0	5.5	5.5	5.5	7.0	5.5	5.5
Max Green Setting (Gmax), s	26.5	33.0	9.5	24.5	9.5	33.0	32.5	14.5
Max Q Clear Time (g_c+I1), s	25.5	23.3	6.3	27.0	5.3	27.2	22.7	16.5
Green Ext Time (p_c), s	0.2	4.3	0.1	0.0	0.0	3.9	1.3	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	52.2
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

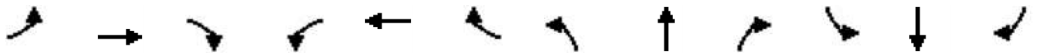
Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	10	10	40	10	5	10	625	15	35	465	10
Future Volume (veh/h)	20	10	10	40	10	5	10	625	15	35	465	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1811	1811	1781	1781	1781	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	22	11	11	43	11	5	11	679	16	38	505	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	8	8	8	4	4	4	4	4	4
Cap, veh/h	238	79	50	305	60	16	636	1116	26	512	1119	24
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.62	0.62	0.62	0.62	0.62	0.62
Sat Flow, veh/h	547	609	385	868	461	123	870	1790	42	737	1794	39
Grp Volume(v), veh/h	44	0	0	59	0	0	11	0	695	38	0	516
Grp Sat Flow(s),veh/h/ln	1542	0	0	1452	0	0	870	0	1832	737	0	1834
Q Serve(g_s), s	0.0	0.0	0.0	0.3	0.0	0.0	0.2	0.0	7.5	1.1	0.0	4.8
Cycle Q Clear(g_c), s	0.7	0.0	0.0	1.1	0.0	0.0	5.0	0.0	7.5	8.5	0.0	4.8
Prop In Lane	0.50		0.25	0.73		0.08	1.00		0.02	1.00		0.02
Lane Grp Cap(c), veh/h	367	0	0	381	0	0	636	0	1142	512	0	1143
V/C Ratio(X)	0.12	0.00	0.00	0.15	0.00	0.00	0.02	0.00	0.61	0.07	0.00	0.45
Avail Cap(c_a), veh/h	1131	0	0	1099	0	0	1595	0	3162	1325	0	3165
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.6	0.0	0.0	12.7	0.0	0.0	4.5	0.0	3.7	6.3	0.0	3.2
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.9	0.1	0.0	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.9	0.1	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	12.7	0.0	0.0	12.9	0.0	0.0	4.5	0.0	4.6	6.4	0.0	3.7
LnGrp LOS	B			B			A		A	A		A
Approach Vol, veh/h		44			59			706			554	
Approach Delay, s/veh		12.7			12.9			4.6			3.9	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	24.2	8.2	24.2	8.2
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	56.0	21.0	56.0	21.0
Max Q Clear Time (g_c+I1), s	10.5	3.1	9.5	2.7
Green Ext Time (p_c), s	7.4	0.2	10.8	0.1

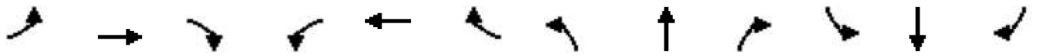
Intersection Summary	
HCM 7th Control Delay, s/veh	4.9
HCM 7th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	4	40	35	5	5	30	510	10	5	455	35
Future Volume (veh/h)	50	4	40	35	5	5	30	510	10	5	455	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1826	1826	1826	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	54	4	43	38	5	5	32	548	11	5	489	38
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	7	7	7	5	5	5	4	4	4	4	4	4
Cap, veh/h	393	243	206	395	113	113	495	865	17	439	839	708
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.03	0.48	0.48	0.01	0.46	0.46
Sat Flow, veh/h	1349	1796	1522	1326	838	838	1753	1798	36	1753	1841	1555
Grp Volume(v), veh/h	54	4	43	38	0	10	32	0	559	5	489	38
Grp Sat Flow(s),veh/h/ln	1349	1796	1522	1326	0	1675	1753	0	1834	1753	1841	1555
Q Serve(g_s), s	1.2	0.1	0.8	0.8	0.0	0.2	0.3	0.0	7.5	0.1	6.5	0.5
Cycle Q Clear(g_c), s	1.4	0.1	0.8	0.9	0.0	0.2	0.3	0.0	7.5	0.1	6.5	0.5
Prop In Lane	1.00		1.00	1.00		0.50	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	393	243	206	395	0	227	495	0	882	439	839	708
V/C Ratio(X)	0.14	0.02	0.21	0.10	0.00	0.04	0.06	0.00	0.63	0.01	0.58	0.05
Avail Cap(c_a), veh/h	1068	1141	967	1058	0	1065	1024	0	2248	1013	2256	1905
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.0	12.4	12.7	12.8	0.0	12.4	5.1	0.0	6.4	5.5	6.7	5.0
Incr Delay (d2), s/veh	0.1	0.0	0.4	0.1	0.0	0.1	0.0	0.0	1.2	0.0	1.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.3	0.2	0.0	0.1	0.1	0.0	1.8	0.0	1.6	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	13.1	12.4	13.1	12.9	0.0	12.5	5.1	0.0	7.6	5.5	7.7	5.1
LnGrp LOS	B	B	B	B		B	A		A	A	A	A
Approach Vol, veh/h		101			48			591			532	
Approach Delay, s/veh		13.1			12.8			7.4			7.4	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.0	19.6		8.5	4.2	20.4		8.5				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	11.0	40.5		21.0	11.0	40.5		21.0				
Max Q Clear Time (g_c+I1), s	2.3	8.5		2.9	2.1	9.5		3.4				
Green Ext Time (p_c), s	0.0	5.6		0.1	0.0	6.4		0.2				

Intersection Summary												
HCM 7th Control Delay, s/veh			8.1									
HCM 7th LOS			A									



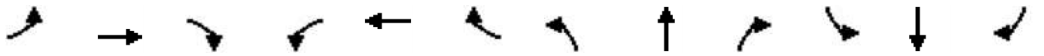
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	10	65	15	5	1	120	555	5	5	395	125
Future Volume (veh/h)	105	10	65	15	5	1	120	555	5	5	395	125
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1900	1900	1900	1826	1826	1826	1841	1841	1841
Adj Flow Rate, veh/h	115	11	71	16	5	1	132	610	5	5	434	137
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	4	4	4	0	0	0	5	5	5	4	4	4
Cap, veh/h	614	62	400	506	358	72	389	1387	11	377	1030	322
Arrive On Green	0.07	0.29	0.29	0.02	0.23	0.23	0.39	0.39	0.39	0.39	0.39	0.39
Sat Flow, veh/h	1753	213	1376	1810	1536	307	819	3526	29	793	2618	818
Grp Volume(v), veh/h	115	0	82	16	0	6	132	300	315	5	289	282
Grp Sat Flow(s),veh/h/ln	1753	0	1590	1810	0	1844	819	1735	1820	793	1749	1687
Q Serve(g_s), s	2.1	0.0	1.7	0.3	0.0	0.1	6.1	5.5	5.5	0.2	5.2	5.3
Cycle Q Clear(g_c), s	2.1	0.0	1.7	0.3	0.0	0.1	11.3	5.5	5.5	5.7	5.2	5.3
Prop In Lane	1.00		0.87	1.00		0.17	1.00		0.02	1.00		0.49
Lane Grp Cap(c), veh/h	614	0	461	506	0	429	389	682	716	377	688	664
V/C Ratio(X)	0.19	0.00	0.18	0.03	0.00	0.01	0.34	0.44	0.44	0.01	0.42	0.43
Avail Cap(c_a), veh/h	1335	0	2019	1354	0	2342	558	1041	1093	542	1050	1013
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.8	0.0	11.5	12.3	0.0	12.8	13.7	9.6	9.6	11.7	9.5	9.6
Incr Delay (d2), s/veh	0.1	0.0	0.3	0.0	0.0	0.0	0.4	0.3	0.3	0.0	0.3	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.5	0.1	0.0	0.0	1.0	1.7	1.7	0.0	1.6	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	10.9	0.0	11.8	12.3	0.0	12.8	14.1	10.0	10.0	11.7	9.8	9.9
LnGrp LOS	B		B	B		B	B	A	A	B	A	A
Approach Vol, veh/h		197			22			747			576	
Approach Delay, s/veh		11.3			12.5			10.7			9.9	
Approach LOS		B			B			B			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.7	17.6		21.0	7.2	15.1		21.0				
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	21.0	55.0		26.0	21.0	55.0		26.0				
Max Q Clear Time (g_c+I1), s	2.3	3.7		7.7	4.1	2.1		13.3				
Green Ext Time (p_c), s	0.0	0.8		2.8	0.2	0.0		3.2				

Intersection Summary		
HCM 7th Control Delay, s/veh	10.5	
HCM 7th LOS	B	

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	0	70	0	0	0	90	625	0	0	400	50
Future Volume (veh/h)	55	0	70	0	0	0	90	625	0	0	400	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1870	1856	1856	1856	1841	1841	1841
Adj Flow Rate, veh/h	63	0	80	0	0	0	102	710	0	0	455	57
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	1	1	1	2	2	2	3	3	3	4	4	4
Cap, veh/h	428	0	221	180	261	0	132	1714	0	180	974	121
Arrive On Green	0.14	0.00	0.14	0.00	0.00	0.00	0.07	0.49	0.00	0.00	0.31	0.31
Sat Flow, veh/h	1780	0	1585	1319	1870	0	1767	3618	0	728	3125	390
Grp Volume(v), veh/h	63	0	80	0	0	0	102	710	0	0	254	258
Grp Sat Flow(s),veh/h/ln	1780	0	1585	1319	1870	0	1767	1763	0	728	1749	1766
Q Serve(g_s), s	1.3	0.0	1.8	0.0	0.0	0.0	2.3	5.2	0.0	0.0	4.7	4.7
Cycle Q Clear(g_c), s	1.3	0.0	1.8	0.0	0.0	0.0	2.3	5.2	0.0	0.0	4.7	4.7
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		0.22
Lane Grp Cap(c), veh/h	428	0	221	180	261	0	132	1714	0	180	545	550
V/C Ratio(X)	0.15	0.00	0.36	0.00	0.00	0.00	0.77	0.41	0.00	0.00	0.47	0.47
Avail Cap(c_a), veh/h	1202	0	910	753	1074	0	926	4576	0	952	2401	2425
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	15.4	0.0	15.6	0.0	0.0	0.0	18.2	6.6	0.0	0.0	11.1	11.1
Incr Delay (d2), s/veh	0.1	0.0	0.6	0.0	0.0	0.0	5.8	0.2	0.0	0.0	0.9	1.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.6	0.0	0.0	0.0	1.0	1.3	0.0	0.0	1.6	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	15.5	0.0	16.2	0.0	0.0	0.0	24.0	6.9	0.0	0.0	12.0	12.1
LnGrp LOS	B		B				C	A			B	B
Approach Vol, veh/h		143			0			812			512	
Approach Delay, s/veh		15.9			0.0			9.0			12.1	
Approach LOS		B						A			B	

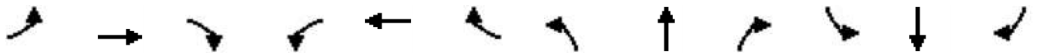
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	7.0	20.5		12.6		27.5		12.6				
Change Period (Y+Rc), s	4.0	* 8		7.0		8.0		7.0				
Max Green Setting (Gmax), s	21.0	* 55		23.0		52.0		23.0				
Max Q Clear Time (g_c+I1), s	4.3	6.7		3.8		7.2		0.0				
Green Ext Time (p_c), s	0.1	5.6		0.4		9.1		0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	10.8
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



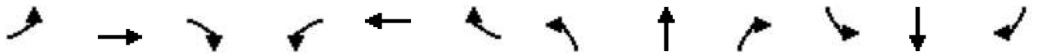
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	260	110	50	495	250	176	345	60	240	200	15
Future Volume (veh/h)	10	260	110	50	495	250	176	345	60	240	200	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1767	1767	1856	1856	1856	1856	1856	1856	1841	1841	1841
Adj Flow Rate, veh/h	10	268	113	52	510	258	181	356	62	247	206	15
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	9	9	9	3	3	3	3	3	3	4	4	4
Cap, veh/h	18	561	447	111	774	533	235	727	125	410	390	28
Arrive On Green	0.01	0.17	0.17	0.06	0.22	0.22	0.13	0.24	0.24	0.12	0.23	0.23
Sat Flow, veh/h	1682	3357	1484	1767	3526	1566	1767	3002	518	3401	1694	123
Grp Volume(v), veh/h	10	268	113	52	510	258	181	208	210	247	0	221
Grp Sat Flow(s),veh/h/ln	1682	1678	1484	1767	1763	1566	1767	1763	1757	1700	0	1817
Q Serve(g_s), s	0.3	3.5	2.8	1.4	6.3	6.2	4.7	4.8	4.9	3.3	0.0	5.1
Cycle Q Clear(g_c), s	0.3	3.5	2.8	1.4	6.3	6.2	4.7	4.8	4.9	3.3	0.0	5.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.29	1.00		0.07
Lane Grp Cap(c), veh/h	18	561	447	111	774	533	235	427	426	410	0	418
V/C Ratio(X)	0.57	0.48	0.25	0.47	0.66	0.48	0.77	0.49	0.49	0.60	0.00	0.53
Avail Cap(c_a), veh/h	369	1052	664	388	1105	680	738	1105	1101	2131	0	1139
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.6	18.0	12.7	21.7	17.1	12.5	20.1	15.6	15.6	20.0	0.0	16.2
Incr Delay (d2), s/veh	16.6	0.5	0.2	1.9	0.7	0.5	3.3	1.3	1.4	0.9	0.0	1.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	1.2	0.8	0.6	2.2	1.8	2.0	1.8	1.9	1.2	0.0	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	40.2	18.5	12.9	23.6	17.8	13.0	23.4	16.9	17.0	20.8	0.0	17.7
LnGrp LOS	D	B	B	C	B	B	C	B	B	C		B
Approach Vol, veh/h		391			820			599			468	
Approach Delay, s/veh		17.4			16.6			18.9			19.4	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.4	16.0	5.0	15.5	10.8	16.6	7.5	13.0
Change Period (Y+Rc), s	5.0	5.0	4.5	5.0	5.0	5.0	4.5	5.0
Max Green Setting (Gmax), s	20.0	30.0	10.5	15.0	30.0	30.0	10.5	15.0
Max Q Clear Time (g_c+I1), s	6.7	7.1	2.3	8.3	5.3	6.9	3.4	5.5
Green Ext Time (p_c), s	0.3	1.9	0.0	2.0	0.6	3.8	0.0	1.1

Intersection Summary	
HCM 7th Control Delay, s/veh	17.9
HCM 7th LOS	B

Notes

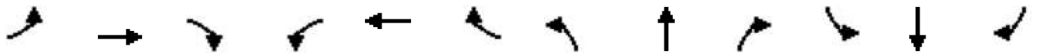
User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	30	50	3	20	15	35	460	10	15	305	35
Future Volume (veh/h)	110	30	50	3	20	15	35	460	10	15	305	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.98		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1826	1826	1826	1841	1841	1841	1826	1826	1826
Adj Flow Rate, veh/h	116	32	53	3	21	16	37	484	11	16	321	37
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	5	5	5	4	4	4	5	5	5
Cap, veh/h	415	85	140	301	55	42	432	602	14	331	510	59
Arrive On Green	0.08	0.13	0.13	0.00	0.06	0.06	0.03	0.34	0.34	0.02	0.32	0.32
Sat Flow, veh/h	1781	631	1045	1739	960	731	1753	1792	41	1739	1606	185
Grp Volume(v), veh/h	116	0	85	3	0	37	37	0	495	16	0	358
Grp Sat Flow(s),veh/h/ln	1781	0	1676	1739	0	1691	1753	0	1833	1739	0	1791
Q Serve(g_s), s	1.9	0.0	1.5	0.1	0.0	0.7	0.5	0.0	8.0	0.2	0.0	5.5
Cycle Q Clear(g_c), s	1.9	0.0	1.5	0.1	0.0	0.7	0.5	0.0	8.0	0.2	0.0	5.5
Prop In Lane	1.00		0.62	1.00		0.43	1.00		0.02	1.00		0.10
Lane Grp Cap(c), veh/h	415	0	225	301	0	97	432	0	616	331	0	569
V/C Ratio(X)	0.28	0.00	0.38	0.01	0.00	0.38	0.09	0.00	0.80	0.05	0.00	0.63
Avail Cap(c_a), veh/h	877	0	1087	617	0	1097	1237	0	2010	1161	0	1964
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.5	0.0	12.8	14.3	0.0	14.7	7.4	0.0	9.8	8.1	0.0	9.4
Incr Delay (d2), s/veh	0.1	0.0	0.4	0.0	0.0	0.9	0.0	0.0	0.9	0.0	0.0	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.5	0.0	0.0	0.2	0.1	0.0	2.3	0.1	0.0	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	12.6	0.0	13.2	14.3	0.0	15.6	7.4	0.0	10.7	8.1	0.0	9.8
LnGrp LOS	B		B	B		B	A		B	A		A
Approach Vol, veh/h		201			40			532			374	
Approach Delay, s/veh		12.8			15.5			10.5			9.8	
Approach LOS		B			B			B			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.1	14.8	6.6	5.9	4.5	15.4	4.1	8.3
Change Period (Y+Rc), s	4.0	4.5	4.0	4.0	4.0	4.5	4.0	4.0
Max Green Setting (Gmax), s	16.0	35.5	11.0	21.0	16.0	35.5	6.0	21.0
Max Q Clear Time (g_c+I1), s	2.5	7.5	3.9	2.7	2.2	10.0	2.1	3.5
Green Ext Time (p_c), s	0.0	0.5	0.0	0.0	0.0	0.7	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	10.8
HCM 7th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	45	185	10	35	15	360	1075	20	70	680	145
Future Volume (veh/h)	105	45	185	10	35	15	360	1075	20	70	680	145
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1722	1722	1722	1811	1811	1811	1781	1781	1781
Adj Flow Rate, veh/h	114	49	201	11	38	16	391	1168	22	76	739	158
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	5	12	12	12	6	6	6	8	8	8
Cap, veh/h	138	230	569	17	98	82	417	2220	990	96	1557	694
Arrive On Green	0.08	0.13	0.13	0.01	0.06	0.06	0.24	0.65	0.65	0.06	0.46	0.46
Sat Flow, veh/h	1739	1826	1540	1640	1722	1444	1725	3441	1535	1697	3385	1510
Grp Volume(v), veh/h	114	49	201	11	38	16	391	1168	22	76	739	158
Grp Sat Flow(s),veh/h/ln	1739	1826	1540	1640	1722	1444	1725	1721	1535	1697	1692	1510
Q Serve(g_s), s	7.7	2.9	11.4	0.8	2.6	1.3	26.7	21.9	0.6	5.3	18.1	7.6
Cycle Q Clear(g_c), s	7.7	2.9	11.4	0.8	2.6	1.3	26.7	21.9	0.6	5.3	18.1	7.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	138	230	569	17	98	82	417	2220	990	96	1557	694
V/C Ratio(X)	0.82	0.21	0.35	0.66	0.39	0.19	0.94	0.53	0.02	0.79	0.47	0.23
Avail Cap(c_a), veh/h	203	313	639	164	267	224	489	2220	990	368	1557	694
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.4	47.1	27.5	59.2	54.6	54.0	44.6	11.4	7.7	55.9	22.4	19.5
Incr Delay (d2), s/veh	10.5	0.2	0.1	23.4	1.5	0.7	23.0	0.9	0.0	8.5	1.0	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.8	2.4	7.5	0.8	2.1	0.9	19.4	11.6	0.4	4.3	11.1	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	64.9	47.2	27.7	82.6	56.1	54.7	67.6	12.3	7.7	64.4	23.4	20.3
LnGrp LOS	E	D	C	F	E	D	E	B	A	E	C	C
Approach Vol, veh/h		364			65			1581			973	
Approach Delay, s/veh		42.0			60.2			25.9			26.1	
Approach LOS		D			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	33.0	61.2	13.5	12.2	10.8	83.4	5.2	20.5
Change Period (Y+Rc), s	4.0	6.0	4.0	5.4	4.0	6.0	4.0	5.4
Max Green Setting (Gmax), s	34.0	34.0	14.0	18.6	26.0	42.0	12.0	20.6
Max Q Clear Time (g_c+I1), s	28.7	20.1	9.7	4.6	7.3	23.9	2.8	13.4
Green Ext Time (p_c), s	0.4	6.4	0.0	0.1	0.1	10.7	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	28.7
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	545	3	65	910	0	5	0	50	0	0	0
Future Volume (veh/h)	0	545	3	65	910	0	5	0	50	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1737	1737	1737	1856	1856	1856	1900	1900	1900	1870	1870	1870
Adj Flow Rate, veh/h	0	599	3	71	1000	0	5	0	55	0	0	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	11	11	11	3	3	3	0	0	0	2	2	2
Cap, veh/h	468	1391	7	637	2255	0	342	0	85	246	99	0
Arrive On Green	0.00	0.41	0.41	0.09	0.64	0.00	0.05	0.00	0.05	0.00	0.00	0.00
Sat Flow, veh/h	1654	3367	17	1767	3618	0	1810	0	1610	1349	1870	0
Grp Volume(v), veh/h	0	294	308	71	1000	0	5	0	55	0	0	0
Grp Sat Flow(s),veh/h/ln	1654	1650	1734	1767	1763	0	1810	0	1610	1349	1870	0
Q Serve(g_s), s	0.0	3.7	3.7	0.5	4.2	0.0	0.1	0.0	1.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	3.7	3.7	0.5	4.2	0.0	0.1	0.0	1.0	0.0	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	468	681	716	637	2255	0	342	0	85	246	99	0
V/C Ratio(X)	0.00	0.43	0.43	0.11	0.44	0.00	0.01	0.00	0.65	0.00	0.00	0.00
Avail Cap(c_a), veh/h	1084	1720	1808	1142	3675	0	1514	0	1128	428	352	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	6.1	6.1	3.4	2.7	0.0	13.2	0.0	13.6	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.7	0.6	0.0	0.2	0.0	0.0	0.0	6.0	0.0	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.7	0.7	0.0	0.1	0.0	0.0	0.0	0.4	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	6.8	6.8	3.5	2.9	0.0	13.2	0.0	19.6	0.0	0.0	0.0
LnGrp LOS		A	A	A	A		B		B			
Approach Vol, veh/h		602			1071			60			0	
Approach Delay, s/veh		6.8			2.9			19.1			0.0	
Approach LOS		A			A			B				

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.6	16.6		6.0	0.0	23.2		6.0				
Change Period (Y+Rc), s	4.0	4.5		4.5	4.0	4.5		4.5				
Max Green Setting (Gmax), s	11.0	30.5		5.5	11.0	30.5		20.5				
Max Q Clear Time (g_c+I1), s	2.5	5.7		0.0	0.0	6.2		3.0				
Green Ext Time (p_c), s	0.0	5.6		0.0	0.0	10.9		0.2				

Intersection Summary	
HCM 7th Control Delay, s/veh	4.8
HCM 7th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	365	350	30	130	450	800	45	1080	125	430	720	675
Future Volume (veh/h)	365	350	30	130	450	800	45	1080	125	430	720	675
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1752	1752	1752	1841	1841	1841	1811	1811	1811	1826	1826	1826
Adj Flow Rate, veh/h	380	365	31	135	469	0	47	1125	0	448	750	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	10	10	10	4	4	4	6	6	6	5	5	5
Cap, veh/h	460	706	60	198	501		59	1121		529	1555	
Arrive On Green	0.14	0.23	0.23	0.06	0.14	0.00	0.03	0.33	0.00	0.16	0.45	0.00
Sat Flow, veh/h	3237	3106	262	3401	3497	1560	1725	3441	1535	3374	3469	1547
Grp Volume(v), veh/h	380	195	201	135	469	0	47	1125	0	448	750	0
Grp Sat Flow(s),veh/h/ln	1618	1664	1705	1700	1749	1560	1725	1721	1535	1687	1735	1547
Q Serve(g_s), s	11.6	10.4	10.5	3.9	13.4	0.0	2.7	33.0	0.0	13.1	15.4	0.0
Cycle Q Clear(g_c), s	11.6	10.4	10.5	3.9	13.4	0.0	2.7	33.0	0.0	13.1	15.4	0.0
Prop In Lane	1.00		0.15	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	460	378	387	198	501		59	1121		529	1555	
V/C Ratio(X)	0.83	0.51	0.52	0.68	0.94		0.79	1.00		0.85	0.48	
Avail Cap(c_a), veh/h	1039	403	412	319	501		162	1121		883	1555	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	42.2	34.3	34.3	46.8	42.9	0.0	48.5	34.1	0.0	41.5	19.7	0.0
Incr Delay (d2), s/veh	2.4	0.7	0.7	2.5	25.2	0.0	13.3	27.7	0.0	2.6	0.4	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.2	7.5	7.7	3.1	11.9	0.0	2.4	23.5	0.0	9.1	9.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	44.6	34.9	35.0	49.3	68.1	0.0	61.8	61.9	0.0	44.1	20.1	0.0
LnGrp LOS	D	C	C	D	E		E	F		D	C	
Approach Vol, veh/h		776			604			1172			1198	
Approach Delay, s/veh		39.7			63.9			61.9			29.1	
Approach LOS		D			E			E			C	

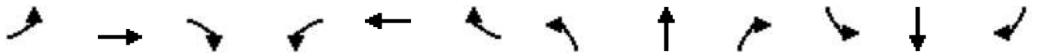
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.4	40.0	11.4	28.5	9.0	52.4	19.9	20.0
Change Period (Y+Rc), s	5.5	7.0	5.5	5.5	5.5	7.0	5.5	5.5
Max Green Setting (Gmax), s	26.5	33.0	9.5	24.5	9.5	33.0	32.5	14.5
Max Q Clear Time (g_c+I1), s	15.1	35.0	5.9	12.5	4.7	17.4	13.6	15.4
Green Ext Time (p_c), s	0.8	0.0	0.1	1.3	0.0	6.4	0.8	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	47.1
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

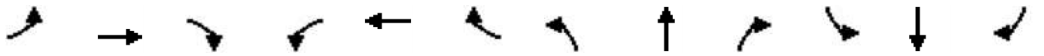
Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	5	15	70	10	30	10	710	20	2	825	10
Future Volume (veh/h)	10	5	15	70	10	30	10	710	20	2	825	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1885	1885	1885	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	11	5	16	74	11	32	11	747	21	2	868	11
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	1	1	1	2	2	2	1	1	1
Cap, veh/h	154	65	105	249	32	54	424	1235	35	493	1268	16
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.68	0.68	0.68	0.68	0.68	0.68
Sat Flow, veh/h	312	501	813	856	245	414	631	1809	51	705	1857	24
Grp Volume(v), veh/h	32	0	0	117	0	0	11	0	768	2	0	879
Grp Sat Flow(s),veh/h/ln	1627	0	0	1515	0	0	631	0	1860	705	0	1880
Q Serve(g_s), s	0.0	0.0	0.0	2.3	0.0	0.0	0.5	0.0	9.5	0.1	0.0	11.9
Cycle Q Clear(g_c), s	0.7	0.0	0.0	3.0	0.0	0.0	12.3	0.0	9.5	9.6	0.0	11.9
Prop In Lane	0.34		0.50	0.63		0.27	1.00		0.03	1.00		0.01
Lane Grp Cap(c), veh/h	324	0	0	334	0	0	424	0	1270	493	0	1284
V/C Ratio(X)	0.10	0.00	0.00	0.35	0.00	0.00	0.03	0.00	0.60	0.00	0.00	0.68
Avail Cap(c_a), veh/h	874	0	0	870	0	0	823	0	2446	939	0	2473
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.5	0.0	0.0	17.4	0.0	0.0	7.7	0.0	3.6	6.2	0.0	4.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.8	0.0	0.0	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.0	1.0	0.0	0.0	0.1	0.0	1.4	0.0	0.0	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	16.5	0.0	0.0	17.9	0.0	0.0	7.7	0.0	4.4	6.2	0.0	5.1
LnGrp LOS	B			B			A		A	A		A
Approach Vol, veh/h		32			117			779			881	
Approach Delay, s/veh		16.5			17.9			4.5			5.1	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	33.1	9.5	33.1	9.5
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	56.0	21.0	56.0	21.0
Max Q Clear Time (g_c+I1), s	13.9	5.0	14.3	2.7
Green Ext Time (p_c), s	15.2	0.4	12.3	0.1

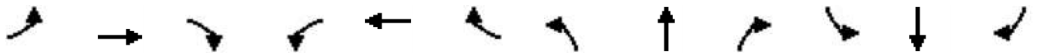
Intersection Summary	
HCM 7th Control Delay, s/veh	5.9
HCM 7th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	20	90	40	10	10	85	625	20	5	765	75
Future Volume (veh/h)	95	20	90	40	10	10	85	625	20	5	765	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.97	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1870	1870	1870	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	103	22	98	43	11	11	92	679	22	5	832	82
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	2	2	2	2	2	2	1	1	1
Cap, veh/h	308	250	210	296	115	115	378	1114	36	439	1070	875
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.06	0.62	0.62	0.01	0.57	0.57
Sat Flow, veh/h	1369	1856	1561	1264	854	854	1781	1799	58	1795	1885	1542
Grp Volume(v), veh/h	103	22	98	43	0	22	92	0	701	5	832	82
Grp Sat Flow(s),veh/h/ln	1369	1856	1561	1264	0	1709	1781	0	1857	1795	1885	1542
Q Serve(g_s), s	3.7	0.5	3.0	1.6	0.0	0.6	1.0	0.0	12.0	0.1	17.7	1.3
Cycle Q Clear(g_c), s	4.3	0.5	3.0	2.1	0.0	0.6	1.0	0.0	12.0	0.1	17.7	1.3
Prop In Lane	1.00		1.00	1.00		0.50	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	308	250	210	296	0	230	378	0	1150	439	1070	875
V/C Ratio(X)	0.33	0.09	0.47	0.15	0.00	0.10	0.24	0.00	0.61	0.01	0.78	0.09
Avail Cap(c_a), veh/h	678	752	632	638	0	693	655	0	1452	811	1473	1205
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.5	19.6	20.7	20.6	0.0	19.7	7.4	0.0	6.0	5.6	8.7	5.1
Incr Delay (d2), s/veh	0.5	0.1	1.2	0.2	0.0	0.1	0.2	0.0	0.8	0.0	2.4	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.2	1.1	0.5	0.0	0.2	0.3	0.0	3.2	0.0	5.7	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	22.0	19.8	21.9	20.7	0.0	19.8	7.6	0.0	6.8	5.6	11.1	5.2
LnGrp LOS	C	B	C	C		B	A		A	A	B	A
Approach Vol, veh/h		223			65			793			919	
Approach Delay, s/veh		21.7			20.4			6.9			10.5	
Approach LOS		C			C			A			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.9	33.9		11.0	4.3	36.6		11.0				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	11.0	40.5		21.0	11.0	40.5		21.0				
Max Q Clear Time (g_c+I1), s	3.0	19.7		4.1	2.1	14.0		6.3				
Green Ext Time (p_c), s	0.1	9.7		0.1	0.0	8.2		0.5				

Intersection Summary												
HCM 7th Control Delay, s/veh			10.7									
HCM 7th LOS			B									



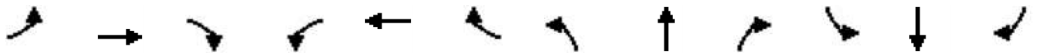
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	10	145	20	10	3	155	605	10	15	790	130
Future Volume (veh/h)	160	10	145	20	10	3	155	605	10	15	790	130
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1811	1811	1811	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	168	11	153	21	11	3	163	637	11	16	832	137
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	6	6	6	2	2	2	2	2	2
Cap, veh/h	566	28	396	382	252	69	293	1699	29	414	1445	238
Arrive On Green	0.10	0.27	0.27	0.02	0.18	0.18	0.48	0.48	0.48	0.48	0.48	0.48
Sat Flow, veh/h	1795	107	1486	1725	1370	374	579	3572	62	781	3040	501
Grp Volume(v), veh/h	168	0	164	21	0	14	163	317	331	16	486	483
Grp Sat Flow(s),veh/h/ln	1795	0	1593	1725	0	1743	579	1777	1857	781	1777	1763
Q Serve(g_s), s	3.8	0.0	4.6	0.5	0.0	0.4	15.2	6.2	6.2	0.7	10.8	10.8
Cycle Q Clear(g_c), s	3.8	0.0	4.6	0.5	0.0	0.4	26.0	6.2	6.2	7.0	10.8	10.8
Prop In Lane	1.00		0.93	1.00		0.21	1.00		0.03	1.00		0.28
Lane Grp Cap(c), veh/h	566	0	425	382	0	321	293	845	883	414	845	839
V/C Ratio(X)	0.30	0.00	0.39	0.05	0.00	0.04	0.56	0.37	0.38	0.04	0.58	0.58
Avail Cap(c_a), veh/h	1071	0	1602	1010	0	1753	293	845	883	414	845	839
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.9	0.0	16.4	17.5	0.0	18.4	19.8	9.2	9.2	11.4	10.4	10.4
Incr Delay (d2), s/veh	0.2	0.0	0.9	0.0	0.0	0.1	2.0	0.2	0.2	0.0	0.8	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	1.6	0.2	0.0	0.1	2.0	2.0	2.1	0.1	3.6	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.1	0.0	17.3	17.6	0.0	18.4	21.8	9.4	9.3	11.4	11.2	11.2
LnGrp LOS	B		B	B		B	C	A	A	B	B	B
Approach Vol, veh/h		332			35			811			985	
Approach Delay, s/veh		15.7			17.9			11.9			11.2	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.1	19.6		30.0	9.6	15.1		30.0				
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	21.0	55.0		26.0	21.0	55.0		26.0				
Max Q Clear Time (g_c+I1), s	2.5	6.6		12.8	5.8	2.4		28.0				
Green Ext Time (p_c), s	0.0	1.8		4.6	0.3	0.1		0.0				

Intersection Summary												
HCM 7th Control Delay, s/veh			12.2									
HCM 7th LOS			B									

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	0	155	0	0	0	145	730	0	0	875	75
Future Volume (veh/h)	45	0	155	0	0	0	145	730	0	0	875	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.98		0.98	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1870	1870	1870	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	46	0	160	0	0	0	149	753	0	0	902	77
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	2	2	2	1	1	1	2	2	2
Cap, veh/h	406	0	263	111	310	0	192	2161	0	111	1440	123
Arrive On Green	0.17	0.00	0.17	0.00	0.00	0.00	0.11	0.60	0.00	0.00	0.43	0.43
Sat Flow, veh/h	1780	0	1584	1226	1870	0	1795	3676	0	710	3310	283
Grp Volume(v), veh/h	46	0	160	0	0	0	149	753	0	0	484	495
Grp Sat Flow(s),veh/h/ln	1780	0	1584	1226	1870	0	1795	1791	0	710	1777	1816
Q Serve(g_s), s	1.4	0.0	6.1	0.0	0.0	0.0	5.3	6.9	0.0	0.0	13.8	13.8
Cycle Q Clear(g_c), s	1.4	0.0	6.1	0.0	0.0	0.0	5.3	6.9	0.0	0.0	13.8	13.8
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		0.16
Lane Grp Cap(c), veh/h	406	0	263	111	310	0	192	2161	0	111	773	790
V/C Ratio(X)	0.11	0.00	0.61	0.00	0.00	0.00	0.78	0.35	0.00	0.00	0.63	0.63
Avail Cap(c_a), veh/h	740	0	560	341	662	0	580	2865	0	403	1503	1536
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	23.2	0.0	25.2	0.0	0.0	0.0	28.3	6.5	0.0	0.0	14.3	14.3
Incr Delay (d2), s/veh	0.1	0.0	1.4	0.0	0.0	0.0	4.1	0.1	0.0	0.0	1.3	1.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	2.3	0.0	0.0	0.0	2.4	2.1	0.0	0.0	5.1	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	23.3	0.0	26.5	0.0	0.0	0.0	32.4	6.6	0.0	0.0	15.5	15.5
LnGrp LOS	C		C				C	A			B	B
Approach Vol, veh/h		206			0			902			979	
Approach Delay, s/veh		25.8			0.0			10.9			15.5	
Approach LOS		C						B			B	

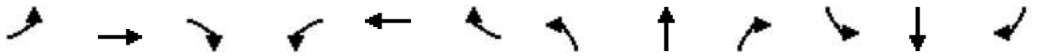
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	10.9	36.3		17.8		47.2		17.8				
Change Period (Y+Rc), s	4.0	* 8		7.0		8.0		7.0				
Max Green Setting (Gmax), s	21.0	* 55		23.0		52.0		23.0				
Max Q Clear Time (g_c+I1), s	7.3	15.8		8.1		8.9		0.0				
Green Ext Time (p_c), s	0.2	12.5		0.7		9.7		0.0				

Intersection Summary												
HCM 7th Control Delay, s/veh			14.5									
HCM 7th LOS			B									

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	500	220	120	370	280	175	445	60	535	505	15
Future Volume (veh/h)	40	500	220	120	370	280	175	445	60	535	505	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1885	1885	1885	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	41	515	227	124	381	289	180	459	62	552	521	15
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	1	1	1	2	2	2	1	1	1
Cap, veh/h	55	646	483	158	856	692	223	848	114	682	621	18
Arrive On Green	0.03	0.18	0.18	0.09	0.24	0.24	0.13	0.27	0.27	0.20	0.34	0.34
Sat Flow, veh/h	1781	3554	1563	1795	3582	1588	1781	3137	421	3483	1822	52
Grp Volume(v), veh/h	41	515	227	124	381	289	180	259	262	552	0	536
Grp Sat Flow(s),veh/h/ln	1781	1777	1563	1795	1791	1588	1781	1777	1782	1742	0	1874
Q Serve(g_s), s	1.7	10.2	8.7	5.0	6.7	9.3	7.3	9.2	9.3	11.2	0.0	19.5
Cycle Q Clear(g_c), s	1.7	10.2	8.7	5.0	6.7	9.3	7.3	9.2	9.3	11.2	0.0	19.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.24	1.00		0.03
Lane Grp Cap(c), veh/h	55	646	483	158	856	692	223	480	482	682	0	639
V/C Ratio(X)	0.75	0.80	0.47	0.78	0.45	0.42	0.81	0.54	0.54	0.81	0.00	0.84
Avail Cap(c_a), veh/h	253	722	516	255	856	692	483	722	724	1416	0	762
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.5	28.9	20.7	33.0	23.9	14.4	31.4	23.0	23.0	28.4	0.0	22.5
Incr Delay (d2), s/veh	11.6	5.4	0.5	5.2	0.3	0.3	4.2	1.4	1.5	1.5	0.0	8.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	4.6	3.0	2.3	2.7	3.0	3.3	3.9	3.9	4.6	0.0	9.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	47.1	34.3	21.3	38.2	24.2	14.7	35.6	24.4	24.5	29.8	0.0	30.4
LnGrp LOS	D	C	C	D	C	B	D	C	C	C		C
Approach Vol, veh/h		783			794			701			1088	
Approach Delay, s/veh		31.2			22.9			27.3			30.1	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.2	30.1	6.8	22.6	19.4	24.9	11.0	18.4
Change Period (Y+Rc), s	5.0	5.0	4.5	5.0	5.0	5.0	4.5	5.0
Max Green Setting (Gmax), s	20.0	30.0	10.5	15.0	30.0	30.0	10.5	15.0
Max Q Clear Time (g_c+I1), s	9.3	21.5	3.7	11.3	13.2	11.3	7.0	12.2
Green Ext Time (p_c), s	0.2	3.1	0.0	1.1	1.3	4.4	0.1	1.0

Intersection Summary	
HCM 7th Control Delay, s/veh	28.1
HCM 7th LOS	C

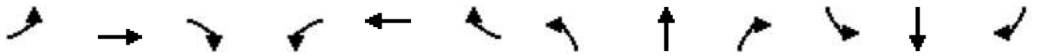
Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	45	45	20	45	45	45	490	20	20	585	155
Future Volume (veh/h)	115	45	45	20	45	45	45	490	20	20	585	155
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.96	0.97		0.98	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1900	1900	1900	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	119	46	46	21	46	46	46	505	21	21	603	160
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	0	0	0	3	3	3	3	3	3
Cap, veh/h	344	134	134	304	86	86	249	853	35	414	653	173
Arrive On Green	0.08	0.16	0.16	0.02	0.10	0.10	0.04	0.48	0.48	0.02	0.47	0.47
Sat Flow, veh/h	1795	844	844	1810	863	863	1767	1768	74	1767	1404	373
Grp Volume(v), veh/h	119	0	92	21	0	92	46	0	526	21	0	763
Grp Sat Flow(s),veh/h/ln	1795	0	1688	1810	0	1726	1767	0	1842	1767	0	1776
Q Serve(g_s), s	2.9	0.0	2.5	0.5	0.0	2.6	0.7	0.0	10.7	0.3	0.0	20.8
Cycle Q Clear(g_c), s	2.9	0.0	2.5	0.5	0.0	2.6	0.7	0.0	10.7	0.3	0.0	20.8
Prop In Lane	1.00		0.50	1.00		0.50	1.00		0.04	1.00		0.21
Lane Grp Cap(c), veh/h	344	0	267	304	0	173	249	0	889	414	0	826
V/C Ratio(X)	0.35	0.00	0.34	0.07	0.00	0.53	0.18	0.00	0.59	0.05	0.00	0.92
Avail Cap(c_a), veh/h	585	0	685	477	0	700	729	0	1263	925	0	1218
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.0	0.0	19.4	20.3	0.0	22.1	11.1	0.0	9.7	7.9	0.0	13.0
Incr Delay (d2), s/veh	0.2	0.0	0.3	0.0	0.0	0.9	0.1	0.0	0.2	0.0	0.0	6.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.9	0.2	0.0	1.0	0.2	0.0	3.4	0.1	0.0	8.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	18.2	0.0	19.7	20.3	0.0	23.1	11.2	0.0	9.9	7.9	0.0	19.8
LnGrp LOS	B		B	C		C	B		A	A		B
Approach Vol, veh/h		211			113			572			784	
Approach Delay, s/veh		18.8			22.6			10.0			19.5	
Approach LOS		B			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.9	28.6	8.1	9.2	5.0	29.5	5.0	12.2
Change Period (Y+Rc), s	4.0	4.5	4.0	4.0	4.0	4.5	4.0	4.0
Max Green Setting (Gmax), s	16.0	35.5	11.0	21.0	16.0	35.5	6.0	21.0
Max Q Clear Time (g_c+I1), s	2.7	22.8	4.9	4.6	2.3	12.7	2.5	4.5
Green Ext Time (p_c), s	0.0	1.2	0.0	0.1	0.0	0.8	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	16.4
HCM 7th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	155	45	500	10	40	55	295	835	15	40	1210	180
Future Volume (veh/h)	155	45	500	10	40	55	295	835	15	40	1210	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1752	1752	1752	1856	1856	1856	1870	1870	1870
Adj Flow Rate, veh/h	158	46	510	10	41	56	301	852	15	41	1235	184
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	10	10	10	3	3	3	2	2	2
Cap, veh/h	183	325	565	16	141	116	327	2249	1002	53	1715	764
Arrive On Green	0.10	0.17	0.17	0.01	0.08	0.08	0.19	0.64	0.64	0.03	0.48	0.48
Sat Flow, veh/h	1781	1870	1563	1668	1752	1440	1767	3526	1571	1781	3554	1583
Grp Volume(v), veh/h	158	46	510	10	41	56	301	852	15	41	1235	184
Grp Sat Flow(s),veh/h/ln	1781	1870	1563	1668	1752	1440	1767	1763	1571	1781	1777	1583
Q Serve(g_s), s	11.4	2.7	22.6	0.8	2.9	4.8	21.7	15.0	0.5	3.0	35.8	8.8
Cycle Q Clear(g_c), s	11.4	2.7	22.6	0.8	2.9	4.8	21.7	15.0	0.5	3.0	35.8	8.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	183	325	565	16	141	116	327	2249	1002	53	1715	764
V/C Ratio(X)	0.87	0.14	0.90	0.64	0.29	0.48	0.92	0.38	0.01	0.77	0.72	0.24
Avail Cap(c_a), veh/h	219	325	565	205	278	228	421	2249	1002	288	1715	764
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.5	45.5	39.6	64.2	56.3	57.2	52.0	11.2	8.6	62.6	26.7	19.7
Incr Delay (d2), s/veh	22.5	0.1	17.3	23.9	0.7	1.9	20.4	0.5	0.0	13.6	2.6	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	10.3	2.3	24.8	0.8	2.4	3.3	16.5	9.0	0.3	2.7	20.8	6.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	79.9	45.6	56.9	88.1	56.9	59.0	72.4	11.7	8.6	76.2	29.3	20.4
LnGrp LOS	E	D	E	F	E	E	E	B	A	E	C	C
Approach Vol, veh/h		714			107			1168			1460	
Approach Delay, s/veh		61.3			60.9			27.3			29.5	
Approach LOS		E			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	28.1	68.7	17.3	15.9	7.9	88.9	5.2	28.0
Change Period (Y+Rc), s	4.0	6.0	4.0	5.4	4.0	6.0	4.0	5.4
Max Green Setting (Gmax), s	31.0	43.0	16.0	20.6	21.0	53.0	16.0	20.6
Max Q Clear Time (g_c+I1), s	23.7	37.8	13.4	6.8	5.0	17.0	2.8	24.6
Green Ext Time (p_c), s	0.3	4.2	0.0	0.2	0.0	10.3	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	36.3
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	1065	55	140	840	0	30	0	80	0	0	1
Future Volume (veh/h)	1	1065	55	140	840	0	30	0	80	0	0	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	0.98		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1870	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	1	1145	59	151	903	0	32	0	86	0	0	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	2	2	2	0	0	0	0	0	0
Cap, veh/h	450	1735	89	464	2162	0	314	0	183	152	0	183
Arrive On Green	0.00	0.50	0.50	0.11	0.61	0.00	0.12	0.00	0.12	0.00	0.00	0.12
Sat Flow, veh/h	1795	3464	178	1781	3647	0	1409	0	1577	1332	0	1577
Grp Volume(v), veh/h	1	592	612	151	903	0	32	0	86	0	0	1
Grp Sat Flow(s),veh/h/ln	1795	1791	1851	1781	1777	0	1409	0	1577	1332	0	1577
Q Serve(g_s), s	0.0	11.7	11.7	1.5	6.3	0.0	1.0	0.0	2.4	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	11.7	11.7	1.5	6.3	0.0	1.0	0.0	2.4	0.0	0.0	0.0
Prop In Lane	1.00		0.10	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	450	897	928	464	2162	0	314	0	183	152	0	183
V/C Ratio(X)	0.00	0.66	0.66	0.33	0.42	0.00	0.10	0.00	0.47	0.00	0.00	0.01
Avail Cap(c_a), veh/h	863	1151	1190	683	2284	0	760	0	681	152	0	183
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	5.9	8.8	8.8	6.1	4.9	0.0	19.0	0.0	19.6	0.0	0.0	18.6
Incr Delay (d2), s/veh	0.0	1.3	1.3	0.2	0.2	0.0	0.1	0.0	1.4	0.0	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.4	3.5	0.3	1.3	0.0	0.3	0.0	0.9	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	5.9	10.2	10.1	6.3	5.1	0.0	19.1	0.0	21.0	0.0	0.0	18.6
LnGrp LOS	A	B	B	A	A		B		C			B
Approach Vol, veh/h		1205			1054			118			1	
Approach Delay, s/veh		10.1			5.3			20.5			18.6	
Approach LOS		B			A			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.2	28.3		10.0	4.1	33.4		10.0				
Change Period (Y+Rc), s	4.0	4.5		4.5	4.0	4.5		4.5				
Max Green Setting (Gmax), s	11.0	30.5		5.5	11.0	30.5		20.5				
Max Q Clear Time (g_c+I1), s	3.5	13.7		2.0	2.0	8.3		4.4				
Green Ext Time (p_c), s	0.1	10.1		0.0	0.0	9.2		0.4				

Intersection Summary		
HCM 7th Control Delay, s/veh	8.5	
HCM 7th LOS	A	

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	715	810	100	145	510	505	55	805	180	790	1115	665
Future Volume (veh/h)	715	810	100	145	510	505	55	805	180	790	1115	665
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1856	1856	1856	1870	1870	1870
Adj Flow Rate, veh/h	730	827	102	148	520	0	56	821	0	806	1138	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	3	3	3	2	2	2
Cap, veh/h	796	918	113	202	415		72	902		732	1517	
Arrive On Green	0.23	0.29	0.29	0.06	0.12	0.00	0.04	0.26	0.00	0.21	0.43	0.00
Sat Flow, veh/h	3483	3203	395	3483	3582	1598	1767	3526	1572	3456	3554	1585
Grp Volume(v), veh/h	730	462	467	148	520	0	56	821	0	806	1138	0
Grp Sat Flow(s),veh/h/ln	1742	1791	1808	1742	1791	1598	1767	1763	1572	1728	1777	1585
Q Serve(g_s), s	25.6	31.1	31.1	5.2	14.5	0.0	3.9	28.3	0.0	26.5	33.8	0.0
Cycle Q Clear(g_c), s	25.6	31.1	31.1	5.2	14.5	0.0	3.9	28.3	0.0	26.5	33.8	0.0
Prop In Lane	1.00		0.22	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	796	513	518	202	415		72	902		732	1517	
V/C Ratio(X)	0.92	0.90	0.90	0.73	1.25		0.78	0.91		1.10	0.75	
Avail Cap(c_a), veh/h	905	513	518	265	415		134	930		732	1517	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	47.1	42.9	42.9	58.0	55.3	0.0	59.4	45.2	0.0	49.3	30.2	0.0
Incr Delay (d2), s/veh	12.4	18.6	18.5	5.5	132.0	0.0	10.5	13.2	0.0	64.3	2.4	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	18.1	22.8	22.9	4.4	22.1	0.0	3.4	19.3	0.0	25.5	19.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	59.5	61.5	61.4	63.5	187.3	0.0	69.9	58.3	0.0	113.6	32.7	0.0
LnGrp LOS	E	E	E	E	F		E	E		F	C	
Approach Vol, veh/h		1659			668			877			1944	
Approach Delay, s/veh		60.6			159.9			59.1			66.2	
Approach LOS		E			F			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	32.0	39.0	12.7	41.3	10.6	60.4	34.1	20.0
Change Period (Y+Rc), s	5.5	7.0	5.5	5.5	5.5	7.0	5.5	5.5
Max Green Setting (Gmax), s	26.5	33.0	9.5	24.5	9.5	33.0	32.5	14.5
Max Q Clear Time (g_c+I1), s	28.5	30.3	7.2	33.1	5.9	35.8	27.6	16.5
Green Ext Time (p_c), s	0.0	1.7	0.1	0.0	0.0	0.0	1.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	75.4
HCM 7th LOS	E

Notes

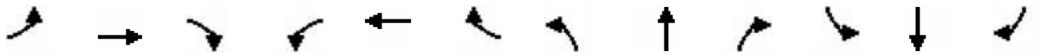
User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	10	17	47	10	5	17	691	22	35	521	10
Future Volume (veh/h)	20	10	17	47	10	5	17	691	22	35	521	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1811	1811	1781	1781	1781	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	22	11	18	51	11	5	18	751	24	38	566	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	8	8	8	4	4	4	4	4	4
Cap, veh/h	197	73	72	293	53	14	601	1158	37	467	1176	23
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.65	0.65	0.65	0.65	0.65	0.65
Sat Flow, veh/h	446	555	546	934	404	108	823	1772	57	684	1799	35
Grp Volume(v), veh/h	51	0	0	67	0	0	18	0	775	38	0	577
Grp Sat Flow(s),veh/h/ln	1546	0	0	1447	0	0	823	0	1829	684	0	1834
Q Serve(g_s), s	0.0	0.0	0.0	0.4	0.0	0.0	0.4	0.0	9.5	1.3	0.0	5.9
Cycle Q Clear(g_c), s	1.0	0.0	0.0	1.4	0.0	0.0	6.3	0.0	9.5	10.8	0.0	5.9
Prop In Lane	0.43		0.35	0.76		0.07	1.00		0.03	1.00		0.02
Lane Grp Cap(c), veh/h	342	0	0	360	0	0	601	0	1195	467	0	1199
V/C Ratio(X)	0.15	0.00	0.00	0.19	0.00	0.00	0.03	0.00	0.65	0.08	0.00	0.48
Avail Cap(c_a), veh/h	984	0	0	956	0	0	1302	0	2756	1051	0	2764
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.5	0.0	0.0	14.6	0.0	0.0	4.9	0.0	3.9	7.1	0.0	3.3
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.0	1.0	0.1	0.0	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.6	0.0	0.0	0.8	0.0	0.0	0.1	0.0	2.3	0.3	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.6	0.0	0.0	14.8	0.0	0.0	4.9	0.0	4.9	7.2	0.0	3.8
LnGrp LOS	B			B			A		A	A		A
Approach Vol, veh/h		51			67			793			615	
Approach Delay, s/veh		14.6			14.8			4.9			4.0	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	28.3	8.9	28.3	8.9
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	56.0	21.0	56.0	21.0
Max Q Clear Time (g_c+I1), s	12.8	3.4	11.5	3.0
Green Ext Time (p_c), s	8.6	0.2	12.8	0.1

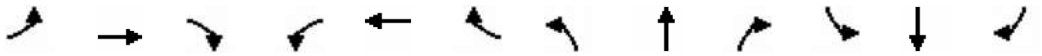
Intersection Summary	
HCM 7th Control Delay, s/veh	5.3
HCM 7th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	4	54	35	5	5	44	590	10	5	525	35
Future Volume (veh/h)	50	4	54	35	5	5	44	590	10	5	525	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1826	1826	1826	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	54	4	58	38	5	5	47	634	11	5	565	38
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	7	7	7	5	5	5	4	4	4	4	4	4
Cap, veh/h	369	239	202	368	111	111	475	940	16	408	892	754
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.04	0.52	0.52	0.01	0.48	0.48
Sat Flow, veh/h	1349	1796	1522	1308	838	838	1753	1804	31	1753	1841	1555
Grp Volume(v), veh/h	54	4	58	38	0	10	47	0	645	5	565	38
Grp Sat Flow(s),veh/h/ln	1349	1796	1522	1308	0	1675	1753	0	1835	1753	1841	1555
Q Serve(g_s), s	1.3	0.1	1.3	1.0	0.0	0.2	0.5	0.0	9.5	0.1	8.4	0.5
Cycle Q Clear(g_c), s	1.5	0.1	1.3	1.0	0.0	0.2	0.5	0.0	9.5	0.1	8.4	0.5
Prop In Lane	1.00		1.00	1.00		0.50	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	369	239	202	368	0	223	475	0	956	408	892	754
V/C Ratio(X)	0.15	0.02	0.29	0.10	0.00	0.04	0.10	0.00	0.67	0.01	0.63	0.05
Avail Cap(c_a), veh/h	962	1029	872	943	0	959	928	0	2027	924	2033	1717
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.5	13.8	14.3	14.3	0.0	13.9	5.2	0.0	6.5	5.7	7.0	5.0
Incr Delay (d2), s/veh	0.1	0.0	0.6	0.1	0.0	0.1	0.1	0.0	1.3	0.0	1.1	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.7	0.0	0.7	0.5	0.0	0.1	0.2	0.0	4.2	0.0	4.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.7	13.8	14.9	14.4	0.0	13.9	5.3	0.0	7.8	5.7	8.2	5.0
LnGrp LOS	B	B	B	B		B	A		A	A	A	A
Approach Vol, veh/h		116			48			692			608	
Approach Delay, s/veh		14.8			14.3			7.6			7.9	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.5	22.3		8.9	4.2	23.6		8.9				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	11.0	40.5		21.0	11.0	40.5		21.0				
Max Q Clear Time (g_c+I1), s	2.5	10.4		3.0	2.1	11.5		3.5				
Green Ext Time (p_c), s	0.0	6.6		0.1	0.0	7.6		0.2				

Intersection Summary												
HCM 7th Control Delay, s/veh			8.5									
HCM 7th LOS			A									



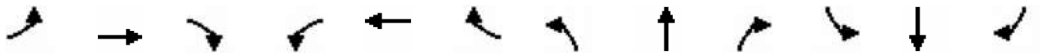
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	10	79	15	5	1	134	649	5	5	479	125
Future Volume (veh/h)	105	10	79	15	5	1	134	649	5	5	479	125
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1900	1900	1900	1826	1826	1826	1841	1841	1841
Adj Flow Rate, veh/h	115	11	87	16	5	1	147	713	5	5	526	137
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	4	4	4	0	0	0	5	5	5	4	4	4
Cap, veh/h	581	49	387	469	333	67	376	1516	11	360	1179	306
Arrive On Green	0.07	0.27	0.27	0.02	0.22	0.22	0.43	0.43	0.43	0.43	0.43	0.43
Sat Flow, veh/h	1753	178	1406	1810	1536	307	752	3531	25	721	2745	712
Grp Volume(v), veh/h	115	0	98	16	0	6	147	350	368	5	334	329
Grp Sat Flow(s),veh/h/ln	1753	0	1584	1810	0	1844	752	1735	1821	721	1749	1708
Q Serve(g_s), s	2.3	0.0	2.2	0.3	0.0	0.1	8.0	6.7	6.7	0.2	6.3	6.3
Cycle Q Clear(g_c), s	2.3	0.0	2.2	0.3	0.0	0.1	14.3	6.7	6.7	6.9	6.3	6.3
Prop In Lane	1.00		0.89	1.00		0.17	1.00		0.01	1.00		0.42
Lane Grp Cap(c), veh/h	581	0	435	469	0	400	376	745	782	360	751	733
V/C Ratio(X)	0.20	0.00	0.23	0.03	0.00	0.01	0.39	0.47	0.47	0.01	0.45	0.45
Avail Cap(c_a), veh/h	1244	0	1874	1257	0	2181	473	970	1018	454	978	955
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.0	0.0	13.0	13.8	0.0	14.3	14.4	9.5	9.5	12.0	9.4	9.4
Incr Delay (d2), s/veh	0.1	0.0	0.4	0.0	0.0	0.0	0.5	0.3	0.3	0.0	0.3	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.4	0.0	1.3	0.2	0.0	0.1	2.1	3.7	3.8	0.1	3.5	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	12.1	0.0	13.4	13.8	0.0	14.3	14.9	9.8	9.8	12.0	9.7	9.7
LnGrp LOS	B		B	B		B	B	A	A	B	A	A
Approach Vol, veh/h		213			22			865			668	
Approach Delay, s/veh		12.7			14.0			10.7			9.7	
Approach LOS		B			B			B			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.7	17.8		24.0	7.4	15.1		24.0				
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	21.0	55.0		26.0	21.0	55.0		26.0				
Max Q Clear Time (g_c+I1), s	2.3	4.2		8.9	4.3	2.1		16.3				
Green Ext Time (p_c), s	0.0	1.0		3.3	0.2	0.0		3.3				

Intersection Summary	
HCM 7th Control Delay, s/veh	10.6
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	0	70	47	0	149	90	584	58	130	368	50
Future Volume (veh/h)	55	0	70	47	0	149	90	584	58	130	368	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1870	1856	1856	1856	1841	1841	1841
Adj Flow Rate, veh/h	63	0	80	53	0	169	102	664	66	148	418	57
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	1	1	1	2	2	2	3	3	3	4	4	4
Cap, veh/h	272	0	324	352	0	321	133	1633	162	390	1087	147
Arrive On Green	0.20	0.00	0.20	0.20	0.00	0.20	0.08	0.50	0.50	0.35	0.35	0.35
Sat Flow, veh/h	1222	0	1588	1312	0	1576	1767	3237	321	712	3091	419
Grp Volume(v), veh/h	63	0	80	53	0	169	102	361	369	148	235	240
Grp Sat Flow(s),veh/h/ln	1222	0	1588	1312	0	1576	1767	1763	1795	712	1749	1761
Q Serve(g_s), s	2.5	0.0	2.2	1.8	0.0	4.9	2.9	6.6	6.6	8.8	5.2	5.3
Cycle Q Clear(g_c), s	7.4	0.0	2.2	4.0	0.0	4.9	2.9	6.6	6.6	8.8	5.2	5.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.18	1.00		0.24
Lane Grp Cap(c), veh/h	272	0	324	352	0	321	133	889	906	390	615	619
V/C Ratio(X)	0.23	0.00	0.25	0.15	0.00	0.53	0.77	0.41	0.41	0.38	0.38	0.39
Avail Cap(c_a), veh/h	569	0	710	671	0	704	721	1782	1815	901	1869	1883
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.6	0.0	17.2	18.8	0.0	18.3	23.3	7.9	7.9	13.7	12.5	12.5
Incr Delay (d2), s/veh	0.3	0.0	0.2	0.1	0.0	0.8	5.6	0.5	0.4	0.9	0.6	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.2	0.0	1.4	0.9	0.0	3.1	2.4	3.6	3.7	2.3	3.3	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	21.8	0.0	17.4	19.0	0.0	19.1	28.9	8.4	8.4	14.6	13.1	13.1
LnGrp LOS	C		B	B		B	C	A	A	B	B	B
Approach Vol, veh/h		143			222			832			623	
Approach Delay, s/veh		19.4			19.1			10.9			13.5	
Approach LOS		B			B			B			B	

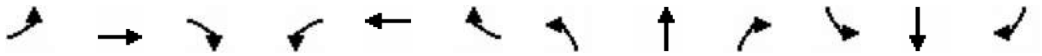
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	7.9	26.1		17.5		34.0		17.5				
Change Period (Y+Rc), s	4.0	* 8		7.0		8.0		7.0				
Max Green Setting (Gmax), s	21.0	* 55		23.0		52.0		23.0				
Max Q Clear Time (g_c+I1), s	4.9	10.8		9.4		8.6		6.9				
Green Ext Time (p_c), s	0.1	7.3		0.4		8.6		0.8				

Intersection Summary												
HCM 7th Control Delay, s/veh			13.4									
HCM 7th LOS			B									

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



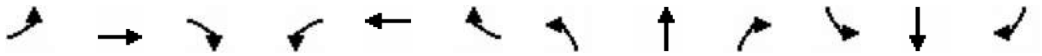
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	260	110	50	495	244	176	368	60	230	225	15
Future Volume (veh/h)	10	260	110	50	495	244	176	368	60	230	225	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1767	1767	1856	1856	1856	1856	1856	1856	1841	1841	1841
Adj Flow Rate, veh/h	10	268	113	52	510	252	181	379	62	237	232	15
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	9	9	9	3	3	3	3	3	3	4	4	4
Cap, veh/h	17	558	445	110	769	528	234	758	123	404	403	26
Arrive On Green	0.01	0.17	0.17	0.06	0.22	0.22	0.13	0.25	0.25	0.12	0.24	0.24
Sat Flow, veh/h	1682	3357	1484	1767	3526	1566	1767	3033	492	3401	1709	111
Grp Volume(v), veh/h	10	268	113	52	510	252	181	219	222	237	0	247
Grp Sat Flow(s),veh/h/ln	1682	1678	1484	1767	1763	1566	1767	1763	1762	1700	0	1820
Q Serve(g_s), s	0.3	3.5	2.8	1.4	6.4	6.2	4.8	5.1	5.2	3.2	0.0	5.8
Cycle Q Clear(g_c), s	0.3	3.5	2.8	1.4	6.4	6.2	4.8	5.1	5.2	3.2	0.0	5.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.28	1.00		0.06
Lane Grp Cap(c), veh/h	17	558	445	110	769	528	234	441	440	404	0	430
V/C Ratio(X)	0.57	0.48	0.25	0.47	0.66	0.48	0.77	0.50	0.50	0.59	0.00	0.58
Avail Cap(c_a), veh/h	365	1040	658	383	1092	672	730	1092	1092	2107	0	1127
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.8	18.3	12.9	21.9	17.3	12.7	20.3	15.6	15.6	20.2	0.0	16.3
Incr Delay (d2), s/veh	16.7	0.5	0.2	1.9	0.7	0.5	3.3	1.3	1.4	0.8	0.0	1.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	2.2	1.4	1.0	4.1	3.3	3.6	3.5	3.6	2.1	0.0	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	40.5	18.8	13.1	23.8	18.0	13.2	23.6	16.9	17.0	21.0	0.0	18.2
LnGrp LOS	D	B	B	C	B	B	C	B	B	C		B
Approach Vol, veh/h		391			814			622			484	
Approach Delay, s/veh		17.7			16.9			18.9			19.6	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.4	16.4	5.0	15.6	10.8	17.1	7.5	13.0
Change Period (Y+Rc), s	5.0	5.0	4.5	5.0	5.0	5.0	4.5	5.0
Max Green Setting (Gmax), s	20.0	30.0	10.5	15.0	30.0	30.0	10.5	15.0
Max Q Clear Time (g_c+I1), s	6.8	7.8	2.3	8.4	5.2	7.2	3.4	5.5
Green Ext Time (p_c), s	0.3	2.1	0.0	2.0	0.5	4.0	0.0	1.1

Intersection Summary	
HCM 7th Control Delay, s/veh	18.1
HCM 7th LOS	B

Notes

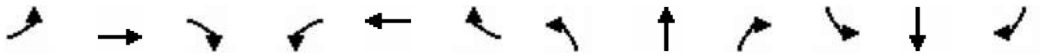
User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	117	30	50	3	20	15	35	476	10	15	323	42
Future Volume (veh/h)	117	30	50	3	20	15	35	476	10	15	323	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.98		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1826	1826	1826	1841	1841	1841	1826	1826	1826
Adj Flow Rate, veh/h	123	32	53	3	21	16	37	501	11	16	340	44
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	5	5	5	4	4	4	5	5	5
Cap, veh/h	416	87	144	296	55	42	417	617	14	324	515	67
Arrive On Green	0.08	0.14	0.14	0.00	0.06	0.06	0.03	0.34	0.34	0.02	0.33	0.33
Sat Flow, veh/h	1781	631	1045	1739	960	731	1753	1794	39	1739	1583	205
Grp Volume(v), veh/h	123	0	85	3	0	37	37	0	512	16	0	384
Grp Sat Flow(s),veh/h/ln	1781	0	1675	1739	0	1691	1753	0	1833	1739	0	1788
Q Serve(g_s), s	2.1	0.0	1.5	0.1	0.0	0.7	0.5	0.0	8.4	0.2	0.0	6.1
Cycle Q Clear(g_c), s	2.1	0.0	1.5	0.1	0.0	0.7	0.5	0.0	8.4	0.2	0.0	6.1
Prop In Lane	1.00		0.62	1.00		0.43	1.00		0.02	1.00		0.11
Lane Grp Cap(c), veh/h	416	0	230	296	0	97	417	0	630	324	0	582
V/C Ratio(X)	0.30	0.00	0.37	0.01	0.00	0.38	0.09	0.00	0.81	0.05	0.00	0.66
Avail Cap(c_a), veh/h	860	0	1064	606	0	1074	1204	0	1968	1136	0	1919
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.5	0.0	13.0	14.6	0.0	15.0	7.5	0.0	9.9	8.2	0.0	9.6
Incr Delay (d2), s/veh	0.1	0.0	0.4	0.0	0.0	0.9	0.0	0.0	1.0	0.0	0.0	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.2	0.0	0.9	0.0	0.0	0.5	0.2	0.0	4.4	0.1	0.0	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	12.7	0.0	13.3	14.6	0.0	15.9	7.5	0.0	10.9	8.2	0.0	10.1
LnGrp LOS	B		B	B		B	A		B	A		B
Approach Vol, veh/h		208			40			549			400	
Approach Delay, s/veh		12.9			15.8			10.6			10.0	
Approach LOS		B			B			B			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.2	15.3	6.8	5.9	4.5	15.9	4.1	8.5
Change Period (Y+Rc), s	4.0	4.5	4.0	4.0	4.0	4.5	4.0	4.0
Max Green Setting (Gmax), s	16.0	35.5	11.0	21.0	16.0	35.5	6.0	21.0
Max Q Clear Time (g_c+I1), s	2.5	8.1	4.1	2.7	2.2	10.4	2.1	3.5
Green Ext Time (p_c), s	0.0	0.6	0.0	0.0	0.0	0.8	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	11.0
HCM 7th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	53	195	10	43	15	368	1075	20	70	680	145
Future Volume (veh/h)	105	53	195	10	43	15	368	1075	20	70	680	145
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1722	1722	1722	1811	1811	1811	1781	1781	1781
Adj Flow Rate, veh/h	114	58	212	11	47	16	400	1168	22	76	739	158
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	5	12	12	12	6	6	6	8	8	8
Cap, veh/h	138	230	577	17	98	82	426	2220	990	96	1540	687
Arrive On Green	0.08	0.13	0.13	0.01	0.06	0.06	0.25	0.65	0.65	0.06	0.45	0.45
Sat Flow, veh/h	1739	1826	1540	1640	1722	1444	1725	3441	1535	1697	3385	1510
Grp Volume(v), veh/h	114	58	212	11	47	16	400	1168	22	76	739	158
Grp Sat Flow(s),veh/h/ln	1739	1826	1540	1640	1722	1444	1725	1721	1535	1697	1692	1510
Q Serve(g_s), s	7.7	3.4	12.0	0.8	3.2	1.3	27.3	21.9	0.6	5.3	18.3	7.6
Cycle Q Clear(g_c), s	7.7	3.4	12.0	0.8	3.2	1.3	27.3	21.9	0.6	5.3	18.3	7.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	138	230	577	17	98	82	426	2220	990	96	1540	687
V/C Ratio(X)	0.82	0.25	0.37	0.66	0.48	0.19	0.94	0.53	0.02	0.79	0.48	0.23
Avail Cap(c_a), veh/h	203	313	647	164	267	224	489	2220	990	368	1540	687
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.4	47.3	27.3	59.2	54.9	54.0	44.3	11.4	7.7	55.9	22.8	19.9
Incr Delay (d2), s/veh	10.5	0.2	0.1	23.4	2.2	0.7	23.8	0.9	0.0	8.5	1.1	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.8	2.8	7.8	0.8	2.6	0.9	19.9	11.6	0.4	4.3	11.2	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	64.9	47.5	27.5	82.6	57.1	54.7	68.1	12.3	7.7	64.4	23.9	20.7
LnGrp LOS	E	D	C	F	E	D	E	B	A	E	C	C
Approach Vol, veh/h		384			74			1590			973	
Approach Delay, s/veh		41.6			60.3			26.3			26.5	
Approach LOS		D			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	33.6	60.6	13.5	12.2	10.8	83.4	5.2	20.5
Change Period (Y+Rc), s	4.0	6.0	4.0	5.4	4.0	6.0	4.0	5.4
Max Green Setting (Gmax), s	34.0	34.0	14.0	18.6	26.0	42.0	12.0	20.6
Max Q Clear Time (g_c+I1), s	29.3	20.3	9.7	5.2	7.3	23.9	2.8	14.0
Green Ext Time (p_c), s	0.4	6.4	0.0	0.1	0.1	10.7	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	29.2
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

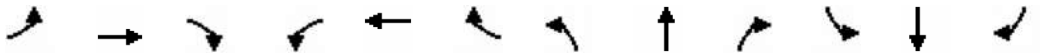
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	516	3	65	857	89	5	0	50	78	0	52
Future Volume (veh/h)	30	516	3	65	857	89	5	0	50	78	0	52
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1737	1737	1737	1856	1856	1856	1900	1900	1900	1870	1870	1870
Adj Flow Rate, veh/h	33	567	3	71	942	98	5	0	55	86	0	57
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	11	11	11	3	3	3	0	0	0	2	2	2
Cap, veh/h	405	1567	8	623	1612	168	310	0	205	310	0	202
Arrive On Green	0.05	0.47	0.47	0.08	0.50	0.50	0.13	0.00	0.13	0.13	0.00	0.13
Sat Flow, veh/h	1654	3366	18	1767	3215	334	1368	0	1610	1349	0	1585
Grp Volume(v), veh/h	33	278	292	71	517	523	5	0	55	86	0	57
Grp Sat Flow(s),veh/h/ln	1654	1650	1734	1767	1763	1786	1368	0	1610	1349	0	1585
Q Serve(g_s), s	0.4	4.3	4.3	0.8	8.3	8.3	0.1	0.0	1.2	2.5	0.0	1.3
Cycle Q Clear(g_c), s	0.4	4.3	4.3	0.8	8.3	8.3	1.4	0.0	1.2	3.7	0.0	1.3
Prop In Lane	1.00		0.01	1.00		0.19	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	405	768	807	623	884	895	310	0	205	310	0	202
V/C Ratio(X)	0.08	0.36	0.36	0.11	0.58	0.58	0.02	0.00	0.27	0.28	0.00	0.28
Avail Cap(c_a), veh/h	784	1259	1323	964	1345	1363	837	0	826	324	0	218
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.5	6.9	6.9	4.5	7.0	7.0	16.4	0.0	15.8	17.4	0.0	15.8
Incr Delay (d2), s/veh	0.1	0.4	0.4	0.0	0.9	0.9	0.0	0.0	0.5	0.4	0.0	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.1	1.9	2.0	0.3	3.6	3.7	0.1	0.0	0.8	1.3	0.0	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	5.5	7.3	7.3	4.6	8.0	8.0	16.5	0.0	16.3	17.8	0.0	16.3
LnGrp LOS	A	A	A	A	A	A	B		B	B		B
Approach Vol, veh/h		603			1111			60			143	
Approach Delay, s/veh		7.2			7.8			16.3			17.2	
Approach LOS		A			A			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.3	23.1		9.6	5.8	24.5		9.6				
Change Period (Y+Rc), s	4.0	4.5		4.5	4.0	4.5		4.5				
Max Green Setting (Gmax), s	11.0	30.5		5.5	11.0	30.5		20.5				
Max Q Clear Time (g_c+I1), s	2.8	6.3		5.7	2.4	10.3		3.4				
Green Ext Time (p_c), s	0.0	5.2		0.0	0.0	9.8		0.2				

Intersection Summary	
HCM 7th Control Delay, s/veh	8.5
HCM 7th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	394	370	30	130	467	800	45	1080	125	430	720	694
Future Volume (veh/h)	394	370	30	130	467	800	45	1080	125	430	720	694
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1752	1752	1752	1841	1841	1841	1811	1811	1811	1826	1826	1826
Adj Flow Rate, veh/h	410	385	31	135	486	0	47	1125	0	448	750	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	10	10	10	4	4	4	6	6	6	5	5	5
Cap, veh/h	490	733	59	197	494		59	1107		528	1539	
Arrive On Green	0.15	0.23	0.23	0.06	0.14	0.00	0.03	0.32	0.00	0.16	0.44	0.00
Sat Flow, veh/h	3237	3121	250	3401	3497	1560	1725	3441	1535	3374	3469	1547
Grp Volume(v), veh/h	410	204	212	135	486	0	47	1125	0	448	750	0
Grp Sat Flow(s),veh/h/ln	1618	1664	1707	1700	1749	1560	1725	1721	1535	1687	1735	1547
Q Serve(g_s), s	12.6	11.0	11.1	4.0	14.2	0.0	2.8	33.0	0.0	13.3	15.7	0.0
Cycle Q Clear(g_c), s	12.6	11.0	11.1	4.0	14.2	0.0	2.8	33.0	0.0	13.3	15.7	0.0
Prop In Lane	1.00		0.15	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	490	391	401	197	494		59	1107		528	1539	
V/C Ratio(X)	0.84	0.52	0.53	0.69	0.98		0.79	1.02		0.85	0.49	
Avail Cap(c_a), veh/h	1025	397	408	315	494		160	1107		871	1539	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	42.3	34.2	34.3	47.4	43.9	0.0	49.2	34.8	0.0	42.1	20.3	0.0
Incr Delay (d2), s/veh	2.4	0.8	0.8	2.6	35.9	0.0	13.3	31.2	0.0	2.9	0.4	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.8	7.9	8.1	3.1	13.3	0.0	2.4	24.4	0.0	9.2	9.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	44.7	35.0	35.1	50.0	79.9	0.0	62.4	66.0	0.0	45.0	20.7	0.0
LnGrp LOS	D	D	D	D	E		E	F		D	C	
Approach Vol, veh/h		826			621			1172			1198	
Approach Delay, s/veh		39.8			73.4			65.8			29.8	
Approach LOS		D			E			E			C	

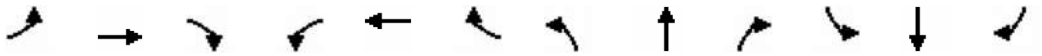
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.6	40.0	11.4	29.6	9.0	52.5	21.0	20.0
Change Period (Y+Rc), s	5.5	7.0	5.5	5.5	5.5	7.0	5.5	5.5
Max Green Setting (Gmax), s	26.5	33.0	9.5	24.5	9.5	33.0	32.5	14.5
Max Q Clear Time (g_c+I1), s	15.3	35.0	6.0	13.1	4.8	17.7	14.6	16.2
Green Ext Time (p_c), s	0.8	0.0	0.1	1.4	0.0	6.3	0.9	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	50.1
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

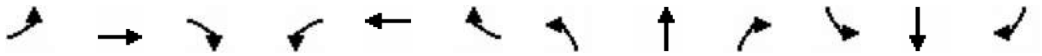
Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	5	19	74	10	30	13	740	23	2	864	10
Future Volume (veh/h)	10	5	19	74	10	30	13	740	23	2	864	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1885	1885	1885	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	11	5	20	78	11	32	14	779	24	2	909	11
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	1	1	1	2	2	2	1	1	1
Cap, veh/h	139	57	115	244	29	51	405	1255	39	477	1293	16
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.70	0.70	0.70	0.70	0.70	0.70
Sat Flow, veh/h	278	447	906	887	229	401	607	1803	56	683	1858	22
Grp Volume(v), veh/h	36	0	0	121	0	0	14	0	803	2	0	920
Grp Sat Flow(s),veh/h/ln	1631	0	0	1517	0	0	607	0	1859	683	0	1880
Q Serve(g_s), s	0.0	0.0	0.0	2.5	0.0	0.0	0.6	0.0	10.4	0.1	0.0	13.1
Cycle Q Clear(g_c), s	0.9	0.0	0.0	3.3	0.0	0.0	13.8	0.0	10.4	10.5	0.0	13.1
Prop In Lane	0.31		0.56	0.64		0.26	1.00		0.03	1.00		0.01
Lane Grp Cap(c), veh/h	311	0	0	323	0	0	405	0	1294	477	0	1309
V/C Ratio(X)	0.12	0.00	0.00	0.37	0.00	0.00	0.03	0.00	0.62	0.00	0.00	0.70
Avail Cap(c_a), veh/h	824	0	0	820	0	0	736	0	2305	848	0	2333
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.6	0.0	0.0	18.6	0.0	0.0	8.2	0.0	3.7	6.5	0.0	4.1
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.5	0.0	0.0	0.1	0.0	0.8	0.0	0.0	1.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.6	0.0	0.0	2.0	0.0	0.0	0.1	0.0	2.9	0.0	0.0	3.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	17.7	0.0	0.0	19.1	0.0	0.0	8.2	0.0	4.5	6.5	0.0	5.3
LnGrp LOS	B			B			A		A	A		A
Approach Vol, veh/h		36			121			817			922	
Approach Delay, s/veh		17.7			19.1			4.6			5.3	
Approach LOS		B			B			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		35.4		9.7		35.4		9.7				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		56.0		21.0		56.0		21.0				
Max Q Clear Time (g_c+I1), s		15.1		5.3		15.8		2.9				
Green Ext Time (p_c), s		16.3		0.4		13.2		0.1				

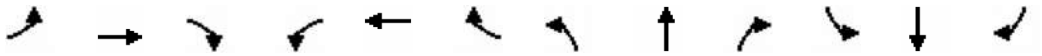
Intersection Summary												
HCM 7th Control Delay, s/veh			6.1									
HCM 7th LOS			A									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	20	98	40	10	10	92	661	20	5	812	75
Future Volume (veh/h)	95	20	98	40	10	10	92	661	20	5	812	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1870	1870	1870	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	103	22	107	43	11	11	100	718	22	5	883	82
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	2	2	2	2	2	2	1	1	1
Cap, veh/h	298	247	208	285	114	114	357	1142	35	424	1097	897
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.06	0.63	0.63	0.01	0.58	0.58
Sat Flow, veh/h	1369	1856	1561	1254	854	854	1781	1803	55	1795	1885	1542
Grp Volume(v), veh/h	103	22	107	43	0	22	100	0	740	5	883	82
Grp Sat Flow(s),veh/h/ln	1369	1856	1561	1254	0	1709	1781	0	1858	1795	1885	1542
Q Serve(g_s), s	3.9	0.6	3.5	1.7	0.0	0.6	1.1	0.0	13.3	0.1	20.2	1.3
Cycle Q Clear(g_c), s	4.5	0.6	3.5	2.3	0.0	0.6	1.1	0.0	13.3	0.1	20.2	1.3
Prop In Lane	1.00		1.00	1.00		0.50	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	298	247	208	285	0	227	357	0	1177	424	1097	897
V/C Ratio(X)	0.35	0.09	0.52	0.15	0.00	0.10	0.28	0.00	0.63	0.01	0.81	0.09
Avail Cap(c_a), veh/h	641	711	598	599	0	655	613	0	1374	775	1394	1140
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.8	20.8	22.1	21.8	0.0	20.9	8.3	0.0	6.1	5.7	9.0	5.1
Incr Delay (d2), s/veh	0.5	0.1	1.5	0.2	0.0	0.1	0.3	0.0	1.0	0.0	3.3	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.2	0.4	2.3	0.9	0.0	0.4	0.7	0.0	6.5	0.0	11.1	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	23.4	20.9	23.6	22.0	0.0	21.0	8.6	0.0	7.1	5.7	12.3	5.1
LnGrp LOS	C	C	C	C		C	A		A	A	B	A
Approach Vol, veh/h		232			65			840			970	
Approach Delay, s/veh		23.2			21.7			7.3			11.7	
Approach LOS		C			C			A			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.1	36.4		11.3	4.3	39.2		11.3				
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0				
Max Green Setting (Gmax), s	11.0	40.5		21.0	11.0	40.5		21.0				
Max Q Clear Time (g_c+I1), s	3.1	22.2		4.3	2.1	15.3		6.5				
Green Ext Time (p_c), s	0.1	9.7		0.1	0.0	8.7		0.5				

Intersection Summary												
HCM 7th Control Delay, s/veh			11.5									
HCM 7th LOS			B									



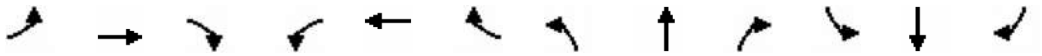
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	10	153	20	10	3	162	648	10	15	845	130
Future Volume (veh/h)	160	10	153	20	10	3	162	648	10	15	845	130
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1811	1811	1811	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	168	11	161	21	11	3	171	682	11	16	889	137
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	6	6	6	2	2	2	2	2	2
Cap, veh/h	566	27	397	375	252	69	275	1701	27	395	1461	225
Arrive On Green	0.10	0.27	0.27	0.02	0.18	0.18	0.48	0.48	0.48	0.48	0.48	0.48
Sat Flow, veh/h	1795	102	1490	1725	1370	374	549	3577	58	749	3072	473
Grp Volume(v), veh/h	168	0	172	21	0	14	171	339	354	16	514	512
Grp Sat Flow(s),veh/h/ln	1795	0	1592	1725	0	1743	549	1777	1858	749	1777	1769
Q Serve(g_s), s	3.8	0.0	4.9	0.5	0.0	0.4	14.3	6.8	6.8	0.8	11.7	11.7
Cycle Q Clear(g_c), s	3.8	0.0	4.9	0.5	0.0	0.4	26.0	6.8	6.8	7.5	11.7	11.7
Prop In Lane	1.00		0.94	1.00		0.21	1.00		0.03	1.00		0.27
Lane Grp Cap(c), veh/h	566	0	425	375	0	321	275	845	884	395	845	841
V/C Ratio(X)	0.30	0.00	0.41	0.06	0.00	0.04	0.62	0.40	0.40	0.04	0.61	0.61
Avail Cap(c_a), veh/h	1071	0	1602	1003	0	1753	275	845	884	395	845	841
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.9	0.0	16.5	17.5	0.0	18.4	21.3	9.3	9.3	11.7	10.6	10.6
Incr Delay (d2), s/veh	0.2	0.0	1.0	0.0	0.0	0.1	3.8	0.2	0.2	0.0	1.1	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.5	0.0	3.1	0.4	0.0	0.3	4.2	3.9	4.1	0.2	7.1	7.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.1	0.0	17.4	17.6	0.0	18.4	25.1	9.5	9.5	11.8	11.7	11.7
LnGrp LOS	B		B	B		B	C	A	A	B	B	B
Approach Vol, veh/h		340			35			864			1042	
Approach Delay, s/veh		15.8			17.9			12.6			11.7	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.1	19.6		30.0	9.6	15.1		30.0				
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	21.0	55.0		26.0	21.0	55.0		26.0				
Max Q Clear Time (g_c+I1), s	2.5	6.9		13.7	5.8	2.4		28.0				
Green Ext Time (p_c), s	0.0	1.9		4.7	0.3	0.1		0.0				

Intersection Summary		
HCM 7th Control Delay, s/veh	12.7	
HCM 7th LOS	B	

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	0	155	31	0	76	145	704	30	90	848	75
Future Volume (veh/h)	45	0	155	31	0	76	145	704	30	90	848	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.98	0.99		0.98	1.00		0.97	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1870	1870	1870	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	46	0	160	32	0	78	149	726	31	93	874	77
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	2	2	2	1	1	1	2	2	2
Cap, veh/h	287	0	285	213	0	281	191	2095	89	412	1433	126
Arrive On Green	0.18	0.00	0.18	0.18	0.00	0.18	0.11	0.60	0.60	0.43	0.43	0.43
Sat Flow, veh/h	1326	0	1586	1215	0	1561	1795	3495	149	705	3300	291
Grp Volume(v), veh/h	46	0	160	32	0	78	149	372	385	93	471	480
Grp Sat Flow(s),veh/h/ln	1326	0	1586	1215	0	1561	1795	1791	1853	705	1777	1814
Q Serve(g_s), s	2.1	0.0	6.3	1.7	0.0	2.9	5.5	7.1	7.1	5.8	13.9	13.9
Cycle Q Clear(g_c), s	5.0	0.0	6.3	7.9	0.0	2.9	5.5	7.1	7.1	5.8	13.9	13.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.08	1.00		0.16
Lane Grp Cap(c), veh/h	287	0	285	213	0	281	191	1073	1111	412	771	788
V/C Ratio(X)	0.16	0.00	0.56	0.15	0.00	0.28	0.78	0.35	0.35	0.23	0.61	0.61
Avail Cap(c_a), veh/h	497	0	537	405	0	528	555	1370	1417	676	1438	1468
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.2	0.0	25.4	29.0	0.0	24.1	29.6	6.9	6.9	12.5	14.8	14.8
Incr Delay (d2), s/veh	0.2	0.0	1.1	0.2	0.0	0.3	4.2	0.3	0.3	0.4	1.2	1.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.2	0.0	4.3	0.9	0.0	1.9	4.5	4.1	4.3	1.6	9.0	9.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	26.4	0.0	26.5	29.2	0.0	24.4	33.8	7.2	7.2	13.0	16.0	16.0
LnGrp LOS	C		C	C		C	C	A	A	B	B	B
Approach Vol, veh/h		206			110			906			1044	
Approach Delay, s/veh		26.5			25.8			11.6			15.7	
Approach LOS		C			C			B			B	

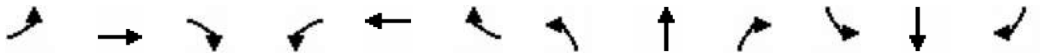
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	11.2	37.5		19.2		48.7		19.2				
Change Period (Y+Rc), s	4.0	* 8		7.0		8.0		7.0				
Max Green Setting (Gmax), s	21.0	* 55		23.0		52.0		23.0				
Max Q Clear Time (g_c+I1), s	7.5	15.9		8.3		9.1		9.9				
Green Ext Time (p_c), s	0.2	13.7		0.7		8.9		0.3				

Intersection Summary	
HCM 7th Control Delay, s/veh	15.5
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



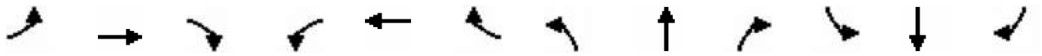
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	500	220	120	370	270	175	459	60	528	516	15
Future Volume (veh/h)	40	500	220	120	370	270	175	459	60	528	516	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1885	1885	1885	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	41	515	227	124	381	278	180	473	62	544	532	15
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	1	1	1	2	2	2	1	1	1
Cap, veh/h	55	643	481	158	853	686	223	870	113	672	627	18
Arrive On Green	0.03	0.18	0.18	0.09	0.24	0.24	0.13	0.28	0.28	0.19	0.34	0.34
Sat Flow, veh/h	1781	3554	1563	1795	3582	1588	1781	3150	411	3483	1823	51
Grp Volume(v), veh/h	41	515	227	124	381	278	180	266	269	544	0	547
Grp Sat Flow(s),veh/h/ln	1781	1777	1563	1795	1791	1588	1781	1777	1784	1742	0	1875
Q Serve(g_s), s	1.7	10.3	8.8	5.0	6.8	9.0	7.3	9.5	9.6	11.1	0.0	20.1
Cycle Q Clear(g_c), s	1.7	10.3	8.8	5.0	6.8	9.0	7.3	9.5	9.6	11.1	0.0	20.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.23	1.00		0.03
Lane Grp Cap(c), veh/h	55	643	481	158	853	686	223	491	493	672	0	645
V/C Ratio(X)	0.75	0.80	0.47	0.79	0.45	0.41	0.81	0.54	0.55	0.81	0.00	0.85
Avail Cap(c_a), veh/h	251	716	513	253	853	686	478	716	719	1403	0	755
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.8	29.2	21.0	33.3	24.2	14.6	31.7	22.9	23.0	28.7	0.0	22.6
Incr Delay (d2), s/veh	11.8	5.6	0.5	5.2	0.3	0.3	4.3	1.4	1.4	1.5	0.0	8.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.6	8.2	5.5	4.2	4.9	5.4	6.0	7.1	7.2	8.1	0.0	14.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	47.6	34.8	21.5	38.5	24.5	14.9	36.0	24.4	24.4	30.2	0.0	31.3
LnGrp LOS	D	C	C	D	C	B	D	C	C	C		C
Approach Vol, veh/h		783			783			715			1091	
Approach Delay, s/veh		31.6			23.3			27.3			30.8	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.3	30.6	6.8	22.7	19.4	25.6	11.0	18.5
Change Period (Y+Rc), s	5.0	5.0	4.5	5.0	5.0	5.0	4.5	5.0
Max Green Setting (Gmax), s	20.0	30.0	10.5	15.0	30.0	30.0	10.5	15.0
Max Q Clear Time (g_c+I1), s	9.3	22.1	3.7	11.0	13.1	11.6	7.0	12.3
Green Ext Time (p_c), s	0.2	3.0	0.0	1.1	1.2	4.5	0.1	1.0

Intersection Summary	
HCM 7th Control Delay, s/veh	28.5
HCM 7th LOS	C

Notes

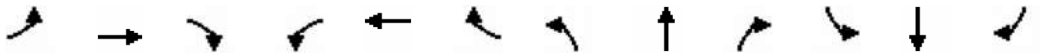
User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	119	45	45	20	45	45	45	500	20	20	593	158
Future Volume (veh/h)	119	45	45	20	45	45	45	500	20	20	593	158
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.96	0.97		0.98	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1900	1900	1900	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	123	46	46	21	46	46	46	515	21	21	611	163
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	0	0	0	3	3	3	3	3	3
Cap, veh/h	344	135	135	300	86	86	244	863	35	410	660	176
Arrive On Green	0.08	0.16	0.16	0.02	0.10	0.10	0.04	0.49	0.49	0.02	0.47	0.47
Sat Flow, veh/h	1795	844	844	1810	863	863	1767	1770	72	1767	1402	374
Grp Volume(v), veh/h	123	0	92	21	0	92	46	0	536	21	0	774
Grp Sat Flow(s),veh/h/ln	1795	0	1688	1810	0	1726	1767	0	1842	1767	0	1776
Q Serve(g_s), s	3.1	0.0	2.6	0.5	0.0	2.7	0.7	0.0	11.1	0.3	0.0	21.6
Cycle Q Clear(g_c), s	3.1	0.0	2.6	0.5	0.0	2.7	0.7	0.0	11.1	0.3	0.0	21.6
Prop In Lane	1.00		0.50	1.00		0.50	1.00		0.04	1.00		0.21
Lane Grp Cap(c), veh/h	344	0	270	300	0	171	244	0	898	410	0	836
V/C Ratio(X)	0.36	0.00	0.34	0.07	0.00	0.54	0.19	0.00	0.60	0.05	0.00	0.93
Avail Cap(c_a), veh/h	573	0	671	469	0	686	714	0	1238	910	0	1194
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.2	0.0	19.7	20.7	0.0	22.6	11.3	0.0	9.8	7.9	0.0	13.1
Incr Delay (d2), s/veh	0.2	0.0	0.3	0.0	0.0	1.0	0.1	0.0	0.2	0.0	0.0	7.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.2	0.0	1.7	0.4	0.0	1.9	0.4	0.0	6.4	0.2	0.0	13.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	18.4	0.0	20.0	20.8	0.0	23.6	11.4	0.0	10.0	8.0	0.0	20.9
LnGrp LOS	B		B	C		C	B		B	A		C
Approach Vol, veh/h		215			113			582			795	
Approach Delay, s/veh		19.1			23.1			10.1			20.5	
Approach LOS		B			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.0	29.4	8.3	9.2	5.1	30.3	5.1	12.4
Change Period (Y+Rc), s	4.0	4.5	4.0	4.0	4.0	4.5	4.0	4.0
Max Green Setting (Gmax), s	16.0	35.5	11.0	21.0	16.0	35.5	6.0	21.0
Max Q Clear Time (g_c+I1), s	2.7	23.6	5.1	4.7	2.3	13.1	2.5	4.6
Green Ext Time (p_c), s	0.0	1.2	0.0	0.1	0.0	0.8	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	17.0
HCM 7th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	155	49	504	10	44	55	301	835	15	40	1210	180
Future Volume (veh/h)	155	49	504	10	44	55	301	835	15	40	1210	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1752	1752	1752	1856	1856	1856	1870	1870	1870
Adj Flow Rate, veh/h	158	50	514	10	45	56	307	852	15	41	1235	184
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	10	10	10	3	3	3	2	2	2
Cap, veh/h	183	325	571	16	141	116	333	2249	1002	53	1703	759
Arrive On Green	0.10	0.17	0.17	0.01	0.08	0.08	0.19	0.64	0.64	0.03	0.48	0.48
Sat Flow, veh/h	1781	1870	1563	1668	1752	1440	1767	3526	1571	1781	3554	1583
Grp Volume(v), veh/h	158	50	514	10	45	56	307	852	15	41	1235	184
Grp Sat Flow(s),veh/h/ln	1781	1870	1563	1668	1752	1440	1767	1763	1571	1781	1777	1583
Q Serve(g_s), s	11.4	2.9	22.6	0.8	3.2	4.8	22.2	15.0	0.5	3.0	36.1	8.9
Cycle Q Clear(g_c), s	11.4	2.9	22.6	0.8	3.2	4.8	22.2	15.0	0.5	3.0	36.1	8.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	183	325	571	16	141	116	333	2249	1002	53	1703	759
V/C Ratio(X)	0.87	0.15	0.90	0.64	0.32	0.48	0.92	0.38	0.01	0.77	0.73	0.24
Avail Cap(c_a), veh/h	219	325	571	205	278	228	421	2249	1002	288	1703	759
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.5	45.6	39.3	64.2	56.4	57.1	51.8	11.2	8.6	62.6	27.0	20.0
Incr Delay (d2), s/veh	22.5	0.1	17.0	23.9	0.8	1.9	21.1	0.5	0.0	13.6	2.7	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	10.3	2.5	24.8	0.8	2.6	3.3	16.9	9.0	0.3	2.7	21.0	6.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	79.9	45.7	56.3	88.1	57.2	59.0	72.9	11.7	8.6	76.2	29.8	20.7
LnGrp LOS	E	D	E	F	E	E	E	B	A	E	C	C
Approach Vol, veh/h		722			111			1174			1460	
Approach Delay, s/veh		60.7			60.9			27.7			29.9	
Approach LOS		E			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	28.5	68.3	17.3	15.9	7.9	88.9	5.2	28.0
Change Period (Y+Rc), s	4.0	6.0	4.0	5.4	4.0	6.0	4.0	5.4
Max Green Setting (Gmax), s	31.0	43.0	16.0	20.6	21.0	53.0	16.0	20.6
Max Q Clear Time (g_c+I1), s	24.2	38.1	13.4	6.8	5.0	17.0	2.8	24.6
Green Ext Time (p_c), s	0.3	4.0	0.0	0.2	0.0	10.3	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	36.6
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

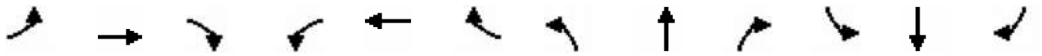
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	1039	55	140	819	51	30	0	80	48	0	23
Future Volume (veh/h)	26	1039	55	140	819	51	30	0	80	48	0	23
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	0.98		0.98	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1870	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	28	1117	59	151	881	55	32	0	86	52	0	25
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	2	2	2	0	0	0	0	0	0
Cap, veh/h	466	1701	90	463	1903	119	307	0	201	252	0	201
Arrive On Green	0.04	0.49	0.49	0.11	0.56	0.56	0.13	0.00	0.13	0.13	0.00	0.13
Sat Flow, veh/h	1795	3459	183	1781	3390	212	1384	0	1580	1314	0	1580
Grp Volume(v), veh/h	28	578	598	151	462	474	32	0	86	52	0	25
Grp Sat Flow(s),veh/h/ln	1795	1791	1851	1781	1777	1824	1384	0	1580	1314	0	1580
Q Serve(g_s), s	0.4	11.6	11.6	1.6	7.3	7.3	1.0	0.0	2.4	1.8	0.0	0.7
Cycle Q Clear(g_c), s	0.4	11.6	11.6	1.6	7.3	7.3	1.7	0.0	2.4	4.2	0.0	0.7
Prop In Lane	1.00		0.10	1.00		0.12	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	466	881	910	463	998	1024	307	0	201	252	0	201
V/C Ratio(X)	0.06	0.66	0.66	0.33	0.46	0.46	0.10	0.00	0.43	0.21	0.00	0.12
Avail Cap(c_a), veh/h	810	1145	1183	680	1136	1166	726	0	679	252	0	201
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.5	9.1	9.1	6.2	6.2	6.2	19.2	0.0	19.2	21.2	0.0	18.5
Incr Delay (d2), s/veh	0.0	1.3	1.3	0.2	0.5	0.5	0.1	0.0	1.1	0.3	0.0	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.2	6.2	6.3	0.6	3.3	3.4	0.6	0.0	1.6	1.0	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	5.5	10.4	10.4	6.4	6.7	6.7	19.3	0.0	20.3	21.5	0.0	18.7
LnGrp LOS	A	B	B	A	A	A	B		C	C		B
Approach Vol, veh/h		1204			1087			118			77	
Approach Delay, s/veh		10.3			6.7			20.0			20.6	
Approach LOS		B			A			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.2	28.0		10.6	5.9	31.3		10.6				
Change Period (Y+Rc), s	4.0	4.5		4.5	4.0	4.5		4.5				
Max Green Setting (Gmax), s	11.0	30.5		5.5	11.0	30.5		20.5				
Max Q Clear Time (g_c+I1), s	3.6	13.6		6.2	2.4	9.3		4.4				
Green Ext Time (p_c), s	0.1	9.9		0.0	0.0	8.8		0.4				

Intersection Summary	
HCM 7th Control Delay, s/veh	9.5
HCM 7th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	728	819	100	145	522	505	55	805	180	790	1115	683
Future Volume (veh/h)	728	819	100	145	522	505	55	805	180	790	1115	683
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1856	1856	1856	1870	1870	1870
Adj Flow Rate, veh/h	743	836	102	148	533	0	56	821	0	806	1138	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	3	3	3	2	2	2
Cap, veh/h	807	928	113	202	413		72	899		729	1511	
Arrive On Green	0.23	0.29	0.29	0.06	0.12	0.00	0.04	0.26	0.00	0.21	0.43	0.00
Sat Flow, veh/h	3483	3208	391	3483	3582	1598	1767	3526	1572	3456	3554	1585
Grp Volume(v), veh/h	743	467	471	148	533	0	56	821	0	806	1138	0
Grp Sat Flow(s),veh/h/ln	1742	1791	1808	1742	1791	1598	1767	1763	1572	1728	1777	1585
Q Serve(g_s), s	26.2	31.5	31.5	5.3	14.5	0.0	3.9	28.4	0.0	26.5	34.0	0.0
Cycle Q Clear(g_c), s	26.2	31.5	31.5	5.3	14.5	0.0	3.9	28.4	0.0	26.5	34.0	0.0
Prop In Lane	1.00		0.22	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	807	518	523	202	413		72	899		729	1511	
V/C Ratio(X)	0.92	0.90	0.90	0.73	1.29		0.78	0.91		1.11	0.75	
Avail Cap(c_a), veh/h	901	518	523	263	413		134	926		729	1511	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	47.1	42.9	42.9	58.3	55.6	0.0	59.7	45.5	0.0	49.6	30.5	0.0
Incr Delay (d2), s/veh	13.2	18.5	18.4	5.6	147.5	0.0	10.5	13.5	0.0	66.3	2.5	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	18.5	23.0	23.2	4.4	23.5	0.0	3.4	19.5	0.0	25.8	20.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	60.3	61.5	61.3	63.9	203.1	0.0	70.2	59.0	0.0	115.9	33.0	0.0
LnGrp LOS	E	E	E	E	F		E	E		F	C	
Approach Vol, veh/h		1681			681			877			1944	
Approach Delay, s/veh		60.9			172.9			59.7			67.4	
Approach LOS		E			F			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	32.0	39.1	12.8	41.8	10.6	60.4	34.6	20.0
Change Period (Y+Rc), s	5.5	7.0	5.5	5.5	5.5	7.0	5.5	5.5
Max Green Setting (Gmax), s	26.5	33.0	9.5	24.5	9.5	33.0	32.5	14.5
Max Q Clear Time (g_c+I1), s	28.5	30.4	7.3	33.5	5.9	36.0	28.2	16.5
Green Ext Time (p_c), s	0.0	1.6	0.1	0.0	0.0	0.0	0.9	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	77.8
HCM 7th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Appendix C: Detailed Trip Generation

OR City

Proposed Use

Land Use	Setting	Size	Units	Model	Equation	Rate	Inbound %	Gross Trips Inbound	Gross Trips Outbound	Gross Trips Subtotal	Land Use Type	Internal Trips In	Internal Trips Out	Internal Trips Total	Internal Trips %	External Trips In	External Trips Out	External Trips Total	Pass-By Trips %	Pass-By Trips In	Pass-By Trips Out	Pass-By Trips Total	Primary Trips Inbound	Primary Trips Outbound	Primary Trips Total
Multifamily (Mid-Rise) (LU 221)		**210**	du								Residential														
Daily	General Urban/Suburban			Equation (lin)	T = 4.77(X) - 46.46	-	50%	478	478	956		123	123	246	26%	355	355	710		-	-	-	355	355	710
AM Peak Hour	General Urban/Suburban			Equation (lin)	T = 0.44(X) - 11.61	-	23%	19	62	81		1	13	14	17%	18	49	67		-	-	-	18	49	67
PM Peak Hour	General Urban/Suburban			Equation (lin)	T = 0.39(X) + 0.34	-	61%	50	32	82		17	11	28	34%	33	21	54		-	-	-	33	21	54
Retail (LU 822)		**10,950**	sf								Retail														
Daily	General Urban/Suburban			Rate	-	54.45	50%	298	298	596		102	102	204	34%	196	196	392	40%	78	78	156	118	118	236
AM Peak Hour	General Urban/Suburban			Rate	-	2.36	60%	16	10	26		2	1	3	12%	14	9	23	40%	5	5	10	9	4	13
PM Peak Hour	General Urban/Suburban			Rate	-	6.59	50%	36	36	72		22	19	41	57%	14	17	31	40%	6	6	12	8	11	19
Coffee Shop with Drive Through Window (937		**3,650**	sf								Restaurant														
Daily	General Urban/Suburban			Rate	-	533.57	50%	974	974	1,948		83	83	166	8%	891	891	1782	53%	468	468	936	423	423	846
AM Peak Hour	General Urban/Suburban			Rate	-	85.88	51%	160	153	313		8	1	9	3%	152	152	304	50%	76	76	152	76	76	152
PM Peak Hour	General Urban/Suburban			Rate	-	38.99	50%	71	71	142		8	12	20	14%	63	59	122	55%	34	34	68	29	25	54
Fast-Food Restaurant with Drive-Through Windov		**4,900**	sf								Restaurant														
Daily	General Urban/Suburban			Rate	-	467.48	50%	1,145	1,145	2,290		97	97	194	8%	1048	1048	2096	53%	550	550	1100	498	498	996
AM Peak Hour	General Urban/Suburban			Rate	-	44.61	51%	112	107	219		5	1	6	3%	107	106	213	50%	53	53	106	54	53	107
PM Peak Hour	General Urban/Suburban			Rate	-	33.03	52%	84	78	162		9	14	23	14%	75	64	139	55%	38	38	76	37	26	63
Subtotal																									
Daily								2,895	2,895	5,790		405	405	810	14%	2,490	2,490	4,980		1,096	1,096	2,192	1,394	1,394	2,788
AM Peak Hour								307	332	639		16	16	32	5%	291	316	607		134	134	268	157	182	339
PM Peak Hour								241	217	458		56	56	112	24%	185	161	346		78	78	156	107	83	190

Notes:

1. Trip rates based on Institute of Transportation Engineers' (ITE) *Trip Generation Manual (* 11th Edition) equation and average trip rates as shown above.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Oregon City Mixed Use	**Organization:**	
Project Location:		**Performed By:**	
Scenario Description:		**Date:**	
Analysis Year:		**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0	0	0
Retail				26	16	10
Restaurant				532	272	260
Cinema/Entertainment				0	0	0
Residential				81	19	62
Hotel				0	0	0
All Other Land Uses[2]				0	0	0
Total				639	307	332

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		1	0	0	0
Restaurant	0	1		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	12	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	639	307	332
Internal Capture Percentage	5%	5%	5%
External Vehicle-Trips[3]	607	291	316
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	13%	10%
Restaurant	5%	1%
Cinema/Entertainment	N/A	N/A
Residential	5%	21%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	Oregon City Mixed Use
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	16	16	1.00	10	10
Restaurant	1.00	272	272	1.00	260	260
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	19	19	1.00	62	62
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	3		1	0	1	0
Restaurant	81	36		0	10	8
Cinema/Entertainment	0	0	0		0	0
Residential	1	1	12	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		5	63	0	0	0
Retail	0		136	0	0	0
Restaurant	0	1		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	3	54	0		0
Hotel	0	1	16	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	2	14	16	14	0	0
Restaurant	13	259	272	259	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	18	19	18	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	1	9	10	9	0	0
Restaurant	2	258	260	258	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	13	49	62	49	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Oregon City Mixed Use	**Organization:**	
Project Location:		**Performed By:**	
Scenario Description:		**Date:**	
Analysis Year:		**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0	0	0
Retail				72	36	36
Restaurant				304	155	149
Cinema/Entertainment				0	0	0
Residential				82	50	32
Hotel				0	0	0
All Other Land Uses[2]				0	0	0
Total				458	241	217

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		10	0	9	0
Restaurant	0	18		0	8	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	4	7	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	458	241	217
Internal Capture Percentage	24%	23%	26%
External Vehicle-Trips[3]	346	185	161
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	61%	53%
Restaurant	11%	17%
Cinema/Entertainment	N/A	N/A
Residential	34%	34%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	Oregon City Mixed Use
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	36	36	1.00	36	36
Restaurant	1.00	155	155	1.00	149	149
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	50	50	1.00	32	32
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	1		10	1	9	2
Restaurant	4	61		12	27	10
Cinema/Entertainment	0	0	0		0	0
Residential	1	13	7	0		1
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		3	3	0	2	0
Retail	0		45	0	23	0
Restaurant	0	18		0	8	0
Cinema/Entertainment	0	1	5		2	0
Residential	0	4	22	0		0
Hotel	0	1	8	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	22	14	36	14	0	0
Restaurant	17	138	155	138	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	17	33	50	33	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	19	17	36	17	0	0
Restaurant	26	123	149	123	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	11	21	32	21	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

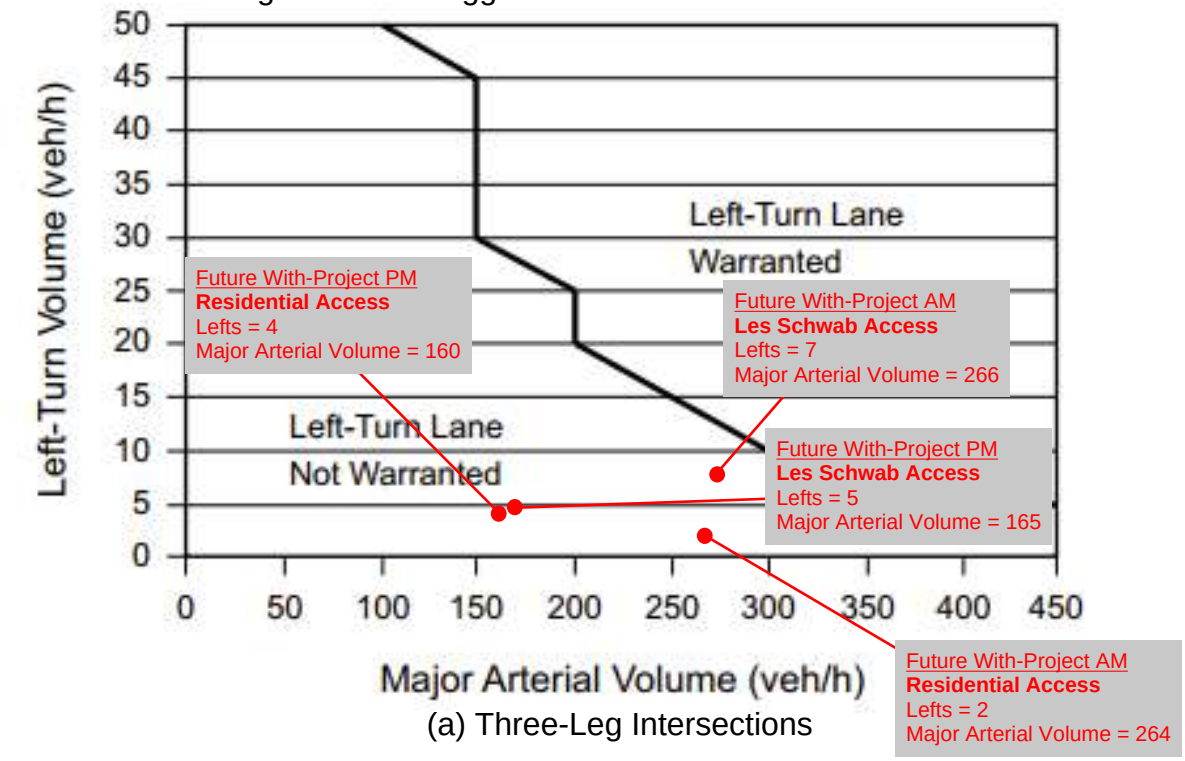
[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

Appendix D: Left Turn Lane Warrant

AASHTO Policy on Geometric Design of Highways and Streets

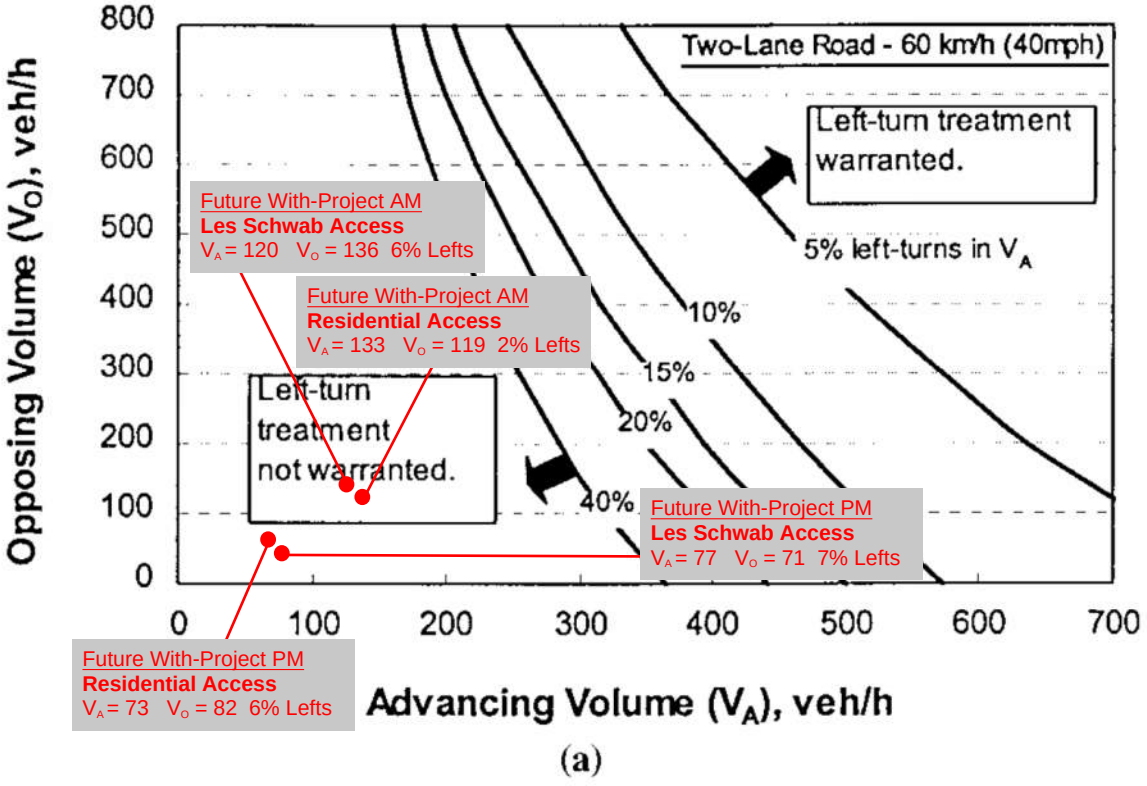
Figure 9-35 - Suggested Left-Turn Lane Warrants



(a) Three-Leg Intersections

NCHRP Report 457 *Evaluating Intersection Improvements*

Figure 2-5



(a)

Appendix E: Queueing Analysis

Queuing Analysis - Parcel A

Weekday AM Peak Hour (Average)

Number of Lanes	1	
Hourly Flow Rate (vph)	152	per Lane
Total Hourly Flow Rate	152	vehicles per hour
Average Stopped Time / Service Time	4:05	(mm:ss)
Average Service Rate (Total)	14.7	vehicles per hour
Average Vehicle Length	25	feet

Total Queues		Queues per Lane	
50th Percentile Queue		**50th Percentile Queue**	
Number of Vehicles	Length (ft)	Number of Vehicles	Length (ft)
11	275	5.5	137.5
85th Percentile Queue		**85th Percentile Queue**	
Number of Vehicles	Length (ft)	Number of Vehicles	Length (ft)
15	375	7.5	187.5
95th Percentile Queue		**95th Percentile Queue**	
Number of Vehicles	Length (ft)	Number of Vehicles	Length (ft)
17	425	8.5	212.5

Queuing Analysis - Parcel A

Weekday PM Peak Hour (Average)

Number of Tunnels	1	
Hourly Flow Rate (vph)	63	per Lane
Total Hourly Flow Rate	63	vehicles per hour
Average Stopped Time / Service Time	4:25	(mm:ss)
Average Service Rate (Total)	13.6	vehicles per hour
Average Vehicle Length	25	feet

Total Queues		Queues per Lane	
50th Percentile Queue		**50th Percentile Queue**	
Number of Vehicles	Length (ft)	Number of Vehicles	Length (ft)
6	150	3	75
85th Percentile Queue		**85th Percentile Queue**	
Number of Vehicles	Length (ft)	Number of Vehicles	Length (ft)
9	225	4.5	112.5
95th Percentile Queue		**95th Percentile Queue**	
Number of Vehicles	Length (ft)	Number of Vehicles	Length (ft)
11	275	5.5	137.5

Queuing Analysis - Parcel D

Weekday AM Peak Hour (Average)

Number of Lanes	2	
Hourly Flow Rate (vph)	53.5	per Lane
Total Hourly Flow Rate	107	vehicles per hour
Average Stopped Time / Service Time	4:05	(mm:ss)
Average Service Rate (Total)	29.4	vehicles per hour
Average Vehicle Length	25	feet

Total Queues		Queues per Lane	
50th Percentile Queue		**50th Percentile Queue**	
Number of Vehicles	Length (ft)	Number of Vehicles	Length (ft)
8	200	4	100
85th Percentile Queue		**85th Percentile Queue**	
Number of Vehicles	Length (ft)	Number of Vehicles	Length (ft)
11	275	5.5	137.5
95th Percentile Queue		**95th Percentile Queue**	
Number of Vehicles	Length (ft)	Number of Vehicles	Length (ft)
13	325	6.5	162.5

Queuing Analysis - Parcel D

Weekday PM Peak Hour (Average)

Number of Tunnels	2	
Hourly Flow Rate (vph)	37.5	per Lane
Total Hourly Flow Rate	75	vehicles per hour
Average Stopped Time / Service Time	4:25	(mm:ss)
Average Service Rate (Total)	27.2	vehicles per hour
Average Vehicle Length	25	feet

Total Queues		Queues per Lane	
50th Percentile Queue		**50th Percentile Queue**	
Number of Vehicles	Length (ft)	Number of Vehicles	Length (ft)
6	150	3	75
85th Percentile Queue		**85th Percentile Queue**	
Number of Vehicles	Length (ft)	Number of Vehicles	Length (ft)
9	225	4.5	112.5
95th Percentile Queue		**95th Percentile Queue**	
Number of Vehicles	Length (ft)	Number of Vehicles	Length (ft)
11	275	5.5	137.5

Date: March 12, 2026

File No: GLUA-25-00025 PA-25-00016

Request: 1367 Molla Avenue Transportation Comments

Reviewer: Reah Flisakowski, PE, and Hallie Turk EI, RSP$_1$, DKS Associates

---

DKS Associates has reviewed the Oregon City Mixed-Use Traffic Impact Analysis (TIA)[1] and revised version of the TIA.[2] The project will construct a mixed-use development including retail use, multifamily apartments, and a fast-food restaurant at 1367 Molalla Avenue in Oregon City.

The general comments and recommended conditions of approval are based on a review of the submitted materials.

TRAFFIC IMPACT ANALYSIS REVIEW

Key findings of the TIA are summarized below.

PROPOSED DEVELOPMENT AND STUDY AREA

- The project will construct a mixed-use development at 1367 Molalla Avenue comprised of 14,600 square feet of retail space, up to 210 multi-family apartment units, and one 4,900 square-foot fast food restaurant with a drive-through window. The project site is located on four existing tax lots and is currently vacant.
- The project will construct a new public street that connects to Molalla Avenue at the existing Safeway access and Beavercreek Road at the existing Southridge Shopping Center commercial access. According to the site plan (shown in Figure 2 of the TIA), this future street will provide access to the development at six driveway locations.
- The project is expected to be fully constructed and operational by the year 2030.
- The TIS analyzed nine study intersections:
    - Molalla Ave/Pearl St
    - Molalla Ave/Holmes Ln

---

[1] Oregon City Mixed-Use: Traffic Impact Analysis. Transpo Group. October 2025.
[2] Oregon City Mixed-Use: Traffic Impact Analysis. Transpo Group. Revised March 2026.

- Molalla Ave/Warner Milne Rd
- Molalla Ave/Safeway access/Future site access
- Molalla Ave/Beavercreek Rd
- Molalla Ave/Clairmont Way
- Molalla Ave/OR-213
- Commercial Access/Beavercreek Rd/Future site access
- OR-213/Beavercreek Rd

VOLUME DEVELOPMENT

- Existing condition intersection counts were collected in September 2025.

- An average annual growth rate of 2%, which was provided by City staff, was applied to represent background growth.

- Trips from the following in-process developments were included in background volumes:

  - 770 Pleasant Townhomes
  - Abernethy Place
  - Canemah Road Subdivision
  - Central Point Subdivision
  - Clackamas Heights Redevelopment
  - Downtown North End Development
  - Park Place Crossing Phase I
  - Serres Farm Master Plan
  - Thimble Creek South Phase I
  - White Lane Subdivision

TRIP GENERATION AND ANALYSIS

- Based on the most recent five years of available crash data (2019 to 2023), critical crash rate calculations, and ODOT SPIS lists, the OR-213/Beavercreek Road intersection was flagged for safety concerns. The TIA notes that since 2023, safety improvements such as signal modifications and improved signage have been completed at this location. As such, no safety mitigations are recommended at this time.

- The development is expected to generate 339 (157 in, 182 out) a.m. peak hour trips, 190 (107 in, 83 out) p.m. peak hour trips, and 2,788 weekday trips. This includes a conservative internal trip capture reduction of 5% in the a.m. peak hour and 25% in the p.m. peak hour, a pass-by rate of 40% for both the a.m. and p.m. peak hours for the Strip Retail (822) land use, and a pass-by rate of 55% for both the a.m. and p.m. peak hours for the Restaurant (934) and Coffee Shop with Drive Through Window (937) land uses.

- Different trip distributions were applied for the commercial and residential land uses.

- *Commercial Trips (Retail and Fast Food):* Approximately 35% of site trips are expected to travel to/from destinations to the south along Molalla Avenue and Beavercreek Road, and approximately 65% are expected to travel to/from destinations to the north along Molalla Avenue.
- *Residential Trips:* Approximately 55% of site trips are expected to travel to/from destinations to the south along Molalla Avenue and Beavercreek Road, and approximately 45% are expected to travel to/from destinations to the north along Molalla Avenue.

- Left turn lane warrants were evaluated at future site access intersections. No left turn lane warrants were met.

- All study intersections are expected to meet performance standards under all analysis scenarios.

- A queuing analysis showed queue lengths at the Molalla Avenue/Shared Business Driveway (Safeway) intersection are expected to exceed the available storage for the northbound left turning movement under both background and build conditions in the p.m. peak hour. The 95th percentile queue is expected to exceed the available storage by only one vehicle in the p.m. peak hour only. No mitigation is recommended at this time.

SITE PLAN REVIEW

- The TIA does not address the proposed site plan's compliance with access spacing standards or sight distance standards.

- The TIA does not address the proposed development's pedestrian/bicycle routes to the nearest schools in consideration of safe routes to school.

- The TIA does not discuss the project's internal vehicle, pedestrian, and bicycle circulation.

RECOMMENDED TIA REVISIONS AND CONDITIONS OF APPROVAL

The following conditions of approval are recommended based on a review of the TIA and site plan:

GENERAL DEVELOPMENT PLAN CONDITIONS

- Since the TIA assumes a reduction in vehicle trips due to internal trip capture that would occur as walking and/or biking trips, the TIA shall be revised to discuss the project's internal pedestrian and bicycle circulation needs and how the site plan adequately accommodates active modes.

- Minimum AASHTO sight distance requirements shall be met at all site intersections and driveways. Sight distances on the internal local street system shall be approved by the City Engineer prior to final site plan approval.

- A proportionate share fee contribution of $404 per p.m. peak hour trip shall be collected for planned improvements at OR-213/Beavercreek Road. The fee amount will be determined as part of future detailed development plan applications.
- A transportation system development charge, associated with the Molalla Avenue Corridor SDC Special Location Discount Area, of $6,474 per dwelling unit shall be collected based on the number of multi-family dwelling units constructed. The fee amount will be determined as part of future detailed development plan applications.
- Both the October 2025 and March 2026 versions of the study finds that the existing transportation system will adequately accommodate the proposed master plan uses. The October 2025 analysis included the proposed Trader Joe's grocery store that represents reasonable worst-case development for that parcel.
- Upon development opening, short-term traffic operations will likely exceed the study's reported operations, which may result in traffic congestion and concerns regarding vehicle queuing. This will be addressed in future detailed development plan applications.

STREET IMPROVEMENT CONDITIONS

- The new public street connection shall be constructed as a city collector street with a modified cross-section standard including dedicated bike lanes, sidewalks, center turn lane and street trees. The design of the facility shall be approved by the City Engineer.
    - The proposed three-lane section along the project frontage shall extend from Molalla Avenue beyond the commercial accesses and transition to a two lane section east of the commercial accesses toward Beavercreek Road.

FUTURE DETAILED DEVELOPMENT PLAN CONDITIONS

- Transportation impact studies will be required for future detailed development plan applications for each parcel and used to write additional conditions of approval. They will include items such as:
    - The TIA shall be revised to include a discussion of the proposed site plan's compliance with access spacing standards, sight distance standards, and safe pedestrian/bicycle routes to school. These elements are required in the Oregon City TIA Guidelines.[3] The site plan shall meet the city's transportation standards and requirements.
    - The City may require a traffic management plan to help mitigate short-term traffic operational concerns related to the drive-through restaurant's opening.

[3] https://www.orcity.org/1164/Guidelines-for-Transportation-Impact-Ana

Christina Robertson-Gardiner

From: Rocky Younger <dalesauto@hotmail.com>
Sent: Friday, March 13, 2026 3:40 PM
To: Christina Robertson-Gardiner
Subject: Re: Easement

Categories: Red Category

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

I would like to have my easement agreements entered as a staff report that I would have the right for public record discussion one on the road agreement and two on the easement agreement that extends down hilltop Avenue along the property line between (wallmart) and myself Rocky Younger

---

From: Rocky Younger <dalesauto@hotmail.com>
Sent: Thursday, March 12, 2026 7:32 PM
To: Christina Robertson-Gardiner <crobertson@orcity.org>
Subject: Re: Easement

This is a recorded easement agreement between wall mart and Rocky younger I would like you to call me and talk about this I fined that drowings do not show this being done , I reserve the right to object , we need to further discuss this issue before public herring 503 656 2010 thanks rocky

---

From: Rocky Younger <dalesauto@hotmail.com>
Sent: Thursday, February 5, 2026 1:25 PM
To: Christina Robertson-Gardiner <crobertson@orcity.org>
Subject: Re: Easement

Thank you

From: Christina Robertson-Gardiner <crobertson@orcity.org>
Sent: Thursday, February 5, 2026 12:04 PM
To: dalesauto@hotmail.com <dalesauto@hotmail.com>
Subject: Easement

Hi Rocky,

I have a call with our attorney this afternoon. Hold off on having your attorney contact her until I talk to her- I will let you know if I need additional information from you. I will send a follow-up email.

It was good seeing you today 😊

Missy Ryan
Bateman◊Seidel
Bateman Seidel Miner Blomgren Chellis & Gram, P.C.
1000 SW Broadway, Suite 1910
Portland, OR 97205

(971) 480-7080 (cell)
mryan@batemanseidel.com

Christina Robertson-Gardiner (she/her)
Senior Planner
crobertson@orcity.org
Oregon City Planning Department
695 Warner Parrot Road
Oregon City, Oregon 97045
503-496-1564 Direct
503-722-3789 Main
https://www.orcity.org/Planning

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201 East Washington, Suite 800
Phoenix, Arizona 85004-2327

Oregon City, OR #5053-00

EASEMENT

This Easement ("Easement") is made this 30th day of SEPT, 2004, by and between **ROCKY C. YOUNGER and JANICE C. YOUNGER** (collectively, "Grantor"), and **WAL-MART STORES, INC.**, a Delaware corporation ("Wal-Mart").

RECITALS

Grantor is the owner of certain real property legally described on ***Exhibit "A"*** attached hereto (the "Grantor Property"), a portion of which is depicted as the construction easement on ***Exhibit "C"*** attached hereto and incorporated herein by this reference (the "Easement Property");

Wal-Mart owns the certain real property contiguous to the Easement Property as legally described on ***Exhibit "B"*** attached hereto (the "Wal-Mart Property");

Wal-Mart has requested that Grantor grant Wal-Mart an easement over the Easement Property.

NOW, THEREFORE, in consideration of the premises and promises contained herein, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties agree as follows:

AGREEMENTS

1. Accuracy of the Recitals. The parties hereby acknowledge the accuracy of the Recitals.

2. Grant of Easement. Grantor hereby grants and conveys to Wal-Mart a non-exclusive easement (the "Easement") in the area depicted on Exhibit "B" over, on and under the Easement Property for the purpose of constructing and thereafter maintaining a retention wall on the Wal-Mart Property and a new screening fence along the Grantor Property to replace the existing fence, all in connection with Wal-Mart's development of a retail facility on the Wal-Mart Property.

3. Clean-Up. Wal-Mart agrees that it will clean-up, restore and return the Easement Property, and any area of the Grantor Property that may be changed, altered or

FIDELITY NATIONAL TITLE CO.
This instrument filed for record by Fidelity National Title as an accommodation only. It has not been examined as to its execution or as to its effect upon the title.

01-11167-C

affected by Wal-Mart's use of the Easement Property, to the condition that existed prior to Wal-Mart's use thereof under this Easement, including without limitation removing any piles of dirt and debris.

4. Indemnification. Wal-Mart hereby defends, indemnifies and holds Grantor harmless from and against all claims, proceedings, lawsuits, injuries, deaths, demands, losses, liabilities, fines, penalties, judgments, liens, awards, damages, costs, and expenses (including without limitation reasonable attorney's fees) arising out of Wal-Mart's exercise of the rights under this Easement and Wal-Mart's use, operation, maintenance and repair of the Easement Property, exclusive of any claims arising out of or in any way related to the negligent acts, omissions or willful misconduct of Grantor.

5. Running With the Land/Binding Effect. The Easement granted herein shall be appurtenant to and run with the land. This Easement shall be binding upon and inure to the benefit of the parties hereto and their respective successors and assigns.

6. Counterparts. This Easement may be executed in one or more counterparts, each of which in the aggregate shall constitute one and the same instrument.

IN WITNESS WHEREOF, the parties have executed this Easement as of the date and year first written above.

WAL-MART STORES, INC., a Delaware corporation

By _____

Its Assistant Vice President

By Rocky C. Younger
ROCKY C. YOUNGER

By Janice C. Younger
JANICE C. YOUNGER

CMM:sjr 548938.01

February 18, 2026

Owner: Rocky Younger
Address: PO Box 1227

Housing Authority of
Clackamas County

Tenant ID: *0000125

affected by Wal-Mart's use of the Easement Property, to the condition that existed prior to Wal-Mart's use thereof under this Easement, including without limitation removing any piles of dirt and debris.

4. Indemnification. Wal-Mart hereby defends, indemnifies and holds Grantor harmless from and against all claims, proceedings, lawsuits, injuries, deaths, demands, losses, liabilities, fines, penalties, judgments, liens, awards, damages, costs, and expenses (including without limitation reasonable attorney's fees) arising out of Wal-Mart's exercise of the rights under this Easement and Wal-Mart's use, operation, maintenance and repair of the Easement Property, exclusive of any claims arising out of or in any way related to the negligent acts, omissions or willful misconduct of Grantor.

5. Running With the Land/Binding Effect. The Easement granted herein shall be appurtenant to and run with the land. This Easement shall be binding upon and inure to the benefit of the parties hereto and their respective successors and assigns.

6. Counterparts. This Easement may be executed in one or more counterparts, each of which in the aggregate shall constitute one and the same instrument.

IN WITNESS WHEREOF, the parties have executed this Easement as of the date and year first written above.

WAL-MART STORES, INC., a Delaware corporation

By _____

Its Assistant Vice President

MBA

By _____
ROCKY C. YOUNGER

By _____
JANICE C. YOUNGER

Approved as to legal terms only
by George Bacso
WAL-MART LEGAL DEPT.
Date: 9-29-04

PO Box 1337
Oregon City, OR 97045

Tenant I

RE: Inspection of property located at: 472 [illegible]

State of Arkansas

County of Benton

The foregoing instrument was acknowledged before me this 24th day of September, 2004, by Michael E. Gardner an Assistant Vice President of Wal-Mart Stores, Inc., a Delaware corporation, on behalf of the corporation.

[1](Seal and Expiration Date)

Jane Bennett
County of Benton
Notary Public - Arkansas
My Commission Exp. 03/13/2012

Jane Bennett
Notary Public

State of OREGON

County of MULTNOMAH

SEPT, 2004, by Rocky C. Younger. The foregoing instrument was acknowledged before me this 30TH day of

(Seal and Expiration Date)

OFFICIAL SEAL
ANGELA E. MICHELSEN
NOTARY PUBLIC-OREGON
COMMISSION NO. 367464
MY COMMISSION EXPIRES APRIL 8, 2007

Angela E. Michelsen
Notary Public

State of OREGON

County of MULTNOMAH

SEPT, 2004, by Janice C. Younger. The foregoing instrument was acknowledged before me this 30TH day of

(Seal and Expiration Date)

OFFICIAL SEAL
ANGELA E. MICHELSEN
NOTARY PUBLIC-OREGON
COMMISSION NO. 367464
MY COMMISSION EXPIRES APRIL 8, 2007

Angela E. Michelsen
Notary Public

Address:
PO Box 1337

Tenant ID: t0000

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nas

EXHIBIT "A"

Legal Description of Grantor Property

LOTS 2, 3, 4, 5, 6, 7, 8, and 9 BLOCK 1, HILLTOP ACRES, IN THE CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON.

M:sjr 548938.01

EXHIBIT "B"

Legal Description of Wal-Mart Property

A TRACT OF LAND SITUATED IN THE SOUTHWEST 1/4 AND THE SOUTHEAST 1/4 OF SECTION 5, TOWNSHIP 3 SOUTH, RANGE 2 EAST, WILLAMETTE MERIDIAN, CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON. SAID TRACT IS MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT A THREE INCH BRASS DISK SET BY THE OREGON STATE HIGHWAY DEPARTMENT IN THE CENTERLINE OF MOLALLA AVENUE (FORMERLY STATE HIGHWAY NO. 213) AT ENGINEER'S STATION 31+00; THENCE SOUTH 73°27'47" EAST A DISTANCE OF 289.83 FEET TO THE NORTHWEST CORNER OF THAT TRACT DESCRIBED IN FEE NO. 96-010378, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SAID POINT ALSO BEING ON THE SOUTHERLY RIGHT-OF-WAY LINE OF HILLTOP AVENUE; THENCE ALONG THE WESTERLY LINE OF SAID TRACT, SOUTH 27°39'59" EAST A DISTANCE OF 104.03 FEET TO THE SOUTHWEST CORNER OF SAID TRACT, AND BEING THE TRUE POINT OF BEGINNING; THENCE ALONG THE NORTHERLY LINE OF THOSE TRACTS DESCRIBED IN FEE NO. 72-08888 AND FEE NO. 69-09411, NORTH 78°20'26" EAST A DISTANCE OF 846.78 FEET TO THE COMMON CORNER OF THOSE LANDS DESCRIBED IN FEE NO. 69-09411, FEE NO. 95-073144 AND FEE NO. 96-010376, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE ALONG THE SOUTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-010376, DEED RECORDS, CLACKAMAS COUNTY, NORTH 67°47'51" EAST A DISTANCE OF 59.75 FEET TO THE COMMON CORNER OF THOSE LANDS DESCRIBED IN FEE NO. 96-010376 AND FEE NO. 96-007471, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE CONTINUING ALONG THE WESTERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-007471, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 14°26'42" EAST A DISTANCE OF 407.81 FEET TO THE COMMON CORNER OF THOSE LANDS DESCRIBED IN FEE NO. 69-09411, FEE NO. 96-007471, AND FEE NO. 96-046001, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE CONTINUING ALONG THE COMMON LINE OF THOSE LANDS DESCRIBED IN FEE NO. 96-046001 AND FEE NO. 96-007471, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 88°29'47" EAST A DISTANCE OF 62.63 FEET; THENCE SOUTH 23°58'58" EAST A DISTANCE OF 133.44 FEET TO THE SOUTHEASTERLY CORNER OF THAT TRACT DESCRIBED IN FEE NO. 96-046001, DEED RECORDS, CLACKAMAS COUNTY, OREGON; THENCE CONTINUING ALONG THE SOUTHERLY LINE OF SAID TRACT, AND ALONG THE NORTHERLY LINE OF THOSE LANDS DESCRIBED IN FEE NO. 98-044696 AND FEE NO. 99-004122, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 76°38'35" WEST A DISTANCE OF 125.26 FEET; THENCE ALONG SAID SOUTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 96-046001, AND THE NORTHERLY LINE OF THAT TRACT DESCRIBED IN FEE NO. 95-045260, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 76°19'45" WEST A DISTANCE OF 45.33 FEET; THENCE ALONG SAID SOUTHERLY LINE, AND THE NORTHERLY LINE OF THOSE LANDS DESCRIBED IN FEE NO. 92-21067, FEE NO. 97-004501, AND FEE NO. 98-041108, DEED RECORDS, CLACKAMAS COUNTY, OREGON, SOUTH 76°29'26" WEST A DISTANCE OF 750.61 FEET TO A POINT IN THE NORTHEASTERLY RIGHT-OF-WAY OF BEAVERCREEK ROAD (MARKET

EXHIBIT C

Depiction of Easement Property

FEE NO. 97-021414
ACRES
LOT 2
BLOCK 2
TRUE POINT OF BEGINNING
50' FOX LANE
FEE NO. 96-004255
LOT 1
FEE NO. 98-019838
BLOCK 3
LOT 9
50' OTTER LANE
LOT 1
LOT 7
LAVER LANE
LOT 1
64.66'
(64.52')(20)
S 21°45' E
463.7'
61.10'
(60.69')(20)
(101.15')(20)
76.97'
(77.04')(20)
N 78°20'55" E
174.64'
60'
333.81'
N 78°23'01" E
192.31' (192.40')(20)
BLOCK 1
FEE NO. 95-073144
LOT 9
FEE NO. 98-008260
LOT 8
FEE NO. 98-019128
LOT 7
FEE NO. 97-073257
LOT 6
FEE NO. 96-015307
LOT 5
333.49' (333.40')(20)
LOT 4
FEE NO. 97-086738
FEE NO. 98-053719
66.76' (66.7')(20)
218.20' (218.31')(20)
60' HILLTOP AVENUE
267.73' (287.73')(20)
LOT 2
FEE NO. 98-010378
(150.74)(20)
100.00' (100.0')(20)
104.03' (117.70')(20)
S 62°42'28" E
65' (24.02')(21)
LOT 1
LOCK 1
WOOD FENCE
CHAINLINK FENCE
N 78°20'25" E
607.74'
(607.74')(20)
846.78'
WOOD & WIRE FENCE
17' CONSTRUCTION EASEMENT
SHEET METAL FENCE
DEED LINE IS FOR INFORMATION ONLY. UPON REVIEW OF THE SURVEY RECORDS AND INTENT OF FEE 69-09411, WE BELIEVE THE WESTERLY LINE OF FEE 96-007471 TO BE THE CORRECT EAST BOUNDARY OF THE LETHA A. YOUNGER PROPERTY.
DEED LINE N 21°45' W
N 27°39'59" W
73.67'
CONSTRUCTION RESTRICTION PER FEE NO. 81-19230
FEE NO. 97-022793
176.19'
N 78°20'26" E
(178.19')(21)
50'
N 62°36'28" E
5.00'
FEE NO. 72-08888
S 88°29'47" E
120.00'
S 12°38'23" E
110.72'
S 12°38'23" E
120.00'
FEE NO. 69-09411
FEE NO. 81-19662
10.28'
EASEMENT FOR ROAD PURPOSES RECORDED IN FEE NO. 82-14415
N 88°29'47" W
653.92'
N 88°29'47" W
771.22'
322.38'
N 62°36'28" E
15.00'
S 88°29'47" E
39.98'
EASEMENT FOR RIGHT-OF-WAY RECORDED AS SUIT NO. CCV96-09-321 DEC. 20, 1996
SEE DETAIL 'C' SHEET 2 OF 2
S 88°29'47" E
1156.21'
S 62°36'28" W
15.00'
Δ = 00°40'05"
307.30'
N 27°23'32" W
(N)
560,272 SQUARE FEET
12.862 ACRES

YOUNGER PROPERTIES
CONSTRUCTION EASEMENT EXHIBIT
1" = 100'
09-27-2004

Oregon
Tina Kotek, Governor

Department of Transportation
Transportation Region 1
123 NW Flanders St.
Portland, OR 97209-4012
(503) 731-8200
Fax: (503) 731-8259

March 17, 2026 ODOT # 13637

ODOT Formal Response

Project: Oregon City Mixed Use General Development Plan	**Site Address:** 1367 Molalla Avenue
Jurisdiction: City of Oregon City	**Applicant:** Cypress Acquisitions, LLC
Jurisdiction Case #: GLUA-25-00025: CU-25-00001, MAS-25-00001, PARK-25-00001 (Master Plan) MAS-25-002_GEO-25-007_NROD-25-012 (Detailed Development Plan)	

The site of this proposed land use action is in the vicinity of OR 213 interchange. ODOT has permitting authority for this facility and an interest in ensuring that this proposed land use is compatible with its safe and efficient operation.

These comments, standards, and requirements are current as of the date of this letter. If the project scope and/or timeline is modified, the applicant should contact the ODOT Region 1 Development Review program (ODOT_R1_DevRev@odot.oregon.gov). Updated comments may be necessary.

LAND USE PROPOSAL

ODOT was notified of a land use application submitted to City of Oregon City for a proposed masterplan impacting tax lots 3200, 3201, 3300, 3400, 500, 501, and 602. The formal city notice includes the following project description:

> *"Proposed Master Plan to create development parcels for future development, along with a Conditional Use Review for two future drive-throughs and a Parking Adjustment to allow above the maximum parking requirements on two of the commercial parcels, along with a Detailed Development Plan for the construction of a new public street and associated infrastructure."*

COMMENTS/FINDINGS

ODOT understands the master plan proposes retail development on Parcel A, multi-family residential development on Parcel B, a new public street on Parcel C, and a quick-serve restaurant on Parcel D. Today, ODOT attended a pre-application conference (PA-26-00002) held March 11, 2026 for the proposed construction of a drive through restaurant on proposed Parcel D.

Traffic Impacts

As part of the materials provided to ODOT, ODOT received a copy of a Traffic Impact Study (TIS) prepared by Transpo Group, dated October 2025. ODOT has reviewed the TIS and supports its recommendation for the project to contribute its pro-rata share at the OR-213/Beavercreek Road intersection toward the City's Transportation System Plan (TSP) projects (construction of a westbound right-turn, merge lane at the OR-213/Beavercreek Road intersection).

ODOT RECOMMENDED CONDITIONS OF APPROVAL FOR LOCAL JURISDICTION

Traffic Impacts

☒ The applicant shall contribute proportional share contributions for the intersection improvements at OR 213/Beavercreek Road.

ADVISORY INFORMATION

Permits and Agreements to Work in State Highway Right of Way

☒ An ODOT Miscellaneous Permit must be obtained for all work in the State highway right of way. If applicable, contact the District Contact indicated below to determine permit requirements and to obtain application information.

Note: All ODOT permits and approvals must reach 100% plans before the District Contact signs off on a local jurisdiction building permit or other necessary requirements before construction.

Contact the ODOT Development Review Planner identified below for further coordination or questions regarding ODOT comments and requirements during the land use process.

Please send a copy of the Notice of Decision/Staff Report with conditions of approval to:
ODOT_R1_DevRev@odot.oregon.gov

Development Review Planner: Melissa Gonzalez	Melissa.GONZALEZ-GABRIEL2@odot.oregon.gov
Traffic Contact: Avi Tayar, P.E.	Abraham.TAYAR@odot.oregon.gov
District Contact: District 2B	d2bup@odot.oregon.gov

Metro

600 NE Grand Ave.
Portland, OR 97232-2736
oregonmetro.gov

503-797-1600
Fax: 503-797-1792
gary.shepherd@oregonmetro.gov

Gary Shepherd, Senior Attorney

March 20, 2026

Oregon City Community Development
Oregon City Planning Commission
695 Warner Parrott Road
Oregon City, OR 97045
planning@orcity.org

RE: **GLUA-25-00025**: **MAS-25-002_GEO-25-007_NROD-25-012**
(Detailed Development Plan to build a new public street and associated infrastructure) &
GLUA-25-00025: **CU-25-00001, MAS-25-00001, PARK-25-00001**
(Master Plan to create development parcels for future development)

Dear Oregon City Community Development and Oregon City Planning Commission:

Respectfully, Metro submits the following comments responding to the above-referenced Development and Master Plan applications before the City. Please include this letter and attachments in the record of these proceedings.

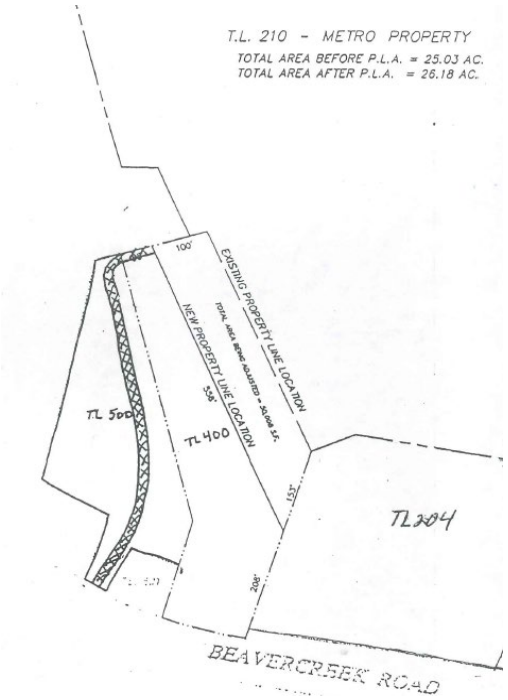
Metro is generally supportive of the Development Proposal and Master Plan. However, there are three matters of concern that warrant further discussion and require resolution: 1) The adverse impact to Metro's access rights, 2) Geological hazards, and 3) Storm water discharge.

Metro's Easement

The new public street plan and associated infrastructure proposed on TL 500 (the new southern access road – colored lavender in the Site Plan) adversely impacts Metro's recorded access easement rights. Metro is a dominant interest holder. TL 500, owned by Mr. Younger, is the servient estate. The project contemplates the City taking ownership and maintenance responsibility of the street from the servient estate.

In 1998, Metro acquired an easement to secure perpetual access to the southern portion of its Newell Creek Canyon Nature Park and Natural Area. The easement, attached, is recorded in Clackamas County records as Document No. 98-044697. The easement area is a 15 ft. wide strip of land taking access from Beavercreek Road, running north through the Younger property, turning east at TL 500's northern property line (the southern property line of the Walmart property) and crossing Younger's TL 401 to Metro's TL 210. Below is a depiction of the easement area.

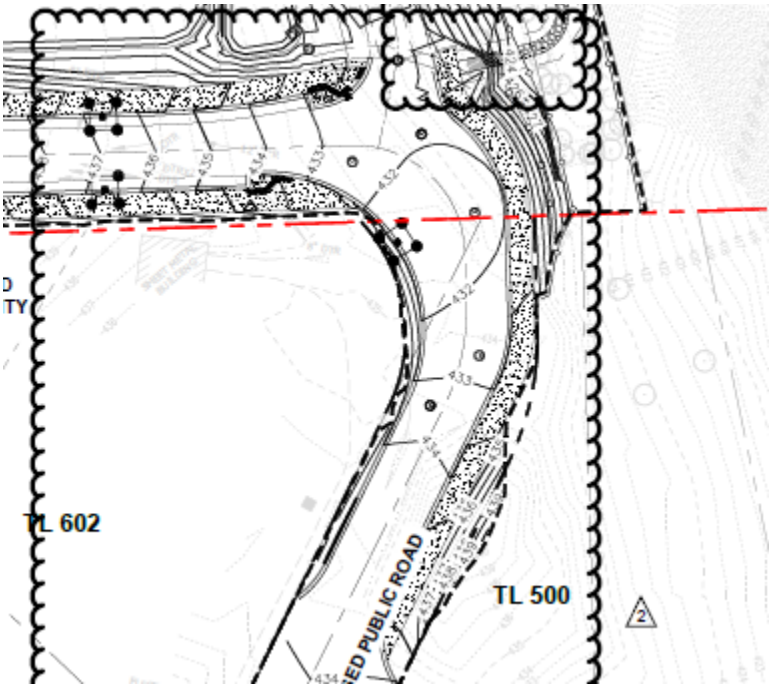
The easement is associated with a 1998 City approved property line adjustment, providing needed access to Metro property.



A Metro gate is located at the end of the easement area, adjacent to the northeast corner of TL 400, as depicted above. The access easement is generally utilized by Metro for land management and maintenance purposes, supporting Metro and contractor vehicles and equipment. The access easement is also utilized by Metro to support construction and other improvement projects in the park and natural area. Below is an aerial image of the Younger property and Metro property, with the gate location depicted.



The image below is a caption of the proposed public street on TL 500 as it turns onto the Walmart property. Metro's property is to the east (right), with its western line represented by the grey north-south line, to the right of the squiggly line on the right side. As depicted in the image below, the public street development plan does not recognize, protect, or provide suitable alternative access for Metro.



Metro acknowledges the easement allows the servient estate holder to relocate the easement area, however, that right can only be invoked if the remainder of Younger's property is being redeveloped. The subject proposal does not represent redevelopment of the remainder of the Younger property. It only represents a public road over a portion of the property. Additionally, if the first condition is triggered, Metro must be consulted, suitable alternative access proposed, and its permission obtained. In this matter, Metro has not been consulted, and its permission has not been requested or given. To demonstrate compliance with applicable criteria, the application routinely refers to an agreement between the developer and the owner of TL 500. However, Metro, the dominant interest holder, is not a party to that agreement. As proposed, the street improvements would obstruct Metro's access by installing a curb, multi-use path, street trees, and inaccessible graded slopes. As such, Metro objects to its dominant real property interests being adversely impacted by the proposed public street proposal.

As this relates to Oregon City Code, street design and driveway spacing and approaches are governed by OCC § 12.04.170 and OCC Chapter 16.12, including § 16.12.035. Metro has not been presented with any plans that would accommodate Metro's access easement interests. To accommodate Metro's access rights, the street plan must be redesigned to include a code compliant driveway approach, with grades and

surfaces that support access. Since the plans must change, it would be premature for the City to find the application in compliance with street design standards. Additionally, § 12.04.170 provides:

> "All streets and driveway connections to another jurisdiction's facility or right-of-way must be reviewed by the appropriate jurisdiction as a condition of the preliminary plat or site planning and when required by law or intergovernmental agreement shall be approved by the appropriate jurisdiction."

Metro is a municipal corporation – another jurisdiction. Metro's facilities are adversely impacted by the proposal. Metro has not been consulted. The procedures and requirements in § 12.04.170 have not been followed. The application identifies § 12.04.170 as applicable but does not include any findings of compliance supported by substantial evidence.

Geological Hazards

The second issue of general concern is the proposal to locate the public easement and improved pathway within the geological hazard area. OCC § 17.44.060 requires developments to "be designed to avoid unnecessary disturbance of natural topography." The review standard is "to the maximum extent practicable." The proposal does not meet this and related standards.

Applicants do not avoid unnecessary disturbances. Applicant proposes to locate the public path within a regulated Geological Hazard area – an area its Geological engineer mapped as highly susceptible to deep landslides, when alternatives exist. *See* Stormwater report, Appendix A, Terracon Geotechnical Report – Figure 6. Additionally, Applicant proposes a disturbance in a high-risk area in part to accommodate its adjustment request to include additional on-site parking – above the maximum allowed by City Code. While there is ample room on site to locate this public easement and improvement outside the geological hazard and high-risk area, Applicant proposes to prioritize additional on-site parking. Above maximum allowed parking should not displace land protection requirements and direct that public facilities are sited in high-risk environments.

As we have seen, area slopes are subject to large scale landslides and slumps. These movements often impact property above the top of slope, thus the need to site infrastructure, both public and private, away from the risk. Several dozen area landslides have been documented. We can look just to the south and Forest Edge Apartments (Newell Creek) for example. While Applicant proposes to protect its investment above a Soldier Pile Wall drilled deep down to bedrock, it would leave the City and the public with an improvement that is not so protected. Moving land disturbances and improvements away from these sensitive slopes should be a primary objective of both the City and Applicant.

The Master Plan also proposes to construct the public path below a long, significant retaining wall, away from site development. As the City is aware, the Walmart property, as

well as the Younger and Metro properties, have had to manage and recover from transient encampments for many years now. Significant damage to real property and natural resources has occurred. The Applicant acknowledges this burden by proposing no on-street parking for the two public roads. This appears to be done with City transportation department support. *See* pages 27 and 28 of the DDP application submission. However, the Master Plan proposes to enhance transient encampment conditions with a public pathway, located out of sight. The very impacts that Applicant is trying to avoid would instead be passed to the City and Metro to manage. The City, Metro, and the public would be better served by a public path that is located further away from the steep slopes and natural area, and more integrated into site development. The proposed pathway location also represents a *significant health and safety concern* to users as it is hidden away below a significant retaining wall. Again, this is another risk created by the proposal's path location that can and should be avoided. The City has the discretion and review authority to require as much.

Storm water discharge

Applicant proposes to collect all the storm water from the vast majority of the site, treat it, direct the water to the southeast portion of the site, and connect to an existing City facility that discharges water onto Metro property. Applicant also proposes that the stormwater from the public street would not be treated, but rather discharged directly into the system. The proposal would increase the quantity of water that would naturally discharge onto Metro property. Metro also has quality concerns. The proposed discharge point is near the headwaters of Newell Creek and Metro property. The creek flows for miles through Metro natural area to its confluence with Abernathy Creek. Both creeks support critical habitat for ESA listed species. Pervading the proposal is the assumption that the discharge and eventual storage and disposal of the development's water is permitted on Metro property. Since Applicant cannot or is otherwise choosing not to handle and infiltrate its own storm water on-site, Applicant must demonstrate that public services, including storm-water disposal, are available to serve the development. OCC § 17.65.050.

Metro understands that the City has a NPDES municipal storm system permit to discharge to waters of the state. If the development's storm water is collected through City pipes and permitted outfall facilities discharging directly into Newell Creek, then Metro has no concern. However, that does not seem to be the case. The application says storm water will be collected and directed to an outfall on TL 500. TL 500 is not adjacent to Newell Creek. Metro property is located between TL 500 and Newell Creek. Collected and directed storm water cannot be discharged overland across Metro property to get to the state water way without permission. Metro is not aware of anything in the record that demonstrates permission or the right to discharge the site's development storm water on or through Metro property to get to Newell Creek.

Thank you for your time and consideration of our concerns.

Sincerely,



Gary Shepherd
Senior Attorney
Office of Metro Attorney

CC: Christina Robinson-Gardiner, Senior Planner: crobertson@orcity.org

Cypress Acquisitions LLC
8144 Walnut Hill Land, Suite 1200
Dallas, TX 75231

Walmart Inc.
2608 SE J St.
Bentonville, AR 72716-5510

Rocky Younger
P.O. Box 1337
Oregon City, OR 97045

Les Schwab
20900 Cooley Road
Bend, OR 97701

FORM No. 926 – EASEMENT. COPYRIGHT 1996 STEVENS-NESS LAW PUBLISHING CO., PORTLAND, OR 97204

NS

OREGON TITLE INS. CO. SCOKUC

EASEMENT

Between

Rocky E. Younger
1367 Molalla Avenue
Oregon City OR 97045

And

Metro
600 NE Grand Avenue
Portland OR 97232

After recording, return to (Name, Address, Zip):

Metro - Attn: April Olbrich
600 NE Grand Avenue
Portland OR 97232

SPACE RESERVED FOR RECORDER'S USE

STATE OF OREGON,
County of _____ } ss.

I certify that the within instrument was received for record on the _____ day of _____, 19____, at _____ o'clock _____M., and recorded in book/reel/volume No. _____ on page _____ and/or as fee/file/instrument/microfilm/reception No. _____, Records of said County.

Witness my hand and seal of County affixed.

_____ NAME _____ TITLE

By _____, Deputy.

THIS AGREEMENT made and entered into this _____ day of May, 1998, by and between Rocky E. Younger, hereinafter called the first party, and Metro, a municipal corporation, hereinafter called the second party, WITNESSETH:

WHEREAS: The first party is the record owner of the following described real property in Clackamas County County, State of Oregon, to-wit:

See Exhibit A, attached.

and has the unrestricted right to grant the easement hereinafter described relative to the real estate.

NOW, THEREFORE, in view of the premises and in consideration of $ other value given by the second party to the first party paid, the receipt of which is acknowledged by the first party, it is agreed:

The first party hereby grants, assigns and sets over to the second party an easement, to-wit:

owner of the property described in Exhibit B, attached hereto.

See Exhibit C, attached, a 15 foot wide access easement, providing legal access to Metro's property described in Exhibit B.

Metro intends to maintain the property described in Exhibit B in its natural state pursuant to the Greenspaces Master Plan, which maintenance may include suppressing growth of exotic and nuisance plant species. Younger intends to landscape a portion of the property adjacent to Metro's property and would like Metro to maintain Younger's border so that exotic and nuisance plant species at the border are kept at a minimum.

98-044697

(Insert a full description of the nature and type of easement granted by the first party to the second party.)

(OVER)

The second party shall have all rights of ingress and egress to and from the real estate (including the right from time to time, except as hereinafter provided, to cut, trim and remove trees, brush, overhanging branches and other obstructions) necessary for the second party's use, enjoyment, operation and maintenance of the easement hereby granted and all rights and privileges incident thereto.

Except as to the rights herein granted, the first party shall have the full use and control of the above described real estate.

The second party agrees to save and hold the first party harmless from any and all claims of third parties arising from the second party's use of the rights herein granted.

The period of this easement shall be perpetual, always subject, however, to the following specific conditions, restrictions and considerations:

Younger may relocate the easement upon development of the remainder of Younger's property, described in Exhibit A, so long as the relocated easement is 15 feet wide, insurable and provides similar ease of access to Metro's property, described in Exhibit B. Metro shall have the right to approve the relocation of the easement, which approval shall not be unreasonably withheld.

If this easement is for a right of way over or across the real estate, the center line of the easement is described as follows:

and the second party's right of way shall be parallel with the center line and not more than _____ feet distant from either side thereof.

During the existence of this easement, maintenance of the easement and costs of repair of the easement, if damaged by natural disasters or other events for which all holders of an interest in the easement are blameless, shall be the responsibility of (check one): ☒ the first party; ☐ ~~the second party;~~ ☐ ~~both parties, share and share alike;~~ ☐ ~~both parties, with the first party responsible~~ for _____% and the second party responsible for _____%. ~~(If the last alternative is selected, the percentages allocated to each party should total 100.)~~

During the existence of this easement, holders of an interest in the easement who are responsible for damage to the easement because of negligence or abnormal use shall repair the damage at their sole expense.

This agreement shall bind and inure to the benefit of, as the circumstances may require, not only the parties hereto but also their respective heirs, executors, administrators, assigns, and successors in interest.

In construing this agreement, where the context so requires, the singular includes the plural and all grammatical changes shall be made so that this agreement shall apply equally to individuals and to corporations. If the undersigned is a corporation, it has caused its name to be signed and its seal, if any, affixed by an officer or other person duly authorized to do so by its board of directors.

IN WITNESS WHEREOF, the parties have hereunto set their hands in duplicate on the day and year first written above.

Rocky Younger

FIRST PARTY

STATE OF OREGON, County of MULTNOMAH) ss.

This instrument was acknowledged before me on MAY 20, 1998,

by ROCKY YOUNGER.

This instrument was acknowledged before me on _____, 19 ____,

by _____

as _____

of _____.

OFFICIAL SEAL
GARY L. DE SALVO
NOTARY PUBLIC-OREGON
COMMISSION NO. 045678
MY COMMISSION EXPIRES AUG. 9, 1999

Notary Public for Oregon

My commission expires 8-9-99

SECOND PARTY

STATE OF OREGON, County of _____) ss.

This instrument was acknowledged before me on _____, 19 ____,

by _____.

This instrument was acknowledged before me on _____, 19 ____,

by _____

as _____

of _____.

Notary Public for Oregon

My commission expires _____

The second party shall have all rights of ingress and egress to and from the real estate (including the right from time to time, except as hereinafter provided, to cut, trim and remove trees, brush, overhanging branches and other obstructions) necessary for the second party's use, enjoyment, operation and maintenance of the easement hereby granted and all rights and privileges incident thereto.

Except as to the rights herein granted, the first party shall have the full use and control of the above described real estate.

The second party agrees to save and hold the first party harmless from any and all claims of third parties arising from the second party's use of the rights herein granted.

The period of this easement shall be perpetual, always subject, however, to the following specific conditions, restrictions and considerations:

Younger may relocate the easement upon development of the remainder of Younger's property, described in Exhibit A, so long as the relocated easement is 15 feet wide, insurable and provides similar ease of access to Metro's property, described in Exhibit B. Metro shall have the right to approve the relocation of the easement, which approval shall not be unreasonably withheld.

If this easement is for a right of way over or across the real estate, the center line of the easement is described as follows:

and the second party's right of way shall be parallel with the center line and not more than _____ feet distant from either side thereof.

During the existence of this easement, maintenance of the easement and costs of repair of the easement, if damaged by natural disasters or other events for which all holders of an interest in the easement are blameless, shall be the responsibility of (check one): ☒ the first party; ☐ ~~the second party; ☐ both parties, share and share alike; ☐ both parties, with the first party responsible~~ for _____% and the second party responsible for _____ ~~%. (If the last alternative is selected, the percentages allocated to each party should total 100.)~~

During the existence of this easement, holders of an interest in the easement who are responsible for damage to the easement because of negligence or abnormal use shall repair the damage at their sole expense.

This agreement shall bind and inure to the benefit of, as the circumstances may require, not only the parties hereto but also their respective heirs, executors, administrators, assigns, and successors in interest.

In construing this agreement, where the context so requires, the singular includes the plural and all grammatical changes shall be made so that this agreement shall apply equally to individuals and to corporations. If the undersigned is a corporation, it has caused its name to be signed and its seal, if any, affixed by an officer or other person duly authorized to do so by its board of directors.

IN WITNESS WHEREOF, the parties have hereunto set their hands in duplicate on the day and year first written above.

_____

_____
FIRST PARTY

STATE OF OREGON, County of _____) ss.

This instrument was acknowledged before me on _____, 19 ____,

by _____

This instrument was acknowledged before me on _____, 19 ____,

by _____

as _____

of _____

_____
Notary Public for Oregon

My commission expires _____

METRO, a muncipal corporation

_____
SECOND PARTY

STATE OF OREGON, County of Multnomah) ss.

~~This instrument was acknowledged before me on _____, 19 ____,~~

~~by _____~~

This instrument was acknowledged before me on May 19, 1998,

by Mike Burton

as Executive Officer

of Metro, a muncipal corporation

OFFICIAL SEAL
V L APRIL OLBRICH
NOTARY PUBLIC-OREGON
COMMISSION NO. 305800
MY COMMISSION EXPIRES OCT 13, 2001

_____
Notary Public for Oregon

My commission expires 10-13-2001

EXHIBIT A

A tract of land in the Samuel Vance DLC No. 51 and being located in the southeast one quarter of Section 5, Township 3 South, Range 2 East, Willamette Meridian, being more particularly described as follows:

Beginning at a brass screw, set in concrete, on the northerly right of way line of Market Road No. 11, South Beavercreek Road, which is located North 39° 62' 50" East 46.20 feet from a 5/8 inch iron rod in a monument box at the point of intersection of the first curve on Market Road No. 11, Survey Record No. LP-060 supplemental map, and which is at the southerly end of the line established by Record Survey P.S. No. 21296, the official survey of judgment Order No. 79-6-427, Circuit Court of Clackamas County; thence North 18° 10' 05" East along the easterly side of the retaining wall, being the line of said judgment survey, 38.48 feet to an angle point; thence North 18° 57' 05" East 28.11 feet to a 5/8 inch iron rod set at the northerly end of said retaining wall; thence North 15° 44' 45" East 120.15 feet to a 2 inch iron pipe with a brass disc on top, marked David Evans and Associates, said point being point "A" mentioned in said judgment document and the north end of said judgment line; thence North 14° 42' 32" West along the easterly line of the Epperson property, 492.02 feet to a 5/8 inch iron rod with a yellow plastic cap on top, marked David Evans and Associates; thence South 74° 52' 24" West 45.35 feet to a 5/8 inch iron rod with a yellow plastic cap on top marked George Cathy L. S. 979; thence South 13° 05' 06" West along the agreement line document between Epperson and Les Schwab, et al, recorded as Fee No. 86-40212, Clackamas County Deed Records, 402.34 feet to a 5/8 inch iron rod with a yellow plastic cap on top, marked Kampe Associates, Inc. at the northwest corner of the Graham Stationary store tract recorded as Fee No. 86-31986, Clackamas County Deed Records; thence South 60° 51' 50" East along the northeasterly line of Fee 86-31986, 131.98 feet to a 5/8 inch iron rod with a yellow plastic cap on top marked Kampe Associates, Inc.; thence South 20° 58' 20" West along the easterly line of Fee 86-31986, 125.95 feet to a 5/8 inch iron rod with a yellow plastic cap on top, marked Kampe Associates, Inc., on the north line of a 10.00 foot wide strip of land conveyed to the City of Oregon City for road purposes, and recorded as Fee No. 86-34381, deed records of Clackamas County; thence Southeasterly around the arc of a 914.93 foot radius curve to the left, through a central angle of 2° 40' 14", an arc distance of 42.64 feet (the long chord of which is South 03° 25' 28" East 42.61 feet) to the westerly line of Fee 68-23282, Clackamas County Deed Records; thence South 19° 27' 28" West along the west line of Fee No. 68-23282, 10.05 feet to the northerly right of way line of Market Road No. 11; thence southeasterly around the arc of a 924.23 foot radius curve to the left, through a central angle of 6° 44' 57", an arc distance of 108.95 feet (the long chord of which is South 68° 11' 60" East 108.89 feet) to the brass screw at the point of beginning.

A tract of land located in the Samuel N. Vance Donation Land Claim No. 51 in Section 5, Township 3 South, Range 2 East of the Willamette Meridian, in the County of Clackamas and State of Oregon, described as follows:

Beginning at the Southeast corner of a tract of land conveyed to George C. Ely, by deed recorded June 4, 1877 in Book N, Page 401, Deed Records; thence North 25°30' West along the East line of said Ely tract, a distance of 255 feet to an iron pipe, said point being the true point of beginning of the tract herein to be described; thence continuing North 25°30' West along the Easterly corner of said Ely tract, a distance of 405 feet to a stone marking the most Northerly corner of a tract of land conveyed to Minnie S. McFee, by deed recorded October 30, 1951 in Book 450, Page 202, Deed Records; thence South 75° West following the Northerly line of said McFee tract, a distance of 160 feet to an iron pipe; thence South 15°10" East, a distance of 470 feet to an iron pipe, said point being Point A as established in conformance to judgment order entered November 4, 1982 and order confirming boundary Commission Report entered February 25, 1983 in Suit, Ruth C. Barber and Minnie S. McFee, plaintiffs vs. Robert Max Epperson and Margaret Joan Epperson, defendants, No. 79-6-427, Clackamas County Circuit Court; thence running along the said established line South 15°47'40" West, a distance of 120.08 feet to a 5/8 inch iron rod at a building corner; thence South 19° West along the most Easterly edge of the building and retaining wall, a distance of 28.16 feet to an angle point in the retaining wall; thence South 18°13' West along said Easterly edge of the building and retaining wall, a distance of 38.48 feet to the Northerly right of way line of the Beavercreek County Road; thence Southeasterly following the Northerly line of said road, a distance of 141.85 feet to the most Southerly corner of said McFee tract; thence North 19° East following the Easterly line of said McFee tract, a distance of 355.8 feet to the true point of beginning.

Together with:

PARCEL 1: A tract of land situated in the Southeast one-quarter of Section 5, Township 3 South, Range 2 East of the Willamette Meridian, in the County of Clackamas and State of Oregon, being more particularly described as follows, to-wit:

Beginning at a 5/8 iron rod at an angle point in the Westerly line of that certain tract of land conveyed to Breck Construction, Inc., Fee No. 79-32547, Deed Records, Clackamas County, Oregon, which iron rod is further identified as being North 25°30' West 255.00 feet from the Southeast corner of a tract of land described in Deed Book "N", Page 401, Clackamas County, Oregon. From said place of beginning; thence South 19°21'14" West 362.30 feet to a 5/8 inch iron rod in the Northerly right of way line of Market Road No. 11; (Beaver Creek Road); thence Easterly along said Northerly right of way line on a curve to the left having a radius of 924.93 feet through a central angle of 0°27'27" a distance of 7.38 feet to a 1/2 inch iron pipe at a point of tangent; thence South 81°21'30" East along said Northerly right of way line of Market Road No. 11 (Beaver Creek Road) 0.65 feet to a 5/8 inch iron rod; thence leaving said Northerly right of way line, North 18°06' East 360.82 feet (Description Exhibit "A" North 19°00' East 355.8 feet, more or less) to the place of beginning.

PARCEL 2: A parcel of land located in the Samuel N. Vance and wife Donation Land Claim No. 51 in Section 5, Township 3 South, Range 2 East, of the Willamette Meridian, in the County of Clackamas and State of Oregon, more particularly described as follows:

Beginning at a 5/8 inch iron rod set by Andy Paris in Private Survey (P.S.) No. 16481 for the Northeast corner of a tract of land conveyed by Eva H. Bennett, husband and wife to Minnie S. McFee as described in Book 450, Page 202 on the 20th of October 1951; thence South 83°26'40" West 159.53 feet to a 5/8 inch iron rod set by Norman N. Oleson in P.S. 15707 for the Northeast corner of the Epperson Parcel,

described in Book 546, Page 56 (Colton to Rippey September 26, 1958); thence South 9°37'30" East 23.53 feet to a 5/8 inch iron rod set by Andy Paris in Said P.S. 16481 for the same Northeast corner of the Epperson Parcel and the Northwest corner of said Book 450, Page 202; thence North 75°00'00" East 160.00 feet to the point of beginning of this description.

Excluding therefrom:

A TRACT OF LAND SITUATED IN THE SOUTHEAST 1/4 OF SECTION 5, T.3S., R.2E., W.M., CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A 5/8 INCH IRON ROD AT THE MOST EASTERLY CORNER OF THAT PARCEL OF LAND CONVEYED TO ROCKY YOUNGER BY WARRANTY DEED RECORDED UNDER FEE NUMBER 97-066827, CLACKAMAS COUNTY DEED RECORDS (SAID POINT BEING ALSO AN ANGLE POINT IN THE WESTERLY LINE OF PARCEL 3, PARTITION PLAT 1996-14, CLACKAMAS COUNTY PARTITION PLAT RECORDS); THENCE ALONG THE EAST LINE OF SAID YOUNGER PARCEL S.20°05'23"W., 147.64 FEET TO A 5/8 INCH IRON ROD WITH YELLOW PLASTIC CAP STAMPED "COMPASS CORP."; THENCE LEAVING SAID EAST LINE N.23°30'51"W., 553.56 FEET TO A 5/8 INCH IRON ROD WITH YELLOW PLASTIC CAP STAMPED "COMPASS CORP." ON THE NORTH LINE OF THE AFOREMENTIONED YOUNGER PARCEL; THENCE ALONG SAID NORTH LINE N.76°33'52"E., 103.42 FEET TO A 5/8 INCH IRON ROD WITH YELLOW PLASTIC CAP STAMPED "DEA" AT THE MOST NORTHERLY CORNER OF THE AFOREMENTIONED YOUNGER PARCEL (SAID POINT BEING ALSO AN ANGLE POINT IN THE WESTERLY LINE OF PARCEL 3, PARTITION PLAT 1996-14, CLACKAMAS COUNTY PARTITION PLAT RECORDS); THENCE ALONG THE EASTERLY LINE OF SAID YOUNGER PARCEL (BEING ALSO THE WESTERLY LINE OF PARCEL 3, PARTITION PLAT 1996-14) S.23°30'51"E., 428.55 FEET TO THE POINT OF BEGINNING CONTAINING 50,000 SQUARE FEET, MORE OR LESS.

EXHIBIT B

A TRACT OF LAND SITUATED IN THE SOUTHEAST 1/4 OF SECTION 5, T.3S., R.2E., W.M., CITY OF OREGON CITY, CLACKAMAS COUNTY, OREGON, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

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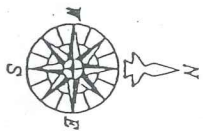
EXHIBIT C





TATE OF OREGON 98-044697
LACKAMAS COUNTY
eceived and placed in the public
ecords of Clackamas County
ECEIPT# AND FEE: 72965 $50.00
ATE AND TIME: 05/21/98 10:54 AM
OHN KAUFFMAN, COUNTY CLERK

8

Christina Robertson-Gardiner

From: Josh Wheeler
Sent: Monday, March 23, 2026 4:26 PM
To: Christina Robertson-Gardiner; Erik Nichols
Cc: Reah Flisakowski
Subject: RE: Request for Link to Testify at Planning Commission Hearing Tonight

Hello,

I tried calling Reah, but she was unavailable. See my response below in red.

Josh Wheeler, PE
Assistant City Engineer
jwheeler@orcity.org
City of Oregon City
PO Box 3040
13895 Fir Street
Oregon City, Oregon 97045
971-204-4634 Direct or phone & text
971-322-9745 Mobile
971-204-4601 Public Works General
www.orcity.org

PUBLIC RECORDS LAW DISCLOSURE: This e-mail is subject to the State Retention Schedule and may be made available to the public.

From: Christina Robertson-Gardiner <crobertson@orcity.org>
Sent: Monday, March 23, 2026 3:21 PM
To: Erik Nichols <enichols@orcity.org>; Josh Wheeler <jwheeler@orcity.org>
Cc: Reah Flisakowski <rlf@dksassociates.com>
Subject: FW: Request for Link to Testify at Planning Commission Hearing Tonight

This just came in today-

Does the city have a response to the comment I can add to my ppt.?

CRG

From: mike ard <mike.ard@gmail.com>
Sent: Monday, March 23, 2026 2:59 PM
To: Christina Robertson-Gardiner <crobertson@orcity.org>
Subject: Re: Request for Link to Testify at Planning Commission Hearing Tonight

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Christina,

I had a few concerns regarding the traffic study that I wanted to provide for the record. I am a registered professional transportation engineer, I have been preparing and reviewing traffic studies professionally for over 20 years, and I own a transportation engineering consulting business (Ard Engineering).

I want to bring a few things to the attention of the Planning Commission.

1) The trip distribution used by the applicant in their transportation analysis looks generally reasonable, but with some problems. Specifically, they appear to show 5% of residential trips that head south on 99E, but they travel through downtown Oregon City to connect to Highway 99E. In reality, these trips would be far more likely to travel on Warner Milne to South End Road to reach Highway 99W. Similarly, the commercial trips are shown with 10% on Warner Milne, 10% on Holmes Lane, and 5% each on Pearl and Jefferson. I would expect some (perhaps 25%) of the trips shown for Pearl and Jefferson to actually take Warner Milne to Linn Avenue to travel to and from those areas, and most of the trips assigned to Holmes would likely take Warner Milne instead. I prepared the map below to show the area of the city that online mapping software suggests routing via Warner Milne to and from the site. It's a substantial area. Note also that for trips to and from the top of the bluff traveling via Telford and S Center Street, the travel time and distance are the same via either Warner Milne or Holmes Lane, so about half would go each way. The point is that the trip assignment under-estimates the number of trips on Warner Milne that will pass through the Linn Avenue/Leland Road intersection. I would have expected to see analysis there, since it will accommodate more than 20 peak hour trips in reality.
   The City transportation consultant has reviewed the application and found:
   Finding: Complies with Condition. The City's transportation consultant has reviewed the applicant's TIA for this development. They have provided to following findings based on the site's master plan TIA:

- Based on the most recent five years of available crash data (2019 to 2023), critical crash rate calculations, and ODOT SPIS lists, the OR-213/Beavercreek Road intersection was flagged for safety concerns. The TIA notes that since 2023, safety improvements such as signal modifications and improved signage have been completed at this location. As such, no safety mitigations are recommended at this time.
- The development is expected to generate 339 (157 in, 182 out) a.m. peak hour trips, 190 (107 in, 83 out) p.m. peak hour trips, and 2,788 weekday trips. This includes a conservative internal trip capture reduction of 5% in the a.m. peak hour and 25% in the p.m. peak hour, a pass-by rate of 40% for both the a.m. and p.m. peak hours for the Strip Retail (822) land use, and a pass-by rate of 55% for both the a.m. and p.m. peak hours for the Restaurant (934) and Coffee Shop with Drive Through Window (937) land uses.
- Different trip distributions were applied for the commercial and residential land uses.
    - *Commercial Trips (Retail and Fast Food):* Approximately 35% of site trips are expected to travel to/from destinations to the south along Molalla Avenue and Beavercreek Road, and approximately 65% are expected to travel to/from destinations to the north along Molalla Avenue.
    - *Residential Trips:* Approximately 55% of site trips are expected to travel to/from destinations to the south along Molalla Avenue and Beavercreek Road, and approximately 45% are expected to travel to/from destinations to the north along Molalla Avenue.
- Left turn lane warrants were evaluated at future site access intersections. No left turn lane warrants were met.

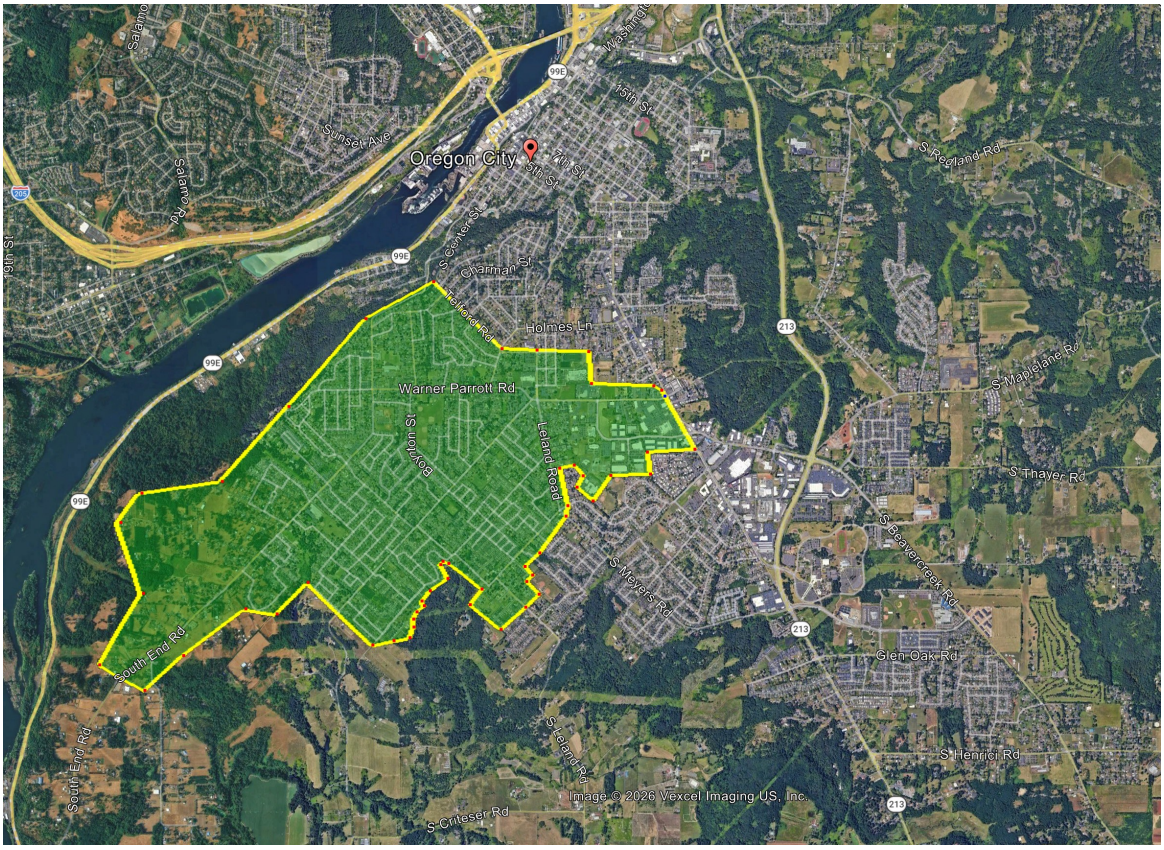
- All study intersections are expected to meet performance standards under all analysis scenarios.
- A queuing analysis showed queue lengths at the Molalla Avenue/Shared Business Driveway (Safeway) intersection are expected to exceed the available storage for the northbound left turning movement under both background and build conditions in the p.m. peak hour. The 95th percentile queue is expected to exceed the available storage by only one vehicle in the p.m. peak hour only. No mitigation is recommended at this time.

The City's transportation consultant also notes the following:

- The TIA does not address the proposed site plan's compliance with access spacing standards or sight distance standards.
- The TIA does not address the proposed development's pedestrian/bicycle routes to the nearest schools in consideration of safe routes to school.
- The TIA does not discuss the project's internal vehicle, pedestrian, and bicycle circulation.

The items noted above typically take into account the whole property, but they do relate to this DDP as final locations of driveways and accessways may be impacted. The applicant shall provide an updated TIA addressing compliance with access spacing standards or sight distance standards, pedestrian/bicycle routes to the nearest schools, and the project's internal vehicle, pedestrian and bicycle circulation.

Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.



2) The crash data shows a very high crash rate (top 5% SPIS list) for the intersection of Highway 213 at Beavercreek and notes that the city has attempted some safety improvements. Since the report was prepared, ODOT has released final data for 2024 that was not included in the traffic analysis. It shows 30

crashes in 2024, which is an increasing crash rate. It may be appropriate to do a detailed analysis of crash types and look for new solutions.
ODOT determined a number of years ago to allow the intersection of 213/Beavercreek to be in a failing condition. The City is currently contracting with a consultant to add a right turn slip lane from Beavercreek west to 213 north which is intended to reduce crashes and improve capacity. Other solutions such as clover leafs and triple lefts have been taken off the table by ODOT. The City did install a traffic warning sign a couple years ago on 213 South with ODOT approval to assist with rear end crashed of those stopped at the traffic light. This application is conditioned to monetarily proportionately contribute to the improvements at 213/Beavercreek.

3) I have heard some talk that a fast-food restaurant on the site may be a "High-Volume Fast-Food Restaurant" as defined by the current 12th Edition of the ITE Trip Generation Manual. This land use category applies to facilities that draw more traffic from a larger area and has about 85% higher trip generation than a standard fast-food restaurant with drive-through.
When this land use applies for approval, they will be required to make any required improvements from their TIA and may contribute proportionately monetarily to the improvements at 213/Beavercreek.

For these reasons, I have some concerns remaining regarding the transportation analysis that was provided for the project.

Thank you,

Michael Ard, PE
(503)537-8511

On Mon, Mar 23, 2026 at 2:42 PM mike ard <mike.ard@gmail.com> wrote:

> Hi Christina,
>
> I would like to have the opportunity to provide some public comments regarding the Molalla Avenue Master Plan (GLUA-25-00025: CU-25-00001, MAS-25-00001, PARK-25-00001-1367) this evening. Can you provide me a Zoom link?
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Sent: Monday, March 23, 2026 2:59 PM
To: Christina Robertson-Gardiner
Subject: Re: Request for Link to Testify at Planning Commission Hearing Tonight

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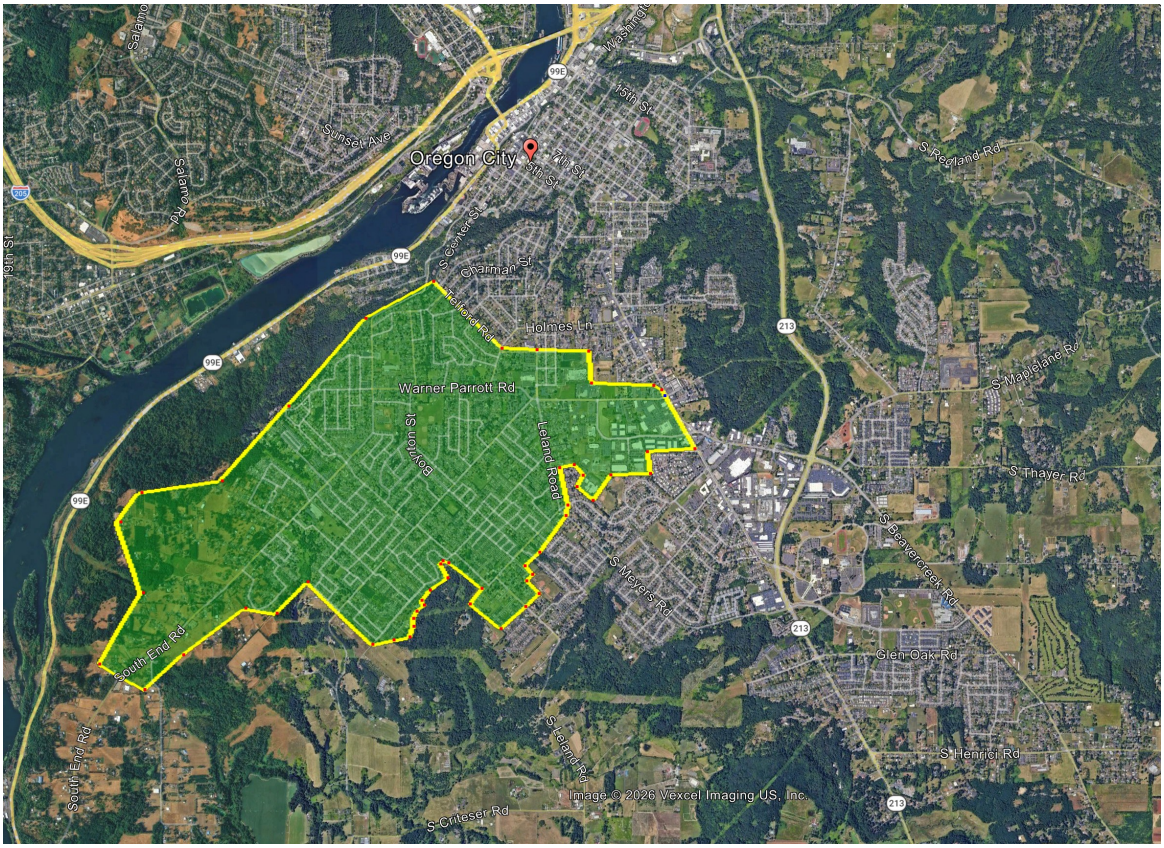

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3) I have heard some talk that a fast-food restaurant on the site may be a "High-Volume Fast-Food Restaurant" as defined by the current 12th Edition of the ITE Trip Generation Manual. This land use category applies to facilities that draw more traffic from a larger area and has about 85% higher trip generation than a standard fast-food restaurant with drive-through.

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Michael Ard, PE
(503)537-8511



Christina Robertson-Gardiner

From: Reah Flisakowski <rlf@dksassociates.com>
Sent: Monday, March 23, 2026 4:24 PM
To: Christina Robertson-Gardiner
Cc: Erik Nichols; Josh Wheeler
Subject: Re: FW: Request for Link to Testify at Planning Commission Hearing Tonight

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I haven't had time to dive into the comments from Mr. Ard but here are my initial thoughts/questions. Overall, an application is required to use the data and resources that are current when the study is conducted and we don't require updates if new data and resources become available prior to the hearing.

1. Trip distribution - It's not clear what data source is being used to determine the alternative trip distribution routes for the project trips. The comment referred to "online mapping software" which is not an established sole source for trip distribution and can be influenced significantly by time of day. I'm assuming the online mapping software is Google maps using the routing feature but I'm not sure. A review of existing intersection turn movement counts, aggregated Big Data and the regional models are other tools to be considered. It's unclear if changes to trip distribution would result in any intersection capacity issues or new conditions of approval.

2. Crash Data - The 2024 data set was not available when the transportation study was conducted. An increase in crash rate does not suggest a new mitigation is needed. ODOT and the city have planned improvements at the intersection to address safety and congestion. It's unlikely that an analysis of 2024 safety data would change the planned improvements or add conditions of approval to the application (who is paying a proportionate share fee to improvements at the intersection).

3. ITE 12th Edition trip rates were not available when the transportation study was conducted. The comment doesn't provide clear information on what 12th edition land use category would be appropriate for the application or how it would change the trip generation estimate and intersection analysis.

Let me know how the hearing goes, I can look into this more if needed.

Reah Flisakowski, PE | Senior Project Manager, Portland Planning Business Development Manager
Direct: 503-972-1203 | Mobile: 503-473-3362 | Email: rlf@dksassociates.com

1050 SW 6th Ave, Suite 600 | Portland, OR 97204 | 503.243.3500
dksassociates.com

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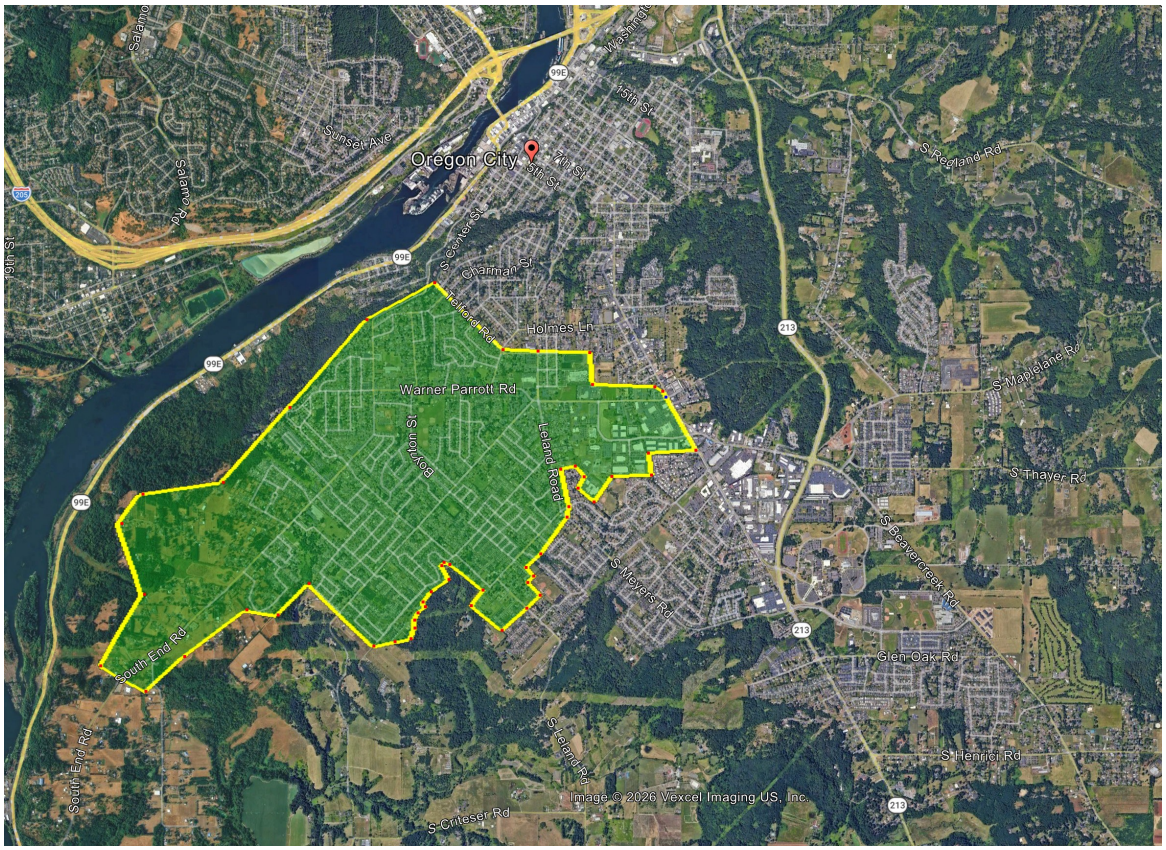

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(503)537-8511



On Mon, Mar 23, 2026 at 2:42 PM mike ard <mike.ard@gmail.com> wrote:

> Hi Christina,
>
> I would like to have the opportunity to provide some public comments regarding the Molalla Avenue Master Plan (GLUA-25-00025: CU-25-00001, MAS-25-00001, PARK-25-00001-1367) this evening. Can you provide me a Zoom link?
>
> Thank you,
>
> Michael Ard, PE
>
> (503)537-8511
>
> 

SUPPLEMENTAL FINDINGS

Masterplan GDP and DDP approval for Mixed Use development at 1367 Molalla Avenue

File Nos: GLUA-25-00025: CU-25-00001, MAS-25-00001, PARK-25-00001-1367
GLUA-25-00025: MAS-25-00002, GEO-25-00007, NROD-25-0012

The purpose for these supplemental findings is to provide some additional response to testimony received and explanation for revisions to conditions of approval that relate to both decisions.

On March 20, the City received testimony from Metro expressing concerns about how this development would impact Metro's Newell Creek Canyon Nature Park and Natural Area located on Tax Lot 210, east of the subject development.

1) Metro's Easement

Metro has expressed concerns that the proposed development adversely impacts Metro's access to its TL 210 which it claims is guaranteed by a private easement. The City's role here is not to interpret or protect easement rights between private property owners. Rather, its sole role is to review applications for compliance with the applicable approval criteria. No law or other criterion demands that the City guarantee this privately negotiated access.

That said, nothing in this approval shall preclude Metro from obtaining access to its TL 210, Metro Newell Creek Canyon Nature Park. This access may occur upon the public road proposed on TL 500 or include the provision of any stubbed improvements at the northeast corning of TL 500 as necessary to accommodate gated access. The owner of TL 500 is encouraged to seek and obtain a driveway access permit allowing for gated access to TL 210 as may be required to fulfill any easement obligations it may have.

2) The Location of the Shared Use Path

[This finding is added to the GDP approval and will also replace the DDP findings discussing the shared use path on pp 38-39.]

Approval of a general development plan requires a finding that the application is in compliance with the Oregon City Comprehensive Plan. OCMC 17.65.050.C.6. The City's Transportation System Plan is an ancillary component part of the Comprehensive Plan. The City's TSP project S28 identifies a shared use path running north and south along the east side of this property. The purpose of this path is to connect development on this property and throughout the Hilltop Area to the Newell Creek Nature Park, whose access is

located one block north of the subject property. This multimodal path will provide direct access to the 208-unit multi-family residential component on Parcel B as well as serve as a resource for employees and customers of the adjacent businesses.

Goal 1 of Chapter 3 of the Comprehensive Plan provides:

> "Provide a safe, comfortable, and accessible transportation network that serves all modes of travel, including non-motorized modes."

The proposed location of the shared use path as proposed is below the development Parcel B below the top of the hillside and will not be visible to the general public. This is a problem because its lack of visibility will compromise its accessibility but more importantly, could create nuisance concerns. For this reason, the City finds that the proposed path location will not result in a pedestrian connection that is safe and comfortable for public use. In order to satisfy the TSP as well as the Comprehensive Plan, revised conditions of approval are proposed which require that a revised design for the multiuse path be submitted as part of the DDP for Parcel B. The revised design shall include a minimum paved 7-foot width that is ADA accessible and lighted to satisfy OCMC 16.12.032.D standards and most importantly, it is at a similar grade such that it is visible from the development at Parcel B. Added benefits of this approach move the path further away from mapped geologic hazards, avoid providing ADA access for complicated grade changes, can take advantage of parking lot lighting from the Parcel B development and will reduce maintenance concerns. With these conditions, the development will provide a safe and comfortable pedestrian / bicycle connection in compliance with the TSP that is will strengthen the wellbeing of future residents and users of this development.

Revisions to and proposed new conditions include:

Master Plan- MAS-25-00001,CU-25-00001, PARK-25-00001
Share Use Path (S28)-NEW
17. The proposed location of the shared use path (S28), (sheet x) is located below the development on Parcel B in a narrow bench of the hillside that is not visible to the general public which will, as designed and built, create an attractive nuisance and public safety concerns and conflicts with the community's comprehensive plan policies to support design that is to strengthen wellbeing, quality of life, and livability across all Oregon City neighborhoods by creating places that are safe and comfortable with convenient access to community services. The applicant shall remove the path from MAS-25-00002, GEO-25-00007, and NROD-25-00012 (DDP) and resubmit a revised design at the time of DDP development for Parcel B. The revised design of S28 requires a minimum paved 7-foot-wide path that is ADA accessible, lit to the standards of 16.12.032.D, at a similar grade and visible from the development on Parcel B, and designed to connect to the northern property line, which will be extended at a future time to Hilltop Avenue.

Detailed Development Plan - GLUA-25-00025: MAS-25-00002, GEO-25-00007, NROD-25-0012

Share Use Path (S28) – REVISED

~~20.The new shared use path shall transition from the curbed path along the new road to the existing bicycle lane along Beavercreek Road either through modification of the existing ADA ramp or by other means evaluated during technical design review. (DS)~~
21. The applicant shall construct their portion of TSP Project S28 within Parcel C (shared use path) as a public 7-10-foot paved off-street ADA compliant pedestrian/bicycle accessway with lighting and landscaping as regulated by code for the portion on TL 3200 and 3400 per OCMC 16.12.032 standards.
~~22. The applicant shall continue the paved shared-use path (S28) from TL 500/501 to the northern property line of TL 3200. (DS)~~
~~23. The Shared-use Path S28 (accessway) shall be a paved 7-foot-wide path within TL 3400 and 3200 where it deviates from the proposed street. (DS)~~
~~24. The applicantlayout of the proposed development shall provide a lighting plan showing that the shared-use path accessway are lit to the standards of 16.12.032.D. (DS)~~
~~25. The portion of S28 that deviates from the expanded sidewalk on TL 500/501 is an off-street pedestrian and bicycle accessway and shall comply with Americans with Disabilities Act (ADA) standards. (DS)~~
~~26. The portion of S28 on TL 3400 and 3200 shall be landscaped per OCMC 16.12.032.F standards. (DS)~~
~~27. The shared-use path S28 shall be paved with all-weather materials (e.g. asphalt, concrete, etc.) approved by the City Engineer. (DS)~~
~~28. The construction of S28 within TL 3400 and TL 3200 shall be completed prior to occupancy of Parcel B.~~

3) Stormwater Drainage

With respect to Metro's comment on Storm water discharge, the applicant must follow the Oregon City Stormwater and Grading Design Standards. These standards requirement volume control and water quality. Condition #2 requires the applicant to follow the Stormwater and Grading Design Standards prior to receiving a permit. Furthermore, the applicant is connecting to a 48" outfall pipe which conveys water onto Metro's property. Oregon Drainage Law states that stormwater discharges should be conveyed in the direction of the existing topography in the undisturbed state of the land. The existing land drains towards Metro's property. The Stormwater and Grading Design Standards and Oregon Drainage Law ensure stormwater is not conveyed at any higher volume or velocity that in the existing condition. This will be addressed during detailed design permit review as Conditioned.

Public Works
13895 Fir Street | Oregon City OR 97045
Ph (971) 204-4601

March 24, 2026

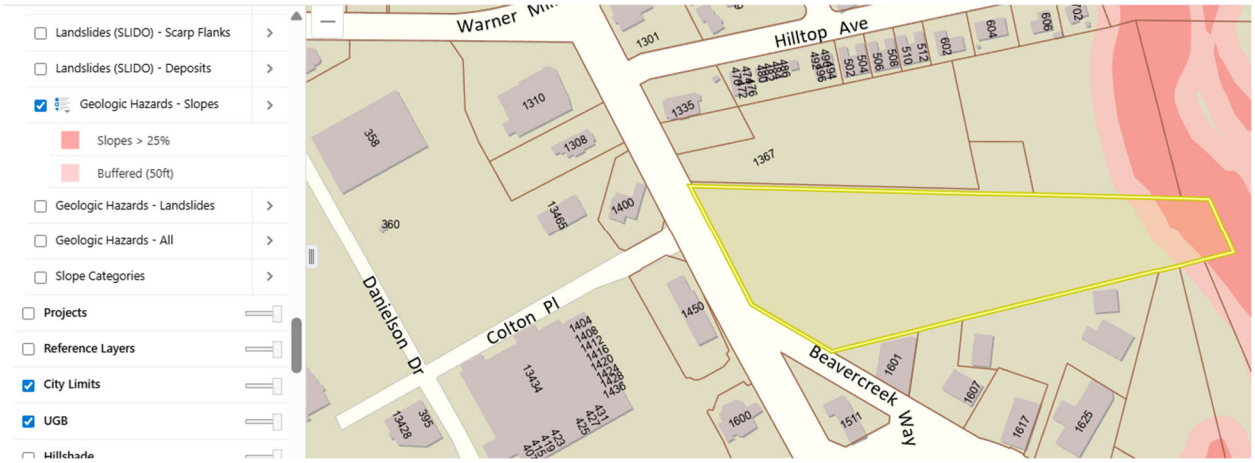
Cypress Acquisitions, LLC
8144 Walnut Hill Lane, Suite 1200
Dallas, TX 75231

RE: 1367 Molalla Mixed Use Development
GLUA 25-00025, MAS-25-00002, GEO-25-00007, NROD-25-00012

To Whom it May Concern,

In reviewing your application for the subject site, our geotechnical engineer has recently brought to our attention that the GDP / DDP development applications assume a geologic hazards protection area, based on the top of the slope, that is not consistent with the Geologic Hazards Overlay Zone that is mapped and regulated pursuant to OCMC 17.44. Staff now believes that accurate application of the City's geologic hazard development standards will have a significant impact on your development.

In July 2021, the City Commission adopted revisions to OCMC 17.44 Geologic Hazards. Pursuant to these amendments, the protections were enhanced to include mapped areas based on historic landslides as well as a buffer zone around the landslide. More specifically, OCMC 17.44.025 minimizes any development within the mapped Geologic Hazards Overlay Zone. All limitations on development are keyed from these mapped areas. The areas designated in the map are specifically defined in OCMC 17.04.515 but they are also depicted in the City's GIS mapping as shown:





What these maps show is that the steep slopes and associated buffer of the Geologic Hazard Overlay Zone impact the eastern portion of the subject property and the landslide deposits and associated buffer of the Geologic Hazards Overlay Zone further impacts the eastern portion of the subject property to a much greater degree than what is reflected in your application materials.

For development within the mapped landslide buffer, the following limitations apply:

OCMC 17.44.060.H.2.a.
For those areas with historic landslides where the structure or ground disturbance will be located within any portion of the mapped landslide or buffer zone, the density shall not exceed two dwelling units per acre except as otherwise provided in subsection I of this section;

OCMC 17.44.060.I.
For properties with slopes of twenty-five to thirty-five percent between grade breaks or are located within any portion of a mapped landslide and buffer zone:

1. *For those portions of the property with slopes of twenty-five to thirty-five percent or located within any portion of a mapped landslide and buffer zone, the maximum residential density shall be limited to two dwelling units per acre; provided, however, that where the entire site is less than one-half acre in size, a single dwelling shall be allowed on a lot or parcel existing as of January 1, 1994 and meeting the minimum lot size requirements of the underlying zone;*
2. *An individual lot or parcel with slopes between twenty-five and thirty-five percent or located within any portion of a mapped landslide and buffer zone, shall have no more than fifty percent or four thousand square feet of the surface area, whichever is smaller, graded or stripped of vegetation or covered with structures or impermeable surfaces.*

Based on the code and the maps and the proposed site plan, it appears the proposed apartment buildings may exceed the standard of a maximum of 2 dwelling units per acre. If

the apartment buildings are fully outside of the landscape buffer layer, then there are no density constraints.

Based on the code and the maps and the proposed site plan, it appears the proposed development will exceed 4,000 sf of disturbed area (or area that is graded). It appears the parking lot, roadway, and stormwater management area exist within the landslide deposit buffer. The site would need to be redesigned so that a maximum of 4,000 sf of the surface area is graded or stripped of vegetation or covered with structures or impermeable surfaces. There is no adjustment or variance available to alter these strict development limitations.

City staff is working to determine the appropriate modifications of the conditions of approval for the current GDP and DDP applications to largely defer how development on Parcel B can occur through its DDP review while recommending approval of the current GDP and DDP applications. It seems unlikely that this project could be redesigned within the current limited decision timeline but City staff would support such extension, if pursued. Again, staff understands that this is a significant revision raised late in the process. However, City staff's primary obligation is the accurate application of the OCMC. City staff is prepared to meet to discuss this information and any concerns early next week.

GLUA-25-00025:
Master Plan-CU-25-00001, MAS-25-00001, PARK-25-00001
DDP-Street -MAS-25-00002, GEO-25-00007, NROD-25-00012

1367 Molalla Ave

Planning Commission March 23, 2026

Christina Robertson-Gardiner, Senior Planner

GLUA 25-0025 Approval Process

Master Plan- Framework Approach- Parking Adjustment, Drive Through Conditional Use –Type III
MAS-25-00001,CU-25-00001, PARK-25-00001

Detailed Development Plan for Parcel C- Street Type II- Concurrent Review
MAS-25-00002, GEO-25-00007, NROD-25-00012

One presentation- two staff reports

Public Comment

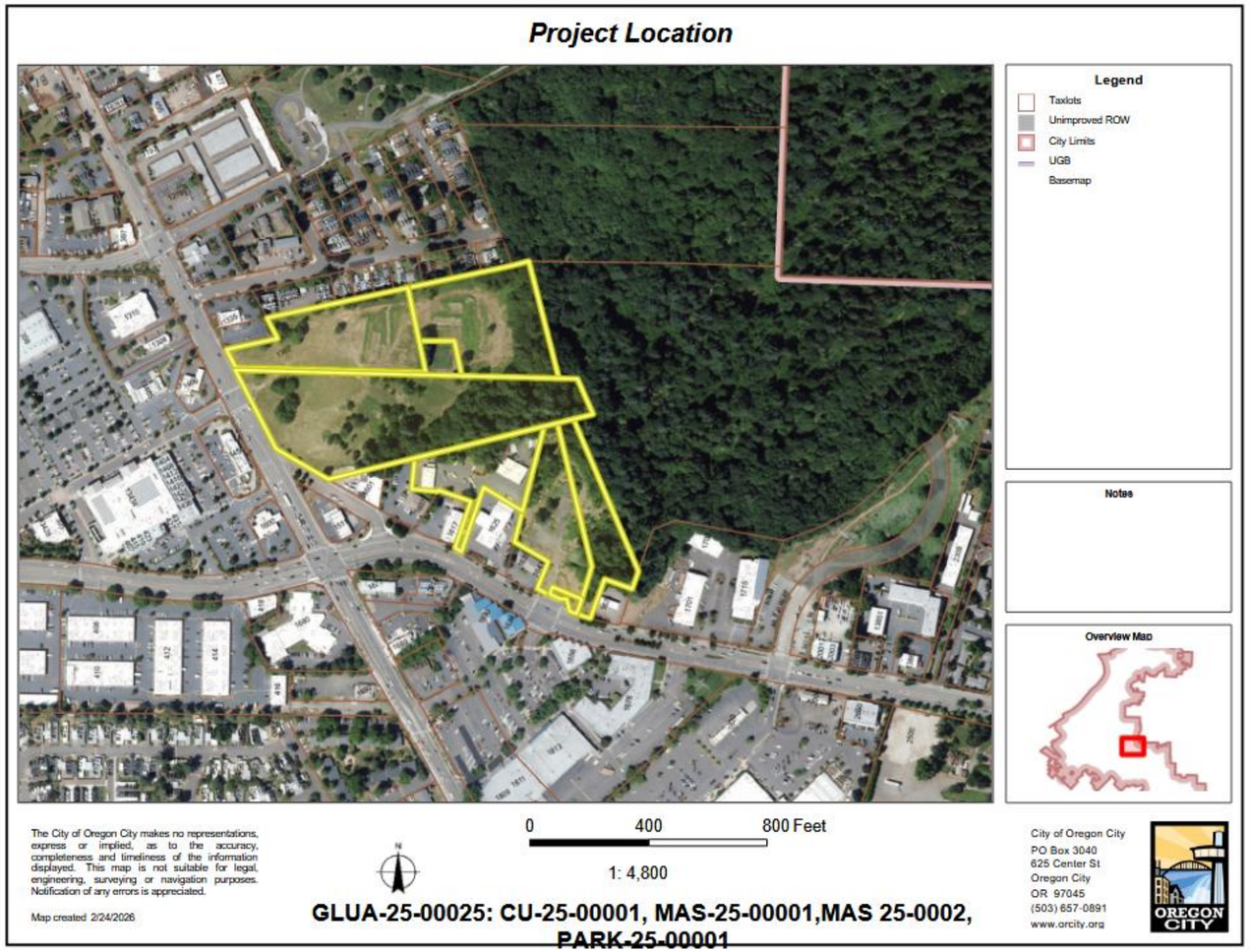
ODOT- supports transportation recommendations and proportional share contributions for the intersection improvements at OR 213/Beavercreek Road.

Metro- submitted concerns about three topics

- Location of the shared use path
- Ensuring access to their gate on Tax Lot 500 (Younger)
- Stormwater outfall.

Mike Ard- Transportation Analysis

Analysis and response to comments are included later in the presentation.





1367 Molalla Ave

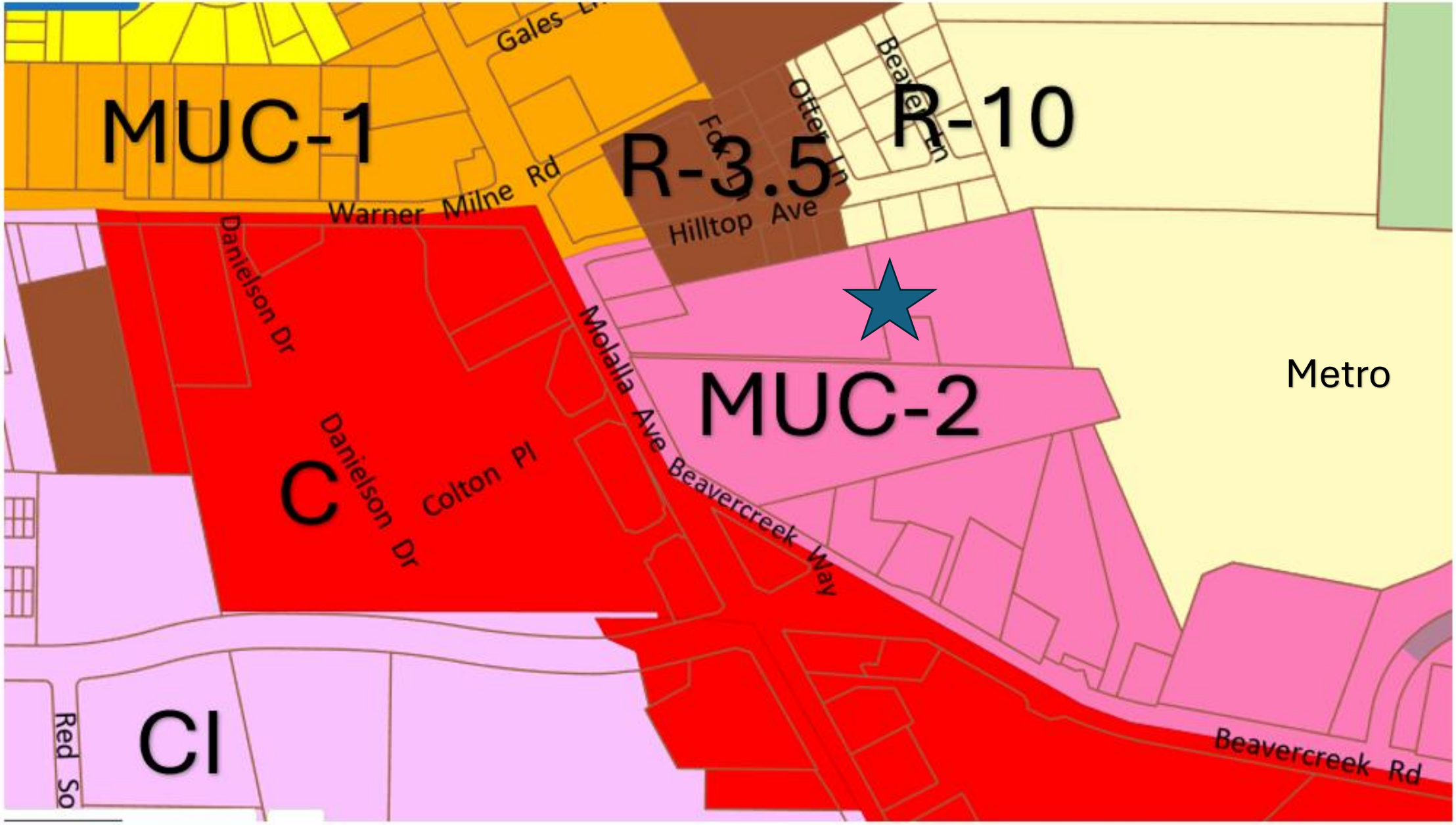


Figure 3. Adjacent Zoning. Mixed Use Corridor (MUC-1) and (MUC-2), Low Density Residential R-10, Medium Density Residential R3.5, Campus Industrial CI, General Commercial-C.

Summary of Master Plan Elements (GDP

- Creation of 4 development parcels
  - Parcel A: Retail,
  - Parcel B: Multi-Family,
  - Parcel C: New Public Road,
  - Parcel D: Quick Serve Restaurant
- Review of Transportation Impact Analysis for the full site
- Review of public road and utility location, site grading.
- Conditional Use Review for two drive-thru facilities (Parcels A and D)
- Parking Maximum Adjustment (Parcels A and D)

Clarifying the future DDP process for parcel building out

- 20-year Master Plan (TLs 3330,3400,3200,3201)
- Can use the code effective at the time of Master Plan submittal, or the current code at the time of DD submittal, for each parcel
- Specific uses are not tied to the Master Plan Approval, but any revision must be reviewed to see if it affects any Master Plan conditions of approval.
- No Master Plan adjustments are being requested. Each DDP must meet the Type II development process or return to the Planning Commission for a Master Plan adjustment request.

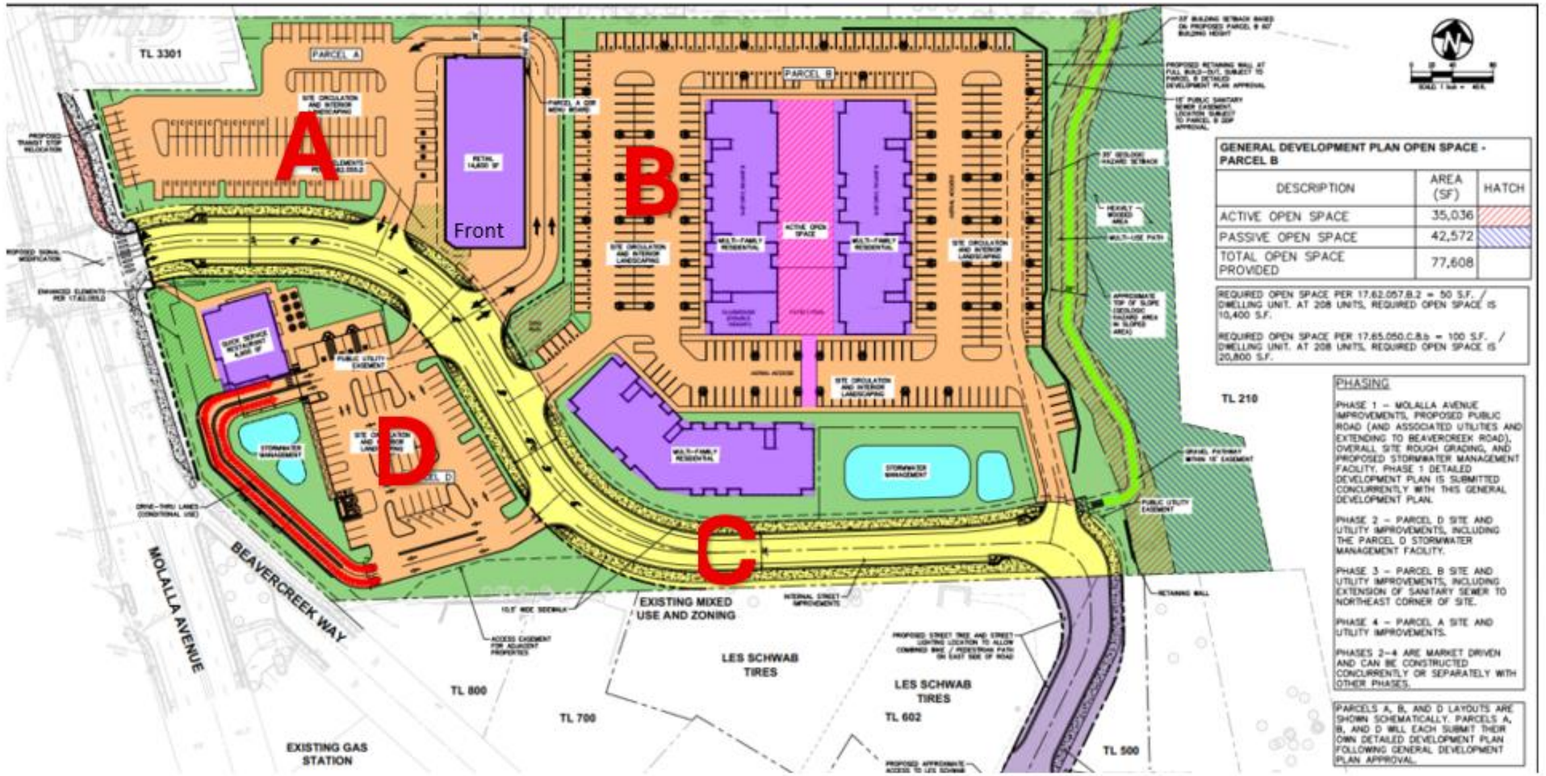


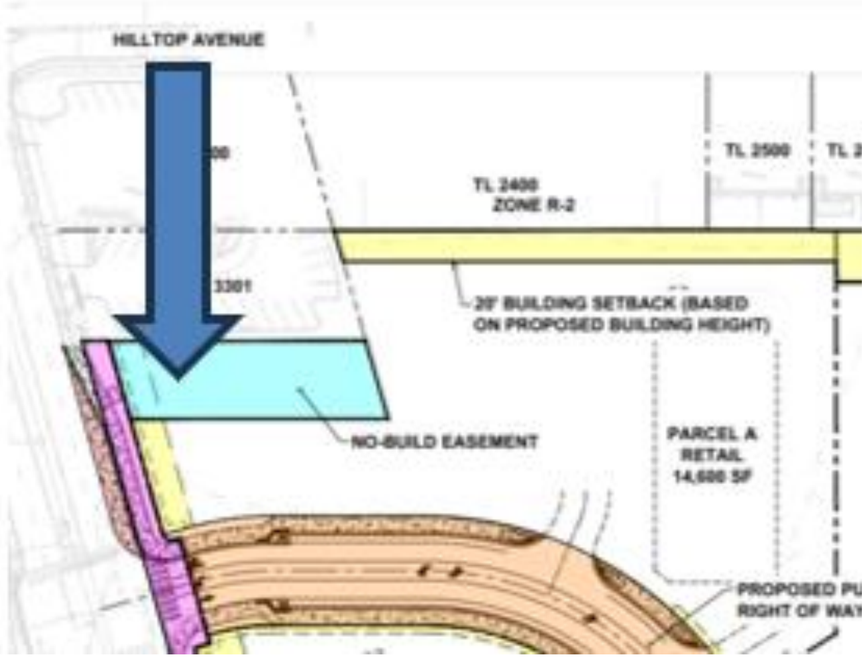
Figure 4: Proposed Master Plan **Parcel A**: Retail**, Parcel B**: Multi-Family, **Parcel C**: New Public Road, **Parcel D:** Quick Serve Restaurant

Two requests in the proposal specifically require Planning Commission review: drive-through facilities and adjustments to the parking maximums for parcels A and D. Staff has found that both requests are reasonable, well-designed, and can meet the criteria for approval with the enclosed conditions.

The Planning Commission should focus its deliberation on these two questions:

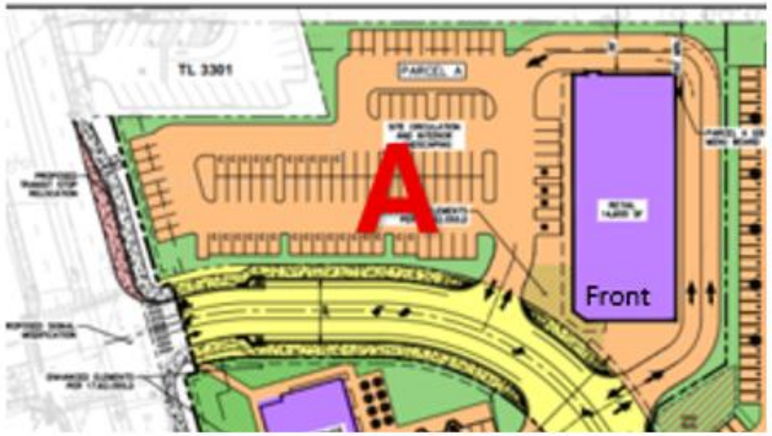
1. Has the applicant adequately demonstrated a need for an adjustment to the maximum parking standard on parcels A and D, and have any adverse effects been mitigated?
2. Has the applicant designed drive-through facilities on Parcels A and D that are safe, contain adequate queue storage, and have any adverse effects been mitigated?

Parking Adjustment- Parcel A





Previous Design- Specialty Grocer



Revised Design- Multi-Tenant Commercial

Parking Adjustment- Parcel A

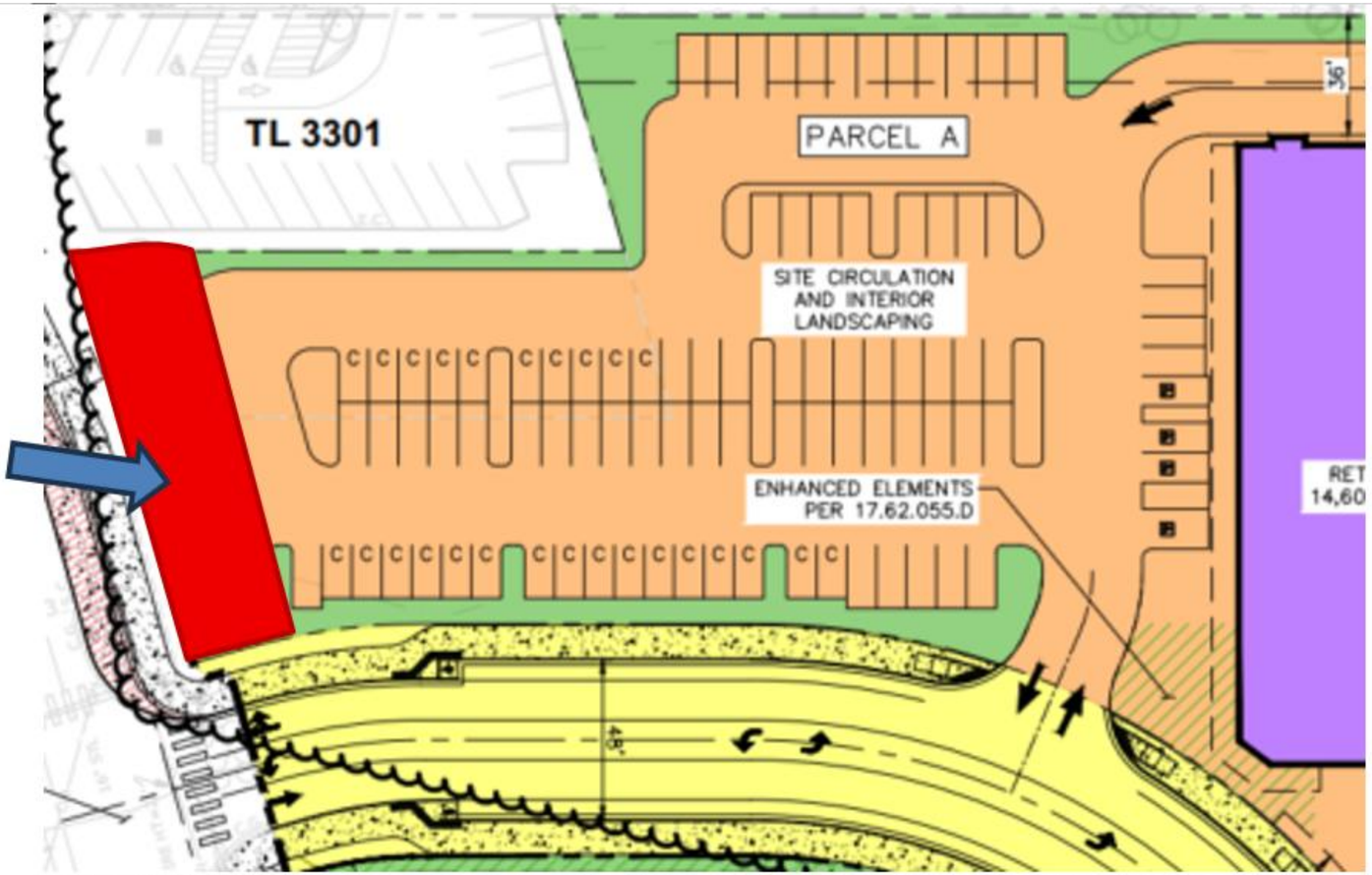


Figure 7 illustrates in red the location of additional enhanced landscaping and the removal of parking to comply with the mitigation requirements for the parking adjustment of Parcel A. This change will eliminate 7-9 parking spaces from the proposed total of 102 spaces.

Staff believes the design is a reasonable approach for the lot, and since no tenants have been identified for this parcel, a parking maximum is not warranted. Instead, staff views the approach as allowing additional parking in the no-build/constrained area of the parcel, subject to enhanced landscaping to create a gateway to the site (Condition of Approval; #14) along Molalla Avenue, which will require removing 7-8 parking spaces

Parking Adjustment- Parcel D- Quick Service Restaurant



Figure 8 illustrates the locations of the proposed and conditioned (in red) enhanced landscaping to comply with the mitigation requirements for the parking adjustment and the drive-through facility on Parcel D.

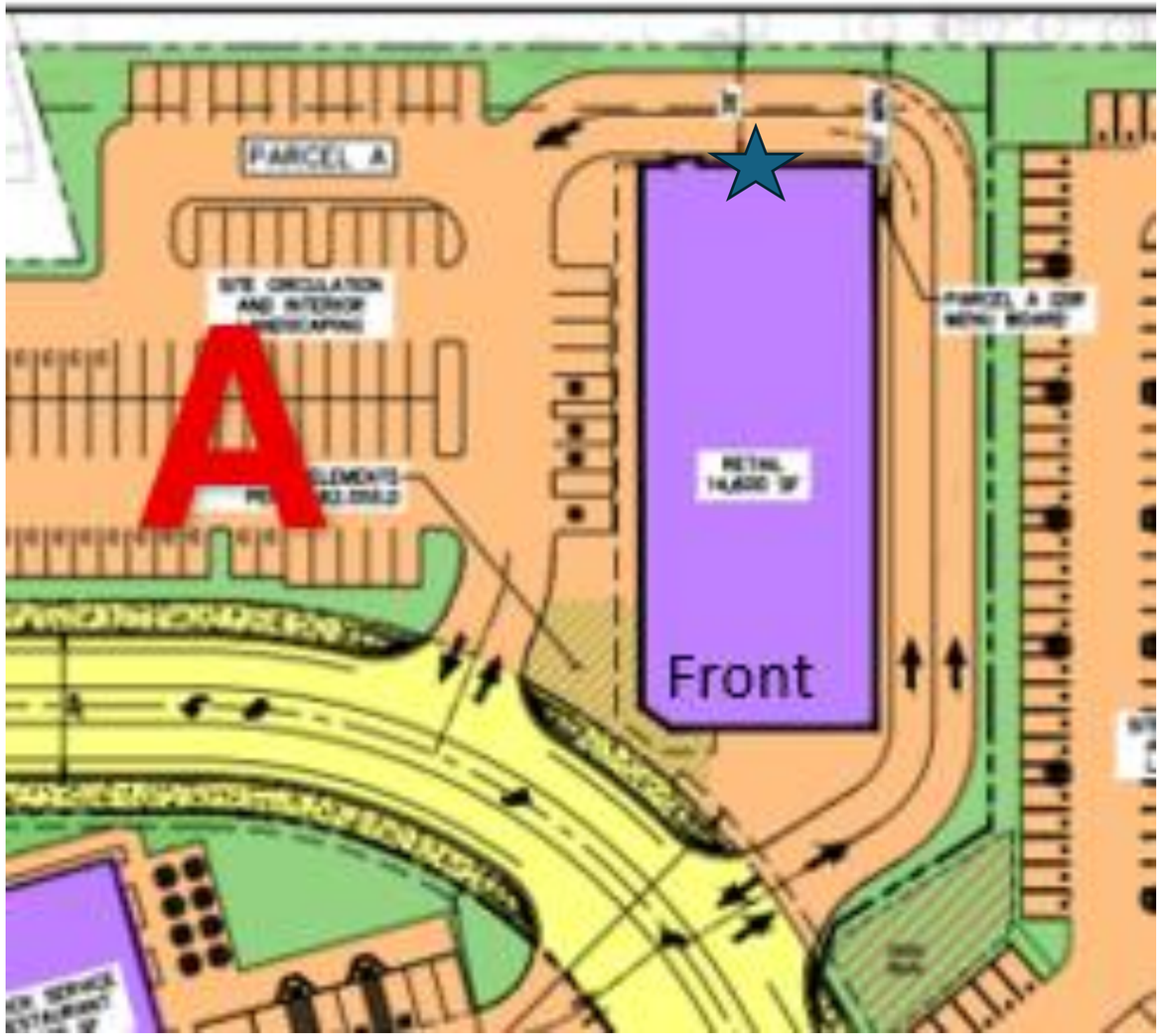
Because the new public road separates Parcels A and D, a shared parking approach is unlikely and impractical.

Allowing an increase in the maximum parking for Parcel D ensures sufficient customer parking for higher-traffic restaurants that lack a larger street connection to the neighborhood, which has limited on-street parking and does not have access rights for customers to use nearby commercial development for parking.

Subject to enhanced landscaping to create a gateway to the site (Condition of Approval; #14)

Conditional Use Driveway Facility Parcel A

The Planning Commission can consider each development separately, conduct a context-sensitive review, and place reasonable conditions on the proposal



Staff notes that the drive-through facility locations have been thoughtfully designed to ensure safety and prevent queues from blocking public roads.

- The associated uses are permitted in the zone;
- The drive-throughs are located on the side and rear
- The buildings are not exclusively dedicated to drive-through traffic.

The drive-thru facility on Parcel A may be used by one or more tenants if, through the Detailed Development Review Process, it can be demonstrated that there is adequate queue storage for an additional tenant.

Conditional Use Driveway Facility- Parcel D

The Planning Commission can consider each development separately, conduct a context-sensitive review, and place reasonable conditions on the proposal

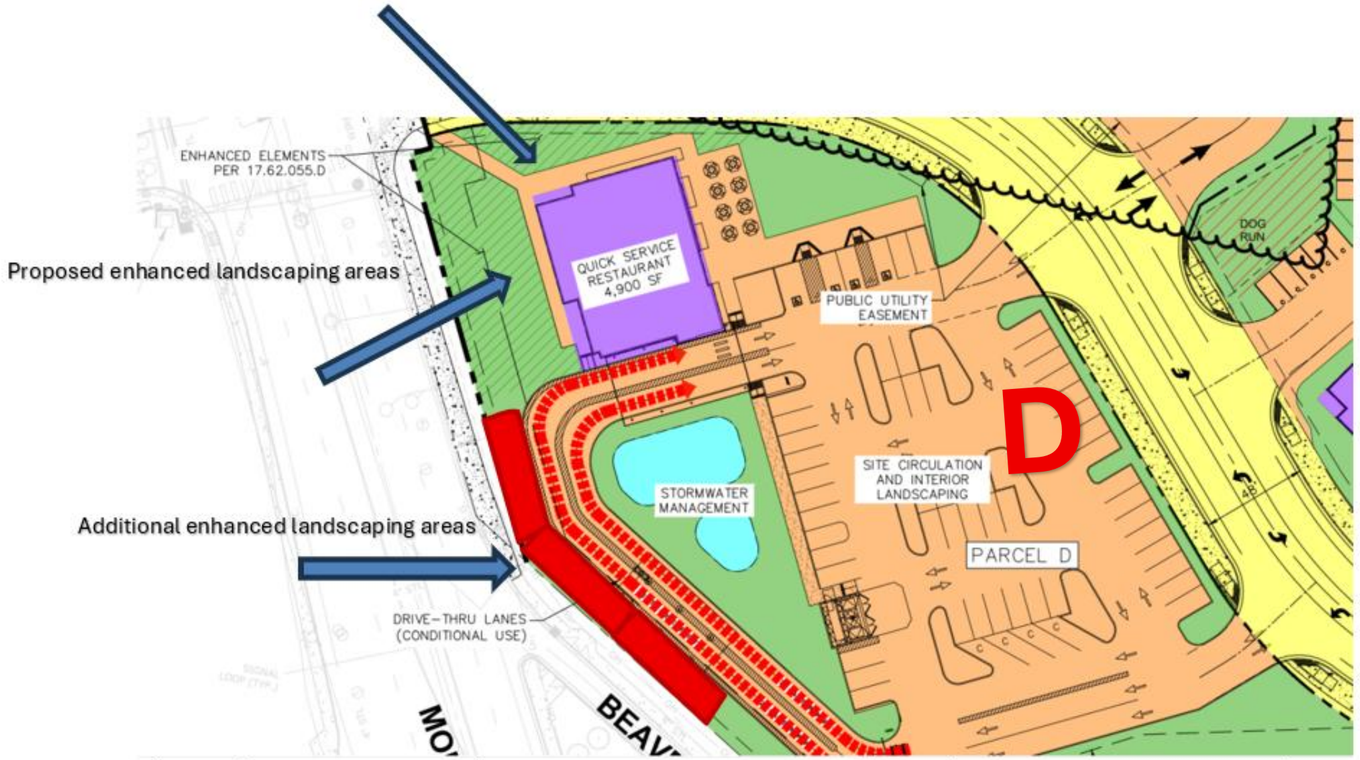


Figure 8 illustrates the locations of the proposed and conditioned (in red) enhanced landscaping to comply with the mitigation requirements for the parking adjustment and the drive-through facility on Parcel D.

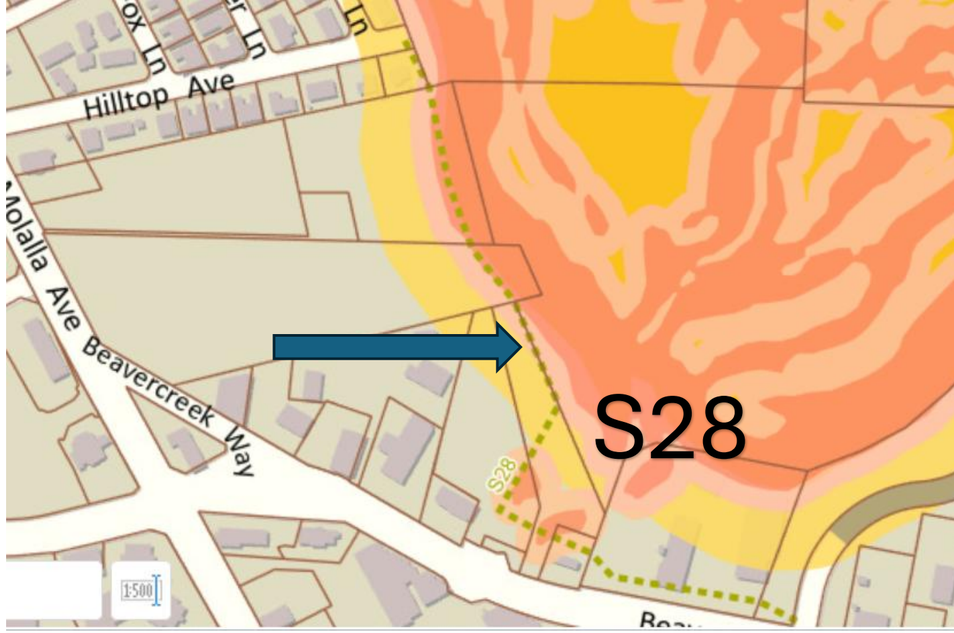
- The associated uses are permitted in the zone;
- The drive-throughs are located on the side and rear
- The buildings are not exclusively dedicated to drive-through traffic.

Subject to enhanced landscaping to create a gateway to the site (Condition of Approval; #14)

At the time of the DDP review, the applicant will be required to implement an on-site and off-site opening-day pedestrian and vehicular circulation and safety plan to address additional traffic congestion and concerns regarding vehicle queuing on opening day.

Master Plan Utility Analysis

See additional emails from Josh Wheeler, DKS



Transportation

Shared-use path location

Transportation impact analysis

Stormwater

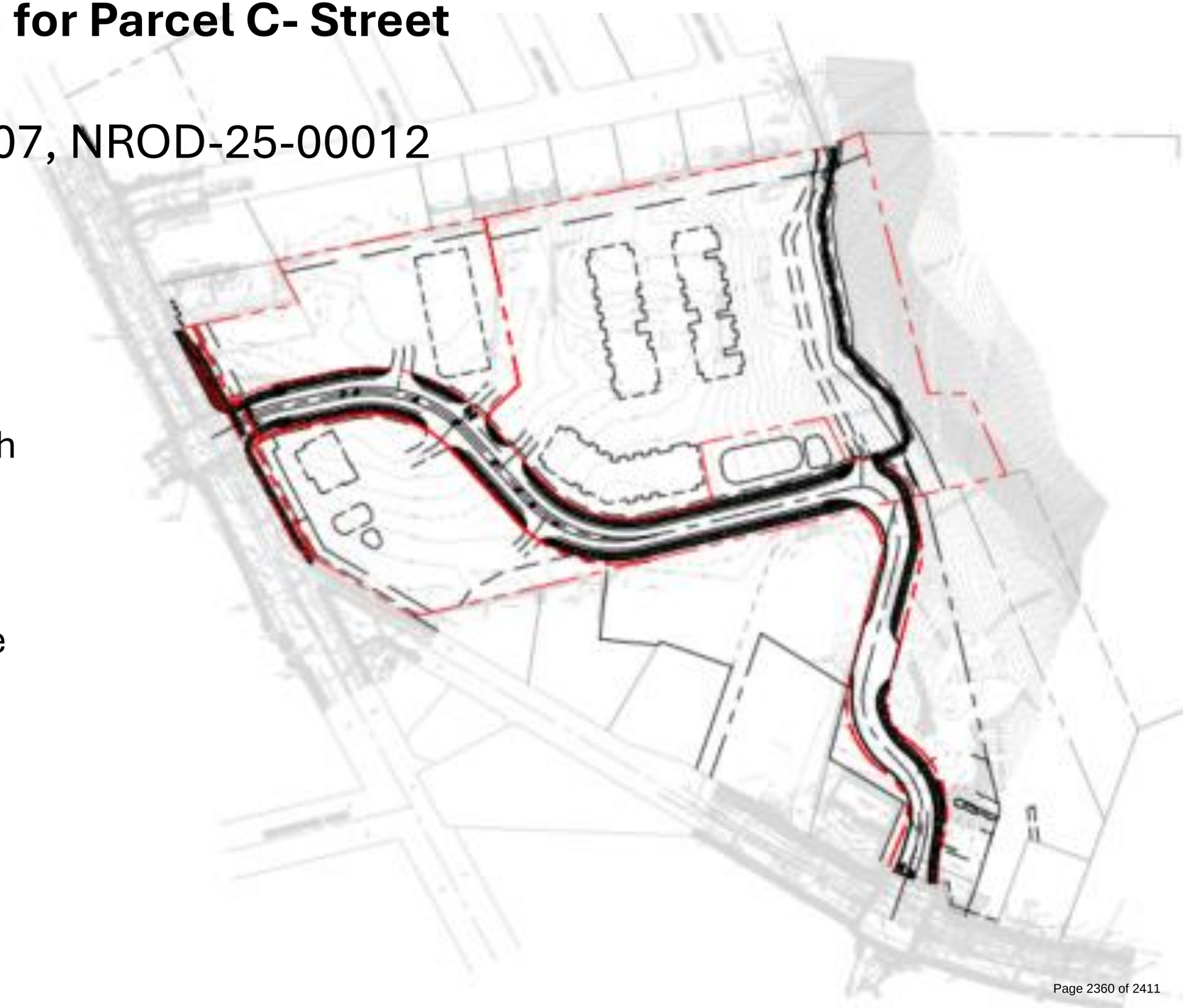
Discharge design and location

See additional emails from Josh Wheeler, DKS

Detailed Development Plan for Parcel C- Street
Type II- Concurrent Review

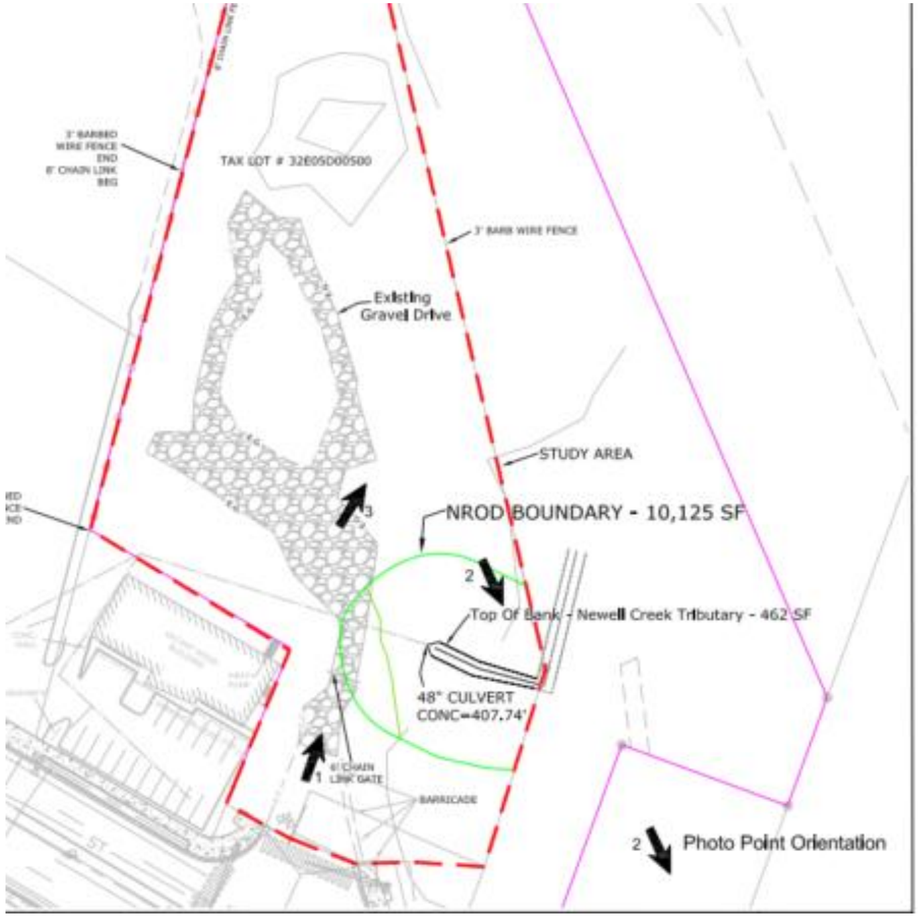
MAS-25-00002, GEO-25-00007, NROD-25-00012

A Detailed Development Plan for the construction of a new public road (parcel C) and utilities has been submitted concurrently with the Master Plan. The staff report will be part of the Planning Commission hearing and can be approved at the same time as the Master Plan.



Detailed Development Plan for Parcel C- Street
Type II- Concurrent Review
MAS-25-00002, GEO-25-00007, NROD-25-00012

Natural Resource Overlay District



Geologic Hazards Overly District



Response to Metro Comments

Location of the shared-use path
The shared-use path has been reviewed as part of the DDP and can meet the requirements of the geohazard zone, as conditioned. However, additional design work is still needed on the applicant's end to ensure compliance. Based on recent public comment, the city has reviewed the path location against the master plan policies for consistency with the Comprehensive Plan and finds that there is an adequate nexus to require a redesign on Parcel B.

Ensuring access to their gate on Tax Lot 500 (Younger)
The Metro easement is a private easement that the city cannot compel access to. The applicant can apply for a driveway access permit on Tax Lot 500 at any time during or after the construction process.

Stormwater outfall.
The stormwater code regulates stormwater flow to remain within the basin, ensuring it is released at pre-development rates. Staff conducted this analysis and established conditions reflecting these requirements.

Master Plan- MAS-25-00001,CU-25-00001, PARK-25-00001

Share Use Path (S28)-NEW

17. The proposed location of the shared use path (S28), (sheet x) is located below the development on Parcel B in a narrow bench of the hillside that is not visible to the general public which will, as designed and built, creates an attractive nuisance and public safety concerns, and conflicts with the community's comprehensive plan policies to support design that is to strengthen wellbeing, quality of life, and livability across all Oregon City neighborhoods by creating places that are safe and comfortable with convenient access to community services. The applicant shall remove the path from MAS-25-00002, GEO-25-00007, and NROD-25-00012 (DDP) and resubmit a revised design during DDP development for Parcel B. The revised design of S28 requires a minimum paved 7-foot-wide path that is ADA accessible, lit to the standards of 16.12.032.D, at a similar grade and visible from the development on Parcel B, and is designed to connect to the northern property line, which will be extended at a future time to Hilltop Avenue.

Detailed Development Plan for Parcel C- Street

MAS-25-00002, GEO-25-00007, NROD-25-00012

Share Use Path (S28)

~~20.The new shared use path shall transition from the curbed path along the new road to the existing bicycle lane along Beavercreek Road either through modification of the existing ADA ramp or by other means evaluated during technical design review. (DS)~~

21. The applicant shall construct their portion of TSP Project S28 within Parcel C (shared use path) as a public 7-10-foot paved off-street ADA-compliant pedestrian/bicycle accessway with lighting and landscaping as regulated by code. ~~for the portion on TL 3200 and 3400 per OCMC 16.12.032 standards~~.

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~~26. The portion of S28 on TL 3400 and 3200 shall be landscaped per OCMC 16.12.032.F standards. (DS)~~

~~27. The shared-use path S28 shall be paved with all-weather materials (e.g. asphalt, concrete, etc.) approved by the City Engineer. (DS)~~

~~28. The construction of S28 within TL 3400 and TL 3200 shall be completed prior to occupancy of Parcel B.~~

Master Plan- MAS-25-00001,CU-25-00001, PARK-25-00001

Enhanced Landscaping in Parcel A- technical revision to condition.

14. Two enhanced landscaping locations are required. Required trees shall be placed as determined feasible, and species with a smaller final height may be used through a sight distance and vision clearance study for all required turning movements at the local road intersection with Molalla Ave and a powerline utility encroachment analysis to ensure safety to be installed before receiving a Certificate of Occupancy for their respective parcels. The enhanced landscaping on Parcels A and D is shown in Figures 8 and 9 of the staff report. The following enhanced landscaping areas (both proposed and conditioned) shall meet the landscaping standards of OCMCM 17.62.050, can be included in the minimum landscaping requirements of the parcel, and include the following elements:

Staff Recommendations

Approve both applications with the revised staff conditions as outlined in the presentation.

Planning Commission Options.

1. Approve the proposal with revised conditions (staff recommendation)

2. Approve the proposal with modified conditions and provide revised findings

3. Deny the proposal and provide revised findings.

4. Continue the hearing and request more information.

GLUA-25-00025:
Master Plan-CU-25-00001, MAS-25-00001, PARK-25-00001
DDP-Street -MAS-25-00002, GEO-25-00007, NROD-25-00012

1367 Molalla Ave

Planning Commission April 13, 2026

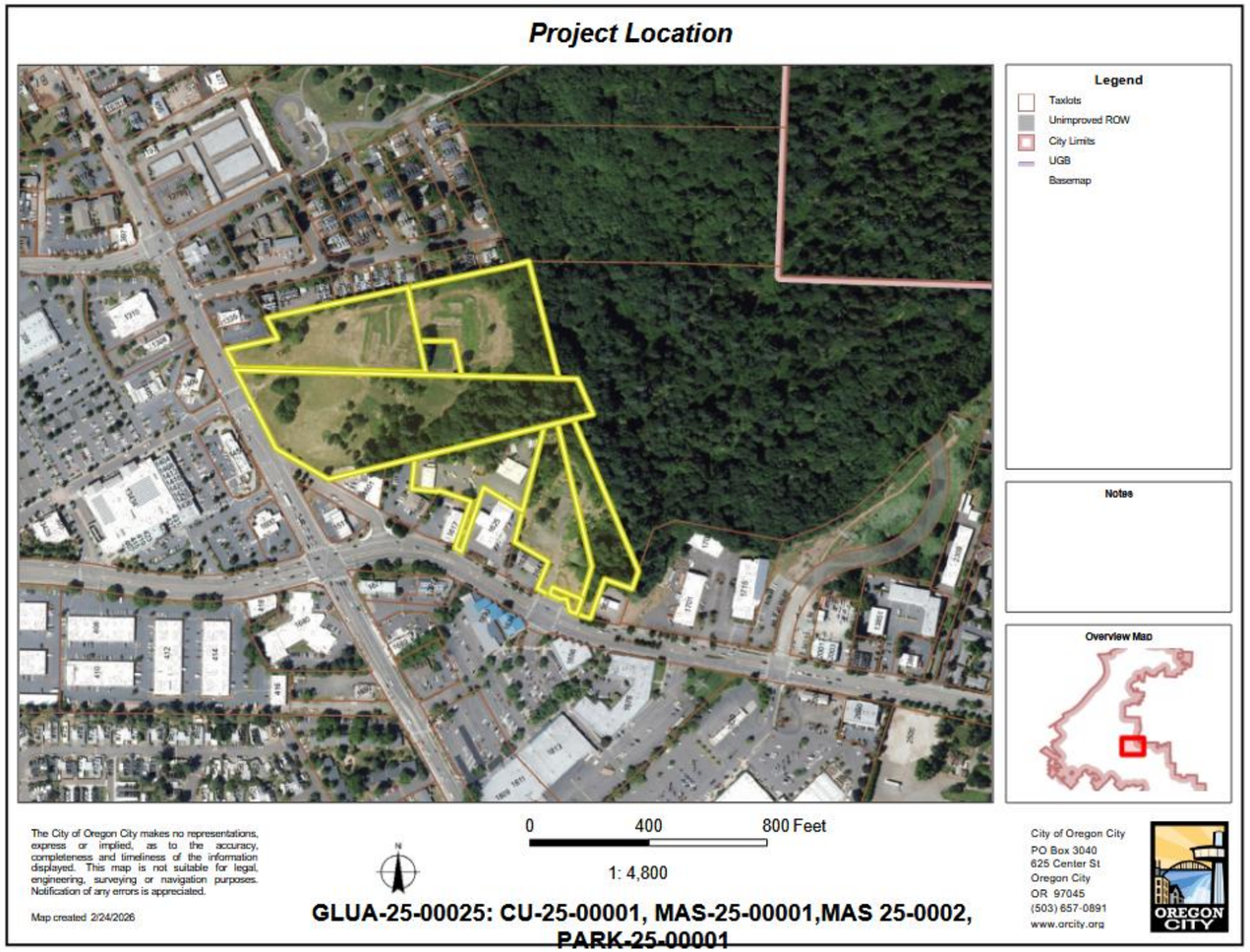
Christina Robertson-Gardiner, Senior Planner

GLUA 25-0025 Approval Process

Master Plan- Framework Approach- Parking Adjustment, Drive Through Conditional Use –Type III
MAS-25-00001,CU-25-00001, PARK-25-00001

Detailed Development Plan for Parcel C- Street Type II- Concurrent Review
MAS-25-00002, GEO-25-00007, NROD-25-00012

One presentation- two staff reports





1367 Molalla Ave

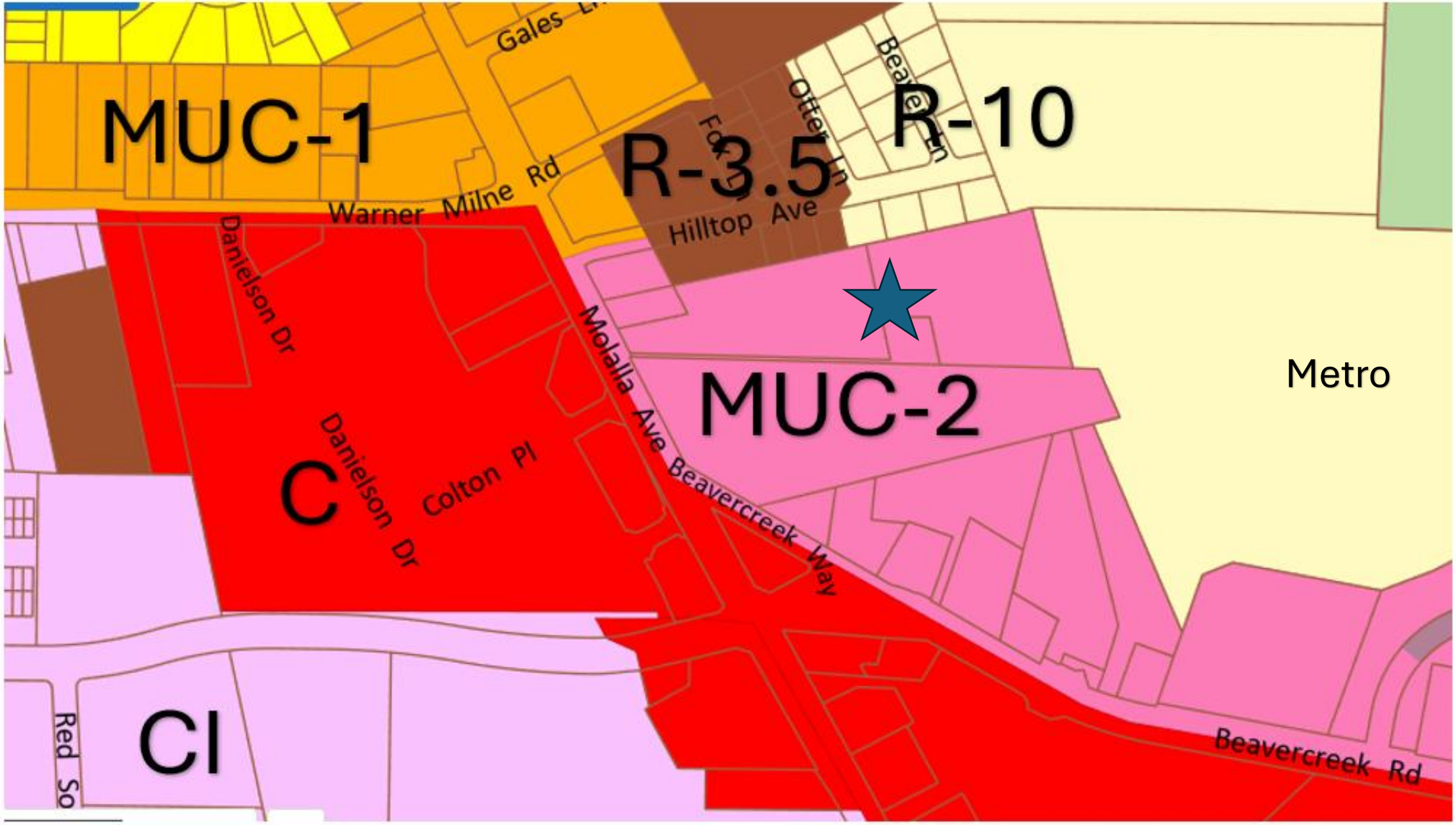
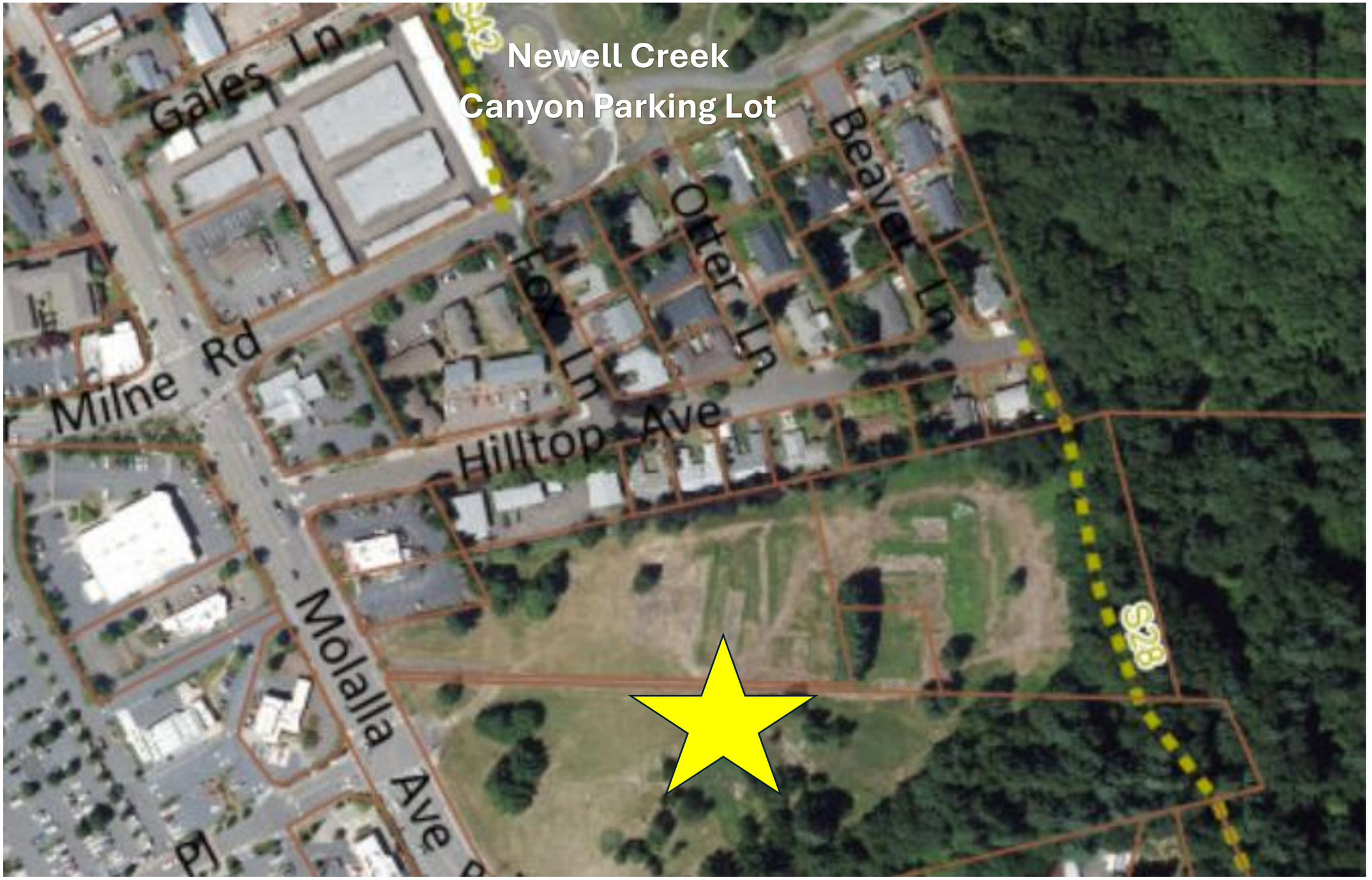


Figure 3. Adjacent Zoning. Mixed Use Corridor (MUC-1) and (MUC-2), Low Density Residential R-10, Medium Density Residential R3.5, Campus Industrial CI, General Commercial-C.


Newell Creek
Canyon Parking Lot
Gales Ln
Milne Rd
Fox Ln
Otter Ln
Beaver Ln
Hilltop Ave
Molalla Ave
S78

Master Plan Deliberations – April 20

The Planning Commission should focus its deliberation on these two questions:

1. Has the applicant adequately demonstrated a need for an adjustment to the maximum parking standard on parcels A and D, and have any adverse effects been mitigated?
2. Has the applicant designed drive-through facilities on Parcels A and D that are safe, contain adequate queue storage, and have any adverse effects been mitigated?

Summary of Master Plan Elements (GDP

- Creation of 4 development parcels
  - Parcel A: Retail,
  - Parcel B: Multi-Family,
  - Parcel C: New Public Road,
  - Parcel D: Quick Serve Restaurant
- Review of Transportation Impact Analysis for the full site
- Review of public road and utility location, site grading.
- Conditional Use Review for two drive-thru facilities (Parcels A and D)
- Parking Maximum Adjustment (Parcels A and D)

Clarifying the future DDP process for parcel building out

- 20-year Master Plan (TLs 3330,3400,3200,3201)
- Can use the code effective at the time of Master Plan submittal, or the current code at the time of DD submittal, for each parcel
- Specific uses are not tied to the Master Plan Approval, but any revision must be reviewed to see if it affects any Master Plan conditions of approval.
- No Master Plan adjustments are being requested. Each DDP must meet the Type II development process or return to the Planning Commission for a Master Plan adjustment request.

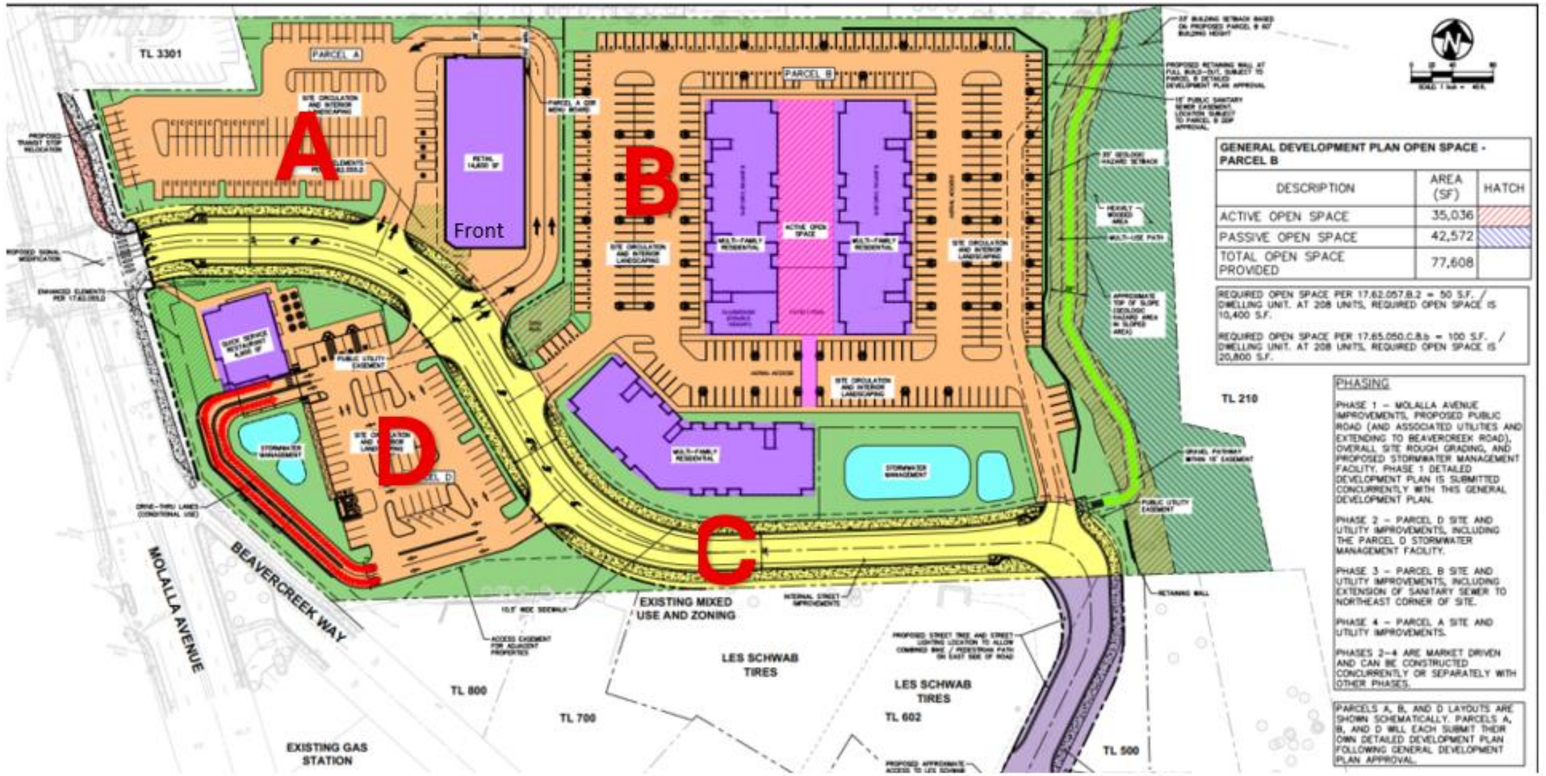


Figure 4: Proposed Master Plan **Parcel A**: Retail**, Parcel B**: Multi-Family, **Parcel C**: New Public Road, **Parcel D:** Quick Serve Restaurant

Master Plan- MAS-25-00001,CU-25-00001, PARK-25-00001

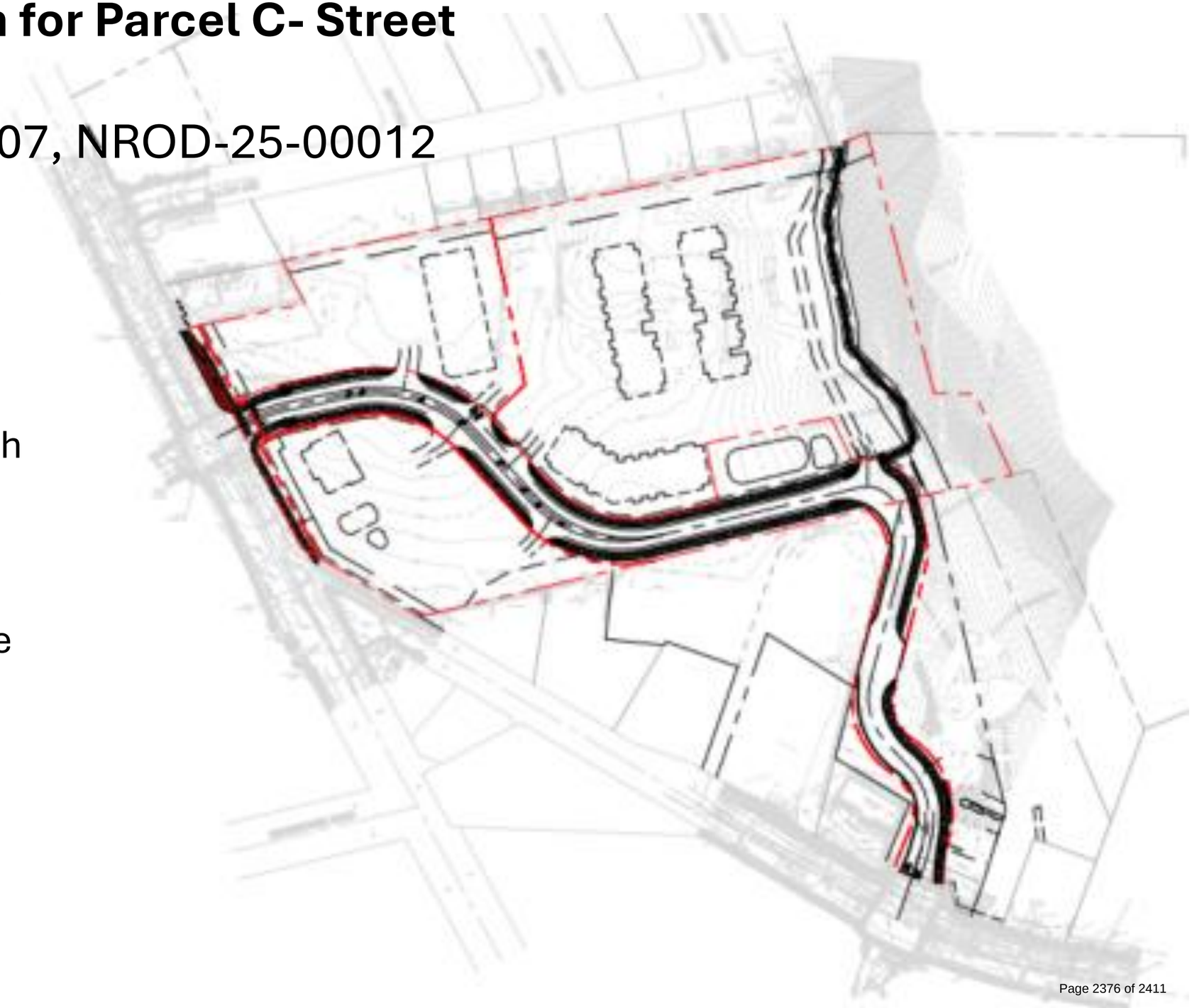
Enhanced Landscaping in Parcel A- technical revision to condition.

14. Two enhanced landscaping locations are required. Required trees shall be placed as determined feasible, and species with a smaller final height may be used through a sight distance and vision clearance study for all required turning movements at the local road intersection with Molalla Ave and a powerline utility encroachment analysis to ensure safety to be installed before receiving a Certificate of Occupancy for their respective parcels. The enhanced landscaping on Parcels A and D is shown in Figures 8 and 9 of the staff report. The following enhanced landscaping areas (both proposed and conditioned) shall meet the landscaping standards of OCMCM 17.62.050, can be included in the minimum landscaping requirements of the parcel, and include the following elements:

Detailed Development Plan for Parcel C- Street
Type II- Concurrent Review

MAS-25-00002, GEO-25-00007, NROD-25-00012

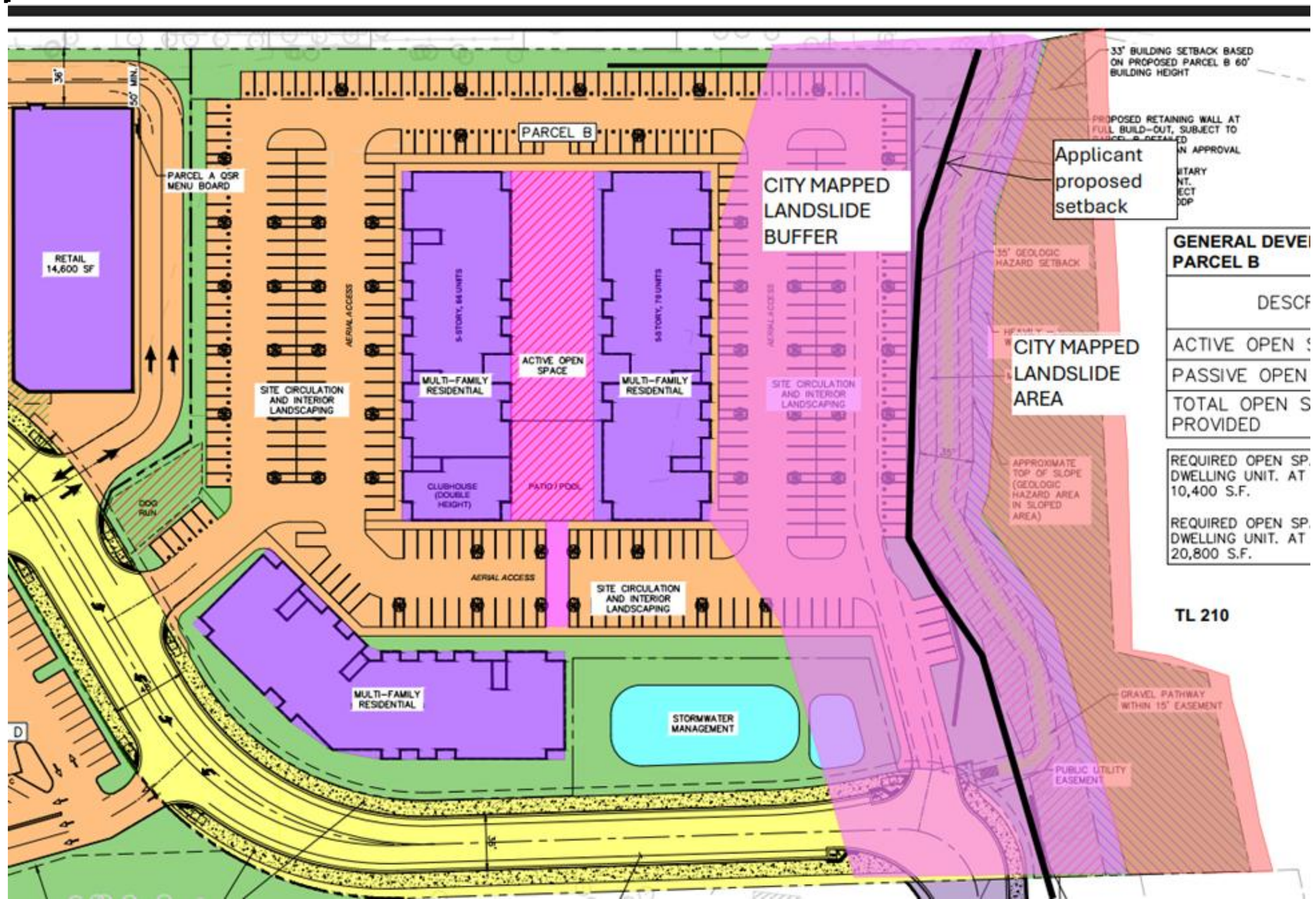
A Detailed Development Plan for the construction of a new public road (parcel C) and utilities has been submitted concurrently with the Master Plan. The staff report will be part of the Planning Commission hearing and can be approved at the same time as the Master Plan.



Changes since March 23- Shared Use Path and Geologic Hazards

- Two changes are part of the staff report since the March 23 presentation and materials
  - Staff is requiring relocation and construction of the shared use path
    - May be completed with new public road in total OR
    - May be completed in part with new public road and future Parcel B DDP
    - Must be constructed of paved materials
    - Must be located to be used by this development and be visible for safety
    - Proportional to development
  - Staff is requiring redesign of Parcel B due to existence of Geologic Hazard Overlay Zone
    - Setback provided in application does not meet code
    - A maximum of 4,000 sf of land within the overlay zone can be disturbed per existing parcel

Geologic Hazard Overlay Zone and Shared Use Path Required Revisions



Staff Recommendations

Approve both applications with the revised staff conditions

Planning Commission Options.

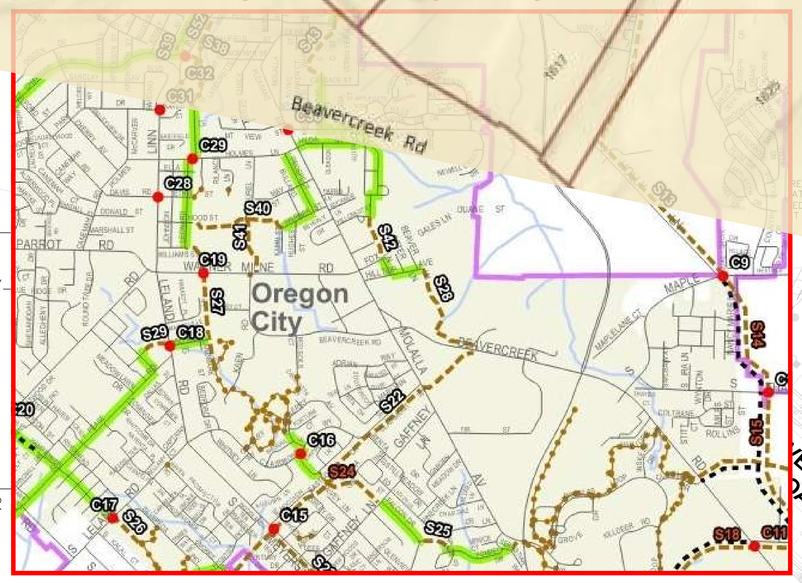
- Applicant has requested 7 days to submit final response- Continue application to April 20, 2026, Planning Commission Meeting
- Ask Staff and Applicant questions this evening
- Deliberations will occur at the April 20 Meeting.

May need retaining wall along north property line to maintain ADA compliance for pathway (adjacent property is higher than the site grading in this area).

Proposed alternate trail location based upon City Staff's change of position regarding the location of the shared pathway.

City references GIS mapping for geo hazard area and associated buffer. The buffer is referenced from the landslide boundary, which is not the top of slope. The Terracon recommendation conservatively used the top of slope for their buffer recommendation.

TSP Fig 21 - Shared Walking and Biking Solutions



SITE DATA

TOTAL SITE AREA: 12.70 AC +/-

PARCEL A AREA: 1.96 AC +/-

PARCEL B AREA: 6.63 AC +/-

PARCEL C AREA: 2.10 AC +/-

PARCEL D AREA: 2.01 AC +/-

NOTE: AREAS SHOWN ARE AFTER PROPOSED ROW DEDICATION.

GENERAL DEVELOPMENT PLAN OPEN SPACE - PARCEL B

DESCRIPTION	AREA (SF)	HATCH
ACTIVE OPEN SPACE	35,036	
PASSIVE OPEN SPACE	42,572	
TOTAL OPEN SPACE PROVIDED	77,608	

REQUIRED OPEN SPACE PER 17.62.057.B.2 = 50 S.F. / DWELLING UNIT. AT 208 UNITS, REQUIRED OPEN SPACE IS 10,400 S.F.

REQUIRED OPEN SPACE PER 17.65.050.C.8.b = 100 S.F. / DWELLING UNIT. AT 208 UNITS, REQUIRED OPEN SPACE IS 20,800 S.F.

PHASING

PHASE 1 – PARCEL A SITE IMPROVEMENTS, INCLUDING ROAD (...) EXTENDING ... OVERALL ... PROPOS... FACILITY. DEVELOP... CONCURR... DEVELOP...

PHASE 2 – PARCEL B SITE AND UTILITY IMPROVEMENTS, INCLUDING THE PA... MANAGEMENT FACILITY.

PHASE 3 – PARCEL B SITE AND UTILITY IMPROVEMENTS, INCLUDING EXTENSION OF SANITARY SEWER TO NORTHEAST CORNER OF SITE.

PHASE 4 – PARCEL A SITE AND UTILITY IMPROVEMENTS.

PHASES 2–4 ARE MARKET DRIVEN AND CAN BE CONSTRUCTED CONCURRENTLY OR SEPARATELY WITH OTHER PHASES.

PARCELS A, B, AND D LAYOUTS ARE SHOWN SCHEMATICALLY. PARCELS A, B, AND D WILL EACH SUBMIT THEIR OWN DETAILED DEVELOPMENT PLAN FOLLOWING GENERAL DEVELOPMENT PLAN APPROVAL.

GENERAL DEVELOPMENT PLAN DECISIONS:

1. OVERALL GENERAL ... DEVELOPMENT PLAN APPROVAL
2. C... CONDITIONAL USE APPROVAL FOR DRIVE-THROUGH FACILITIES ... BOTH PARCELS A AND D
3. MAXIMUM PARKING ADJUSTMENT

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CLIENT/OWNER
CYPRESS EQUITIES

PROJECT NAME
OREGON CITY MIXED USE GENERAL ...ELOPMENT PLAN

PROJECT NUMBER: 794-002-701
PROJECT ADDRESS
...MOLALLA AVENUE ...ON CITY, OR 97045

STAMP

REVISIONS

REV.	ISSUED FOR:	DATE
0	GDP SUBMITTAL	11/4/2025
1	GDP SUBMITTAL	12/09/2025
2	GDP SUBMITTAL	02/02/2026

SECTION, TOWNSHIP, RANGE:
SECTION 16, TOWNSHIP 3 ...OUTH, RANGE 2 EAST, W.M.

PROJECT TEAM
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME
GENERAL DEVELOPMENT PLAN

SHEET NUMBER
GDP-C1.0

TL 3301

PARCEL A

May need retaining wall along north property line to maintain ADA compliance for pathway (adjacent property is higher than the site grading in this area).

PROPOSED TRANSIT STOP RELOCATION

ENHANCED ELEMENTS PER 17.62.055.D

RETAIL 14,600 SF

PROPOSED SIGNAL MODIFICATION

ENHANCED ELEMENTS PER 17.62.055.D

QUICK SERVICE RESTAURANT 4,900 SF

PUBLIC UTILITY EASEMENT

STORMWATER MANAGEMENT

SITE CIRCULATION AND INTERIOR LANDSCAPING

PARCEL D

DRIVE-THRU LANES (CONDITIONAL USE)

MOLALLA AVENUE

BEAVERCREEK WAY

10.5' WIDE SIDEWALK

ACCESS EASEMENT FOR ADJACENT PROPERTIES

EXISTING MIXED USE AND ZONING

EXISTING GAS STATION

TL 800

TL 700

LES SCHWAB TIRES

PARCEL A QSR MENU BOARD

PARCEL B

Proposed alternate trail location based upon City Staff's change of position regarding the location of the shared pathway.

169'-1 9/16"

200'-4 5/8"

201'-3 1/4"

200'-1 5/8"

AERIAL ACCESS

MULTI-FAMILY RESIDENTIAL

ACTIVE OPEN SPACE

PATIO / POOL

SITE CIRCULATION AND INTERIOR LANDSCAPING

DOG RUN

MULTI-FAMILY RESIDENTIAL

STORMWATER MANAGEMENT

INTERNAL STREET IMPROVEMENTS

PROPOSED STREET TREE AND STREET LIGHTING LOCATION TO ALLOW COMBINED BIKE / PEDESTRIAN PATH ON EAST SIDE OF ROAD

LES SCHWAB TIRES

TL 602

TL 500

PROPOSED APPROXIMATE ACCESS TO LES SCHWAB

PROPOSED PUBLIC ROAD CONNECTION

PROPOSED SIGNAL MODIFICATION

TL 503

TL 501

TL 402

TL 210

33' BUILDING SETBACK BASED ON PROPOSED PARCEL B 60' BUILDING HEIGHT

PROPOSED RETAINING WALL AT FULL BUILD-OUT, SUBJECT TO PARCEL B DETAILED DEVELOPMENT PLAN APPROVAL

15' PUBLIC SANITARY SEWER EASEMENT. LOCATION SUBJECT TO PARCEL B DDP APPROVAL.

50' GEOLOGIC HAZARD SETBACK

HEAVILY WOODED AREA

MULTI-USE PATH

APPROXIMATE TOP OF SLOPE GEOLOGIC HAZARD AREA IN SLOPED AREA)

GRAVEL PATHWAY WITHIN 15' EASEMENT

PUBLIC UTILITY EASEMENT

RETAINING WALL

PROPOSED 10.5' MULTI-USE PATH WITH STREET TREES BEHIND PATH

50' BUFFER

NROD SETBACK TOP OF BANK

City references GIS mapping for geo hazard area and associated buffer. The buffer is referenced from the landslide boundary, which is not the top of slope. The Terracon recommendation conservatively used the top of slope for their buffer recommendation.

0 20 40 80

SCALE: 1 inch = 40 ft.

GENERAL DEVELOPMENT PLAN OPEN SPACE - PARCEL B

DESCRIPTION	AREA (SF)	HATCH
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PASSIVE OPEN SPACE	42,572	
TOTAL OPEN SPACE PROVIDED	77,608	

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REQUIRED OPEN SPACE PER 17.65.050.C.8.b = 100 S.F. / DWELLING UNIT. AT 208 UNITS, REQUIRED OPEN SPACE IS 20,800 S.F.

PHASING

PHASE 1 – PARCEL D SITE AND UTILITY IMPROVEMENTS, INCLUDING EXTENSION OF MOLALLA AVENUE ROAD (A[illegible] EXTENDING SOUTH TO OVERALL[illegible] PROPOS[illegible] FACILITY[illegible] DEVELOP[illegible] CONCUR[illegible] DEVELOP[illegible]

PHASE [illegible] UTILITY [illegible] THE PA[illegible] MANAGEMENT FACILITY.

PHASE 3 – PARCEL B SITE AND UTILITY IMPROVEMENTS, INCLUDING EXTENSION OF SANITARY SEWER TO NORTHEAST CORNER OF SITE.

PHASE 4 – PARCEL A SITE AND UTILITY IMPROVEMENTS.

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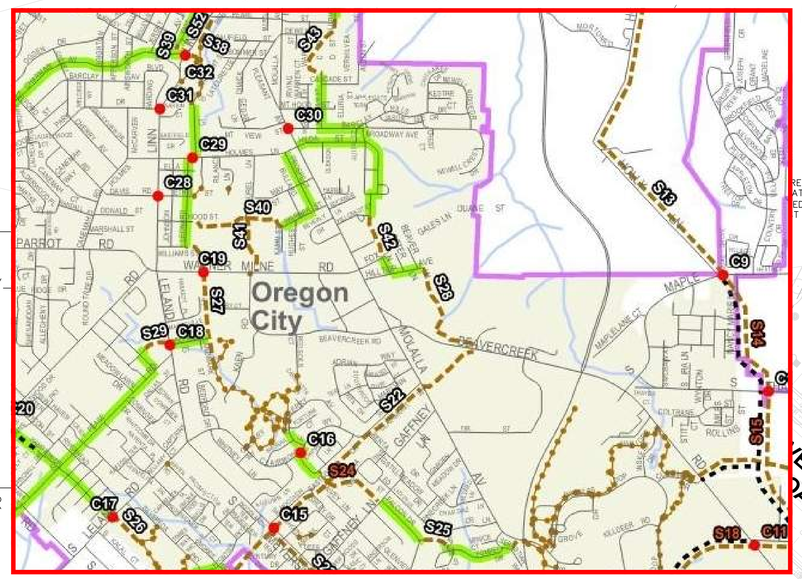
1. OVERALL GENERAL DEVELOPMENT PLAN APPROVAL
2. CONDITIONAL USE APPROVAL FOR DRIVE-THROUGH FACILITIES ON BOTH PARCELS A AND D
3. MAXIMUM PARKING ADJUSTMENT

TSP Fig 21 - Shared Walking and Biking Solutions



SITE DATA

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PARCEL A AREA: 1.96 AC +/-

PARCEL B AREA: 6.63 AC +/-

PARCEL C AREA: 2.10 AC +/-

PARCEL D AREA: 2.01 AC +/-

NOTE: AREAS SHOWN ARE AFTER PROPOSED ROW DEDICATION.

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CLIENT/OWNER

CYPRESS EQUITIES

PROJECT NAME

OREGON CITY MIXED USE GENERAL [illegible]ELOPMENT PLAN

PROJECT NUMBER: 794-002-701

PROJECT ADDRESS

[illegible]MOLALLA AVENUE [illegible]ON CITY, OR 97045

STAMP

REVISIONS

REV	ISSUED FOR:	DATE
0	GDP SUBMITTAL	11/14/2025
1	GDP SUBMITTAL	12/09/2025
2	GDP SUBMITTAL	03/02/2026

SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

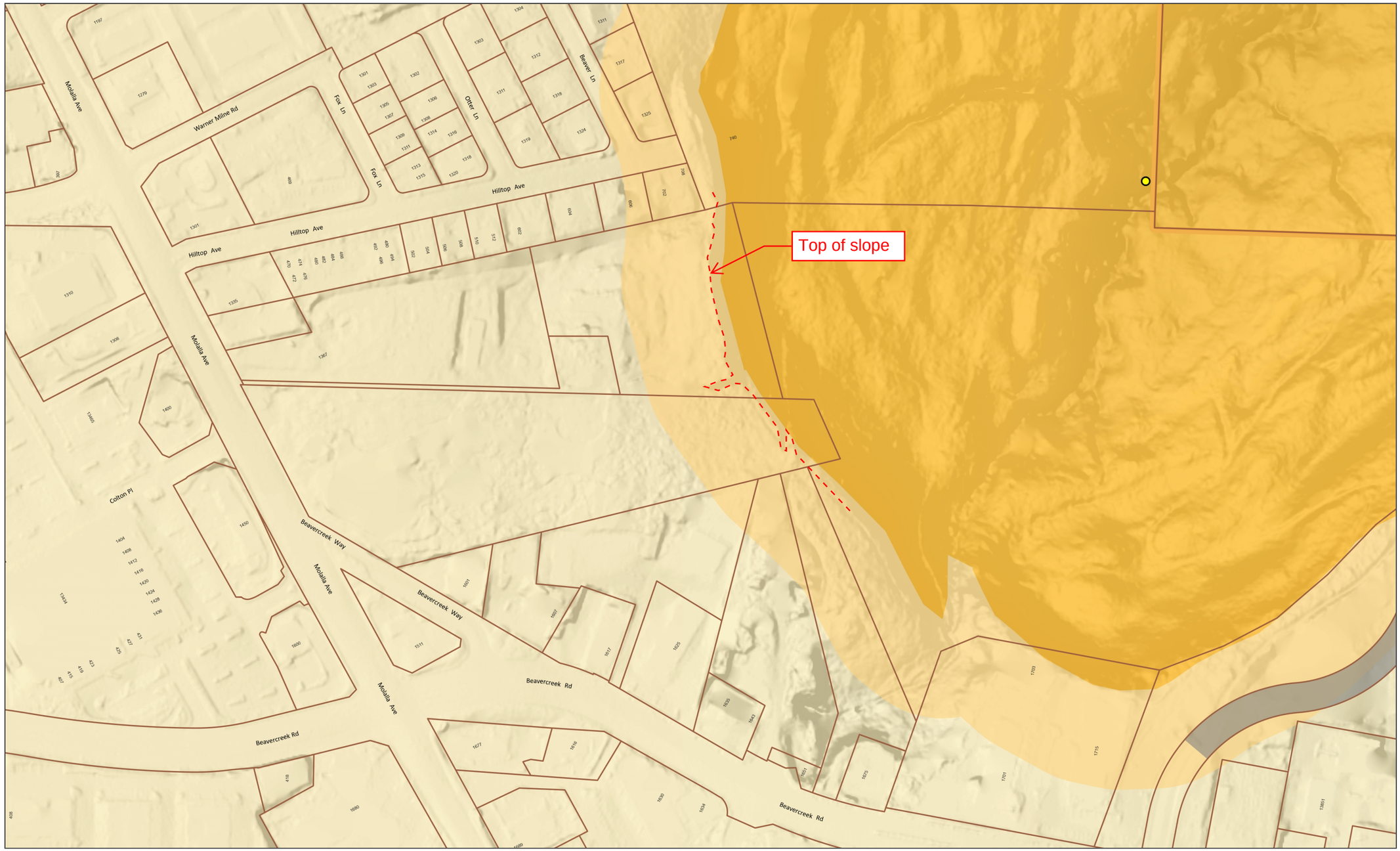
SHEET NAME

GENERAL DEVELOPMENT PLAN

SHEET NUMBER

GDP-C1.0

Oregon City Geo Hazard Map

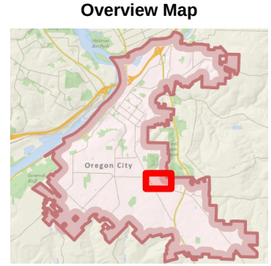


Legend

- Street Names
- Taxlots
- Unimproved ROW
- Landslides (SLIDO) - Historic Landslide
- Geologic Hazards - Landslides
  - Landslides
  - Buffered (200 ft)
- City Limits
- UGB
- Basemap

Notes

Overview Map



The City of Oregon City makes no representations, express or implied, as to the accuracy, completeness and timeliness of the information displayed. This map is not suitable for legal, engineering, surveying or navigation purposes. Notification of any errors is appreciated.

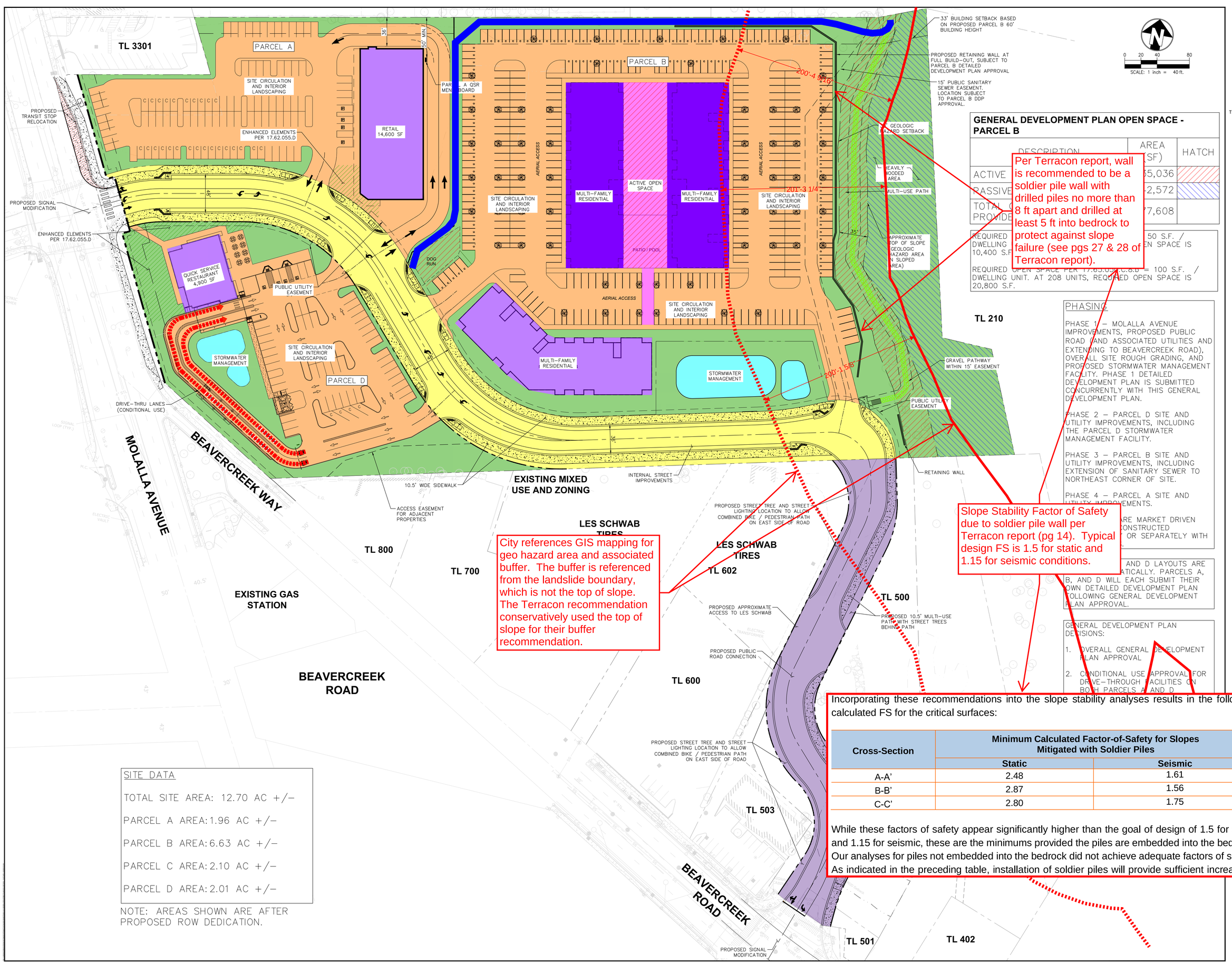
Map created 4/13/2026

N

0 400 800 Feet

1: 2,400

City of Oregon City
PO Box 3040
625 Center St
Oregon City
OR 97045
(503) 657-0891
www.orcity.org



GENERAL DEVELOPMENT PLAN OPEN SPACE - PARCEL B

DESCRIPTION	AREA (SF)	HATCH
ACTIVE	35,036	
PASSIVE	2,572	
TOTAL PROVIDED	37,608	

REQUIRED DWELLING 10,400 S.F

50 S.F. / EN SPACE IS

REQUIRED OPEN SPACE PER 17.62.055.C.3.b = 100 S.F. / DWELLING UNIT. AT 208 UNITS, REQUIRED OPEN SPACE IS 20,800 S.F.

Per Terracon report, wall is recommended to be a soldier pile wall with drilled piles no more than 8 ft apart and drilled at least 5 ft into bedrock to protect against slope failure (see pgs 27 & 28 of Terracon report).

PHASING

PHASE 1 – MOLALLA AVENUE IMPROVEMENTS, PROPOSED PUBLIC ROAD (AND ASSOCIATED UTILITIES AND EXTENDING TO BEAVERCREEK ROAD), OVERALL SITE ROUGH GRADING, AND PROPOSED STORMWATER MANAGEMENT FACILITY. PHASE 1 DETAILED DEVELOPMENT PLAN IS SUBMITTED CONCURRENTLY WITH THIS GENERAL DEVELOPMENT PLAN.

PHASE 2 – PARCEL D SITE AND UTILITY IMPROVEMENTS, INCLUDING THE PARCEL D STORMWATER MANAGEMENT FACILITY.

PHASE 3 – PARCEL B SITE AND UTILITY IMPROVEMENTS, INCLUDING EXTENSION OF SANITARY SEWER TO NORTHEAST CORNER OF SITE.

PHASE 4 – PARCEL A SITE AND UTILITY IMPROVEMENTS.

ARE MARKET DRIVEN CONSTRUCTED OR SEPARATELY WITH

AND D LAYOUTS ARE ATICALLY. PARCELS A, B, AND D WILL EACH SUBMIT THEIR OWN DETAILED DEVELOPMENT PLAN FOLLOWING GENERAL DEVELOPMENT PLAN APPROVAL.

GENERAL DEVELOPMENT PLAN DECISIONS:

1. OVERALL GENERAL DEVELOPMENT PLAN APPROVAL
2. CONDITIONAL USE APPROVAL FOR DRIVE-THROUGH FACILITIES ON BOTH PARCELS A AND D

Slope Stability Factor of Safety due to soldier pile wall per Terracon report (pg 14). Typical design FS is 1.5 for static and 1.15 for seismic conditions.

City references GIS mapping for geo hazard area and associated buffer. The buffer is referenced from the landslide boundary, which is not the top of slope. The Terracon recommendation conservatively used the top of slope for their buffer recommendation.

Incorporating these recommendations into the slope stability analyses results in the following calculated FS for the critical surfaces:

Cross-Section	Minimum Calculated Factor-of-Safety for Slopes Mitigated with Soldier Piles	
	Static	Seismic
A-A'	2.48	1.61
B-B'	2.87	1.56
C-C'	2.80	1.75

While these factors of safety appear significantly higher than the goal of design of 1.5 for static and 1.15 for seismic, these are the minimums provided the piles are embedded into the bedrock. Our analyses for piles not embedded into the bedrock did not achieve adequate factors of safety. As indicated in the preceding table, installation of soldier piles will provide sufficient increase in

SITE DATA

TOTAL SITE AREA: 12.70 AC +/-

PARCEL A AREA: 1.96 AC +/-

PARCEL B AREA: 6.63 AC +/-

PARCEL C AREA: 2.10 AC +/-

PARCEL D AREA: 2.01 AC +/-

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CLIENT/OWNER

CYPRESS EQUITIES

PROJECT NAME

OREGON CITY MIXED USE GENERAL DEVELOPMENT PLAN

LANGAN PROJECT NUMBER: 794-002-701

PROJECT ADDRESS

1367 MOLALLA AVENUE
OREGON CITY, OR 97045

STAMP

REVISIONS

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0	GDP SUBMITTAL	11/14/2025
1	GDP SUBMITTAL	12/09/2025
2	GDP SUBMITTAL	03/02/2026

811

, TOWNSHIP, RANGE:

ON 16, TOWNSHIP 3 RANGE 2 EAST, W.M.

OJECT TEAM

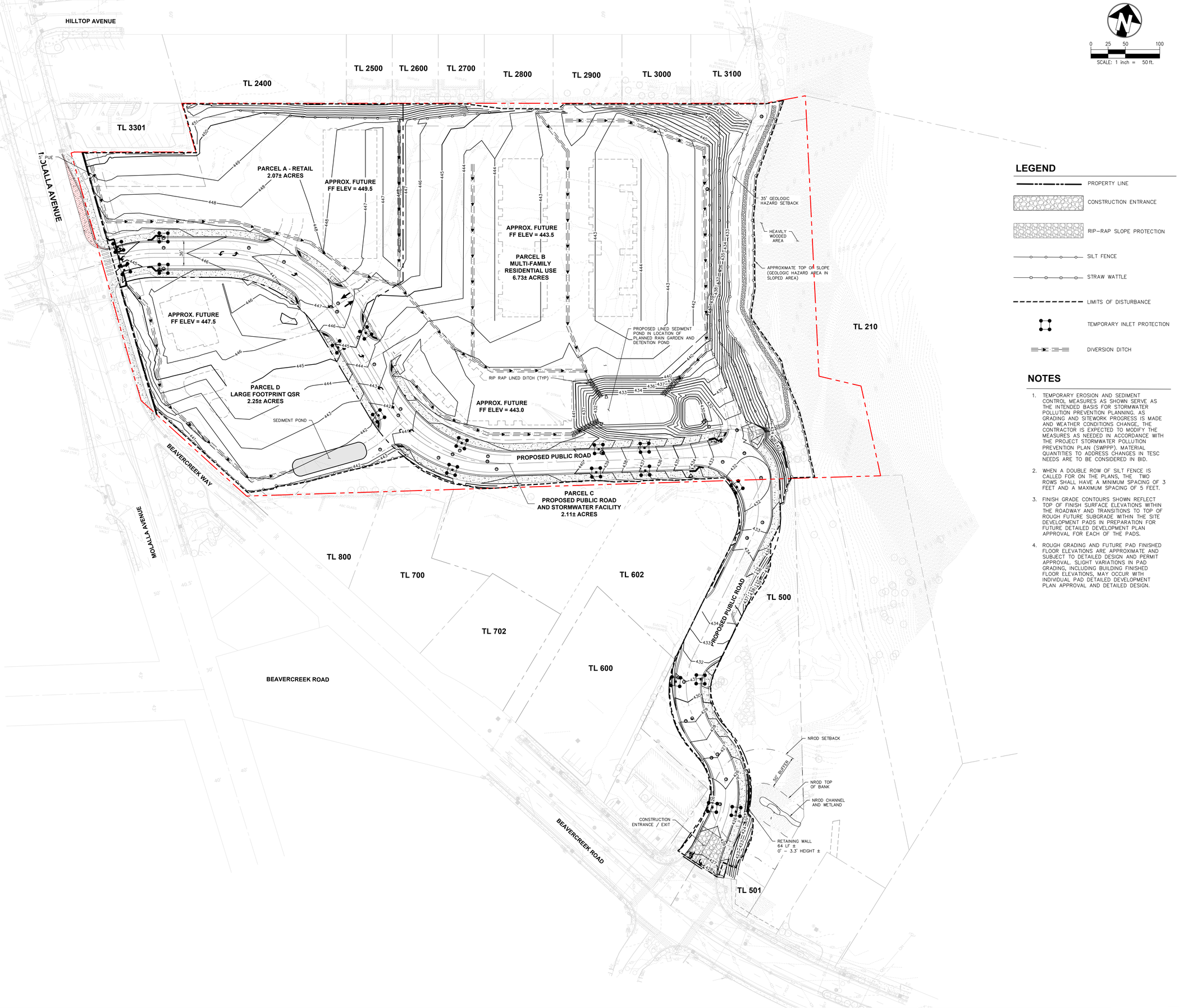
BY: S.FRANKLIN
BY: T.SHABRAM

SHEET NAME

GENERAL DEVELOPMENT PLAN

SHEET NUMBER

GDP-C1.0



0 25 50 100

SCALE: 1 inch = 50 ft.

LEGEND

- PROPERTY LINE
- CONSTRUCTION ENTRANCE
- RIP–RAP SLOPE PROTECTION
- SILT FENCE
- STRAW WATTLE
- LIMITS OF DISTURBANCE
- TEMPORARY INLET PROTECTION
- DIVERSION DITCH

NOTES

1. TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES AS SHOWN SERVE AS THE INTENDED BASIS FOR STORMWATER POLLUTION PREVENTION PLANNING. AS GRADING AND SITEWORK PROGRESS IS MADE AND WEATHER CONDITIONS CHANGE, THE CONTRACTOR IS EXPECTED TO MODIFY THE MEASURES AS NEEDED IN ACCORDANCE WITH THE PROJECT STORMWATER POLLUTION PREVENTION PLAN (SWPPP). MATERIAL QUANTITIES TO ADDRESS CHANGES IN TESC NEEDS ARE TO BE CONSIDERED IN BID.
2. WHEN A DOUBLE ROW OF SILT FENCE IS CALLED FOR ON THE PLANS, THE TWO ROWS SHALL HAVE A MINIMUM SPACING OF 3 FEET AND A MAXIMUM SPACING OF 5 FEET.
3. FINISH GRADE CONTOURS SHOWN REFLECT TOP OF FINISH SURFACE ELEVATIONS WITHIN THE ROADWAY AND TRANSITIONS TO TOP OF ROUGH FUTURE SUBGRADE WITHIN THE SITE DEVELOPMENT PADS IN PREPARATION FOR FUTURE DETAILED DEVELOPMENT PLAN APPROVAL FOR EACH OF THE PADS.
4. ROUGH GRADING AND FUTURE PAD FINISHED FLOOR ELEVATIONS ARE APPROXIMATE AND SUBJECT TO DETAILED DESIGN AND PERMIT APPROVAL. SLIGHT VARIATIONS IN PAD GRADING, INCLUDING BUILDING FINISHED FLOOR ELEVATIONS, MAY OCCUR WITH INDIVIDUAL PAD DETAILED DEVELOPMENT PLAN APPROVAL AND DETAILED DESIGN.

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CLIENT/OWNER

CYPRESS EQUITIES

PROJECT NAME

OREGON CITY MIXED USE DETAILED DEVELOPMENT PLAN

LANGAN PROJECT NUMBER: 794-002-701

PROJECT ADDRESS

1367 MOLALLA AVENUE
OREGON CITY, OR 97045

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1	DDP SUBMITTAL	12/09/2025
2	DDP SUBMITTAL	03/02/2026

SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

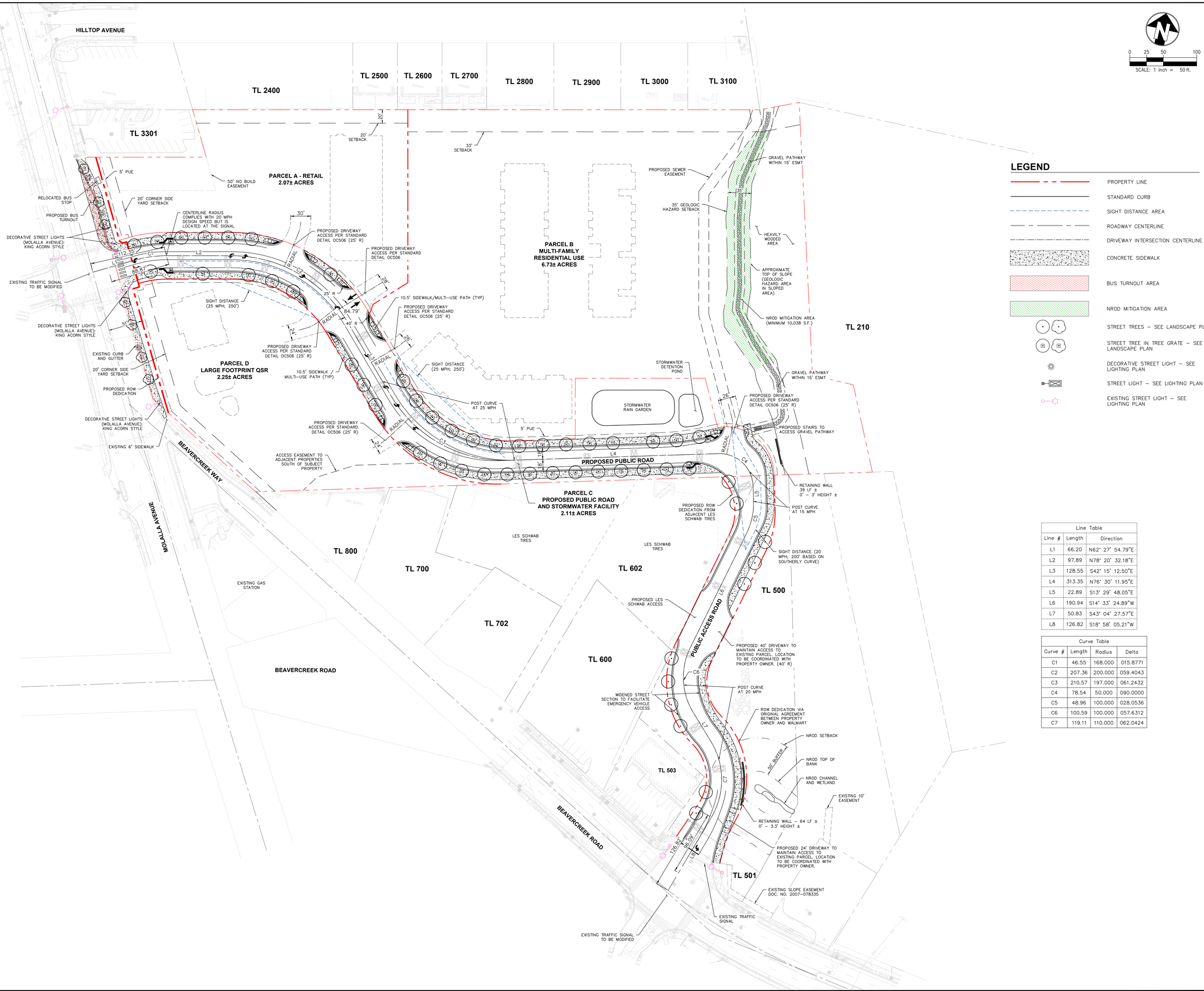
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

PRELIMINARY ROUGH GRADING AND EROSION CONTROL PLAN

SHEET NUMBER

DDP-C0.1



LEGEND

- PROPERTY LINE
- STANDARD CURB
- SIGHT DISTANCE AREA
- ROADWAY CENTERLINE
- DRIVEWAY INTERSECTION CENTERLINE
- CONCRETE SIDEWALK
- BUS TURNOUT AREA
- NROD MITIGATION AREA
- STREET TREES – SEE LANDSCAPE PLAN
- STREET TREE IN TREE GRATE – SEE LANDSCAPE PLAN
- DECORATIVE STREET LIGHT – SEE LIGHTING PLAN
- STREET LIGHT – SEE LIGHTING PLAN
- EXISTING STREET LIGHT – SEE LIGHTING PLAN

Line Table		
Line #	Length	Direction
L1	66.20	N62° 27' 54.79"E
L2	97.89	N78° 20' 32.18"E
L3	128.55	S42° 15' 12.50"E
L4	313.35	N76° 30' 11.95"E
L5	22.89	S13° 29' 48.05"E
L6	190.94	S14° 33' 24.89"W
L7	50.83	S43° 04' 27.57"E
L8	126.82	S18° 58' 05.21"W

Curve Table			
Curve #	Length	Radius	Delta
C1	46.55	168.000	015.8771
C2	207.36	200.000	059.4043
C3	210.57	197.000	061.2432
C4	78.54	50.000	090.0000
C5	48.96	100.000	028.0536
C6	100.59	100.000	057.6312
C7	119.11	110.000	062.0424

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T: 503.659.9500 www.langan.com

CLIENT/OWNER

CYPRESS EQUITIES

PROJECT NAME

OREGON CITY MIXED USE DETAILED DEVELOPMENT PLAN

LANGAN PROJECT NUMBER: 794-002-701

PROJECT ADDRESS

1367 MOLALLA AVENUE
OREGON CITY, OR 97045

STAMP

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0	DDP SUBMITTAL	11/14/2025
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SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

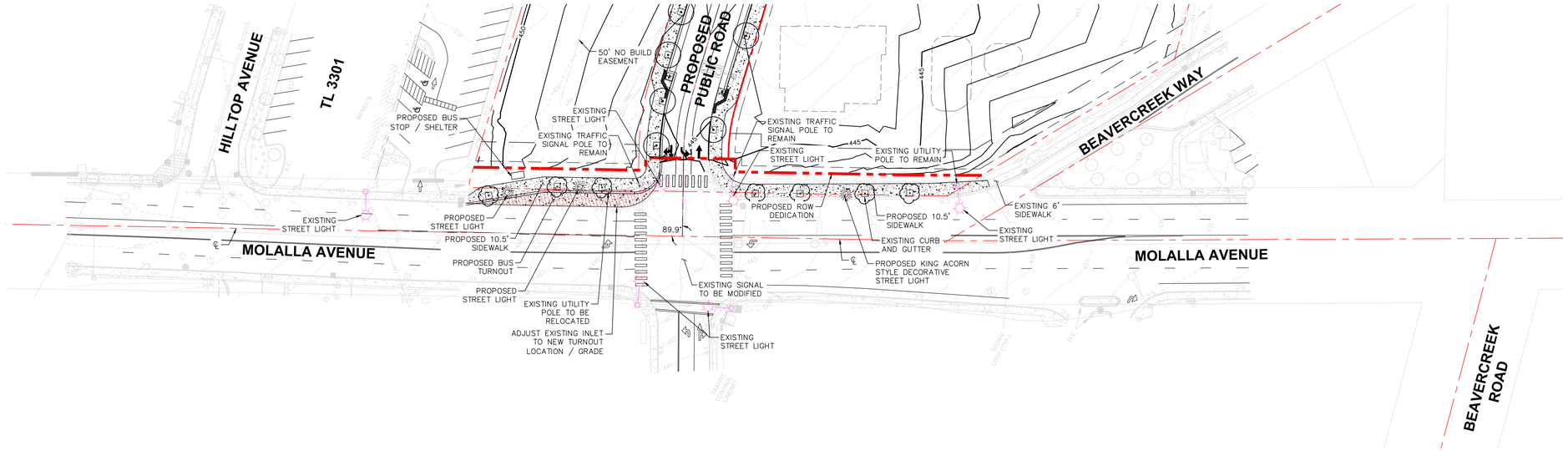
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

CIVIL SITE PLAN

SHEET NUMBER

DDP-C1.0

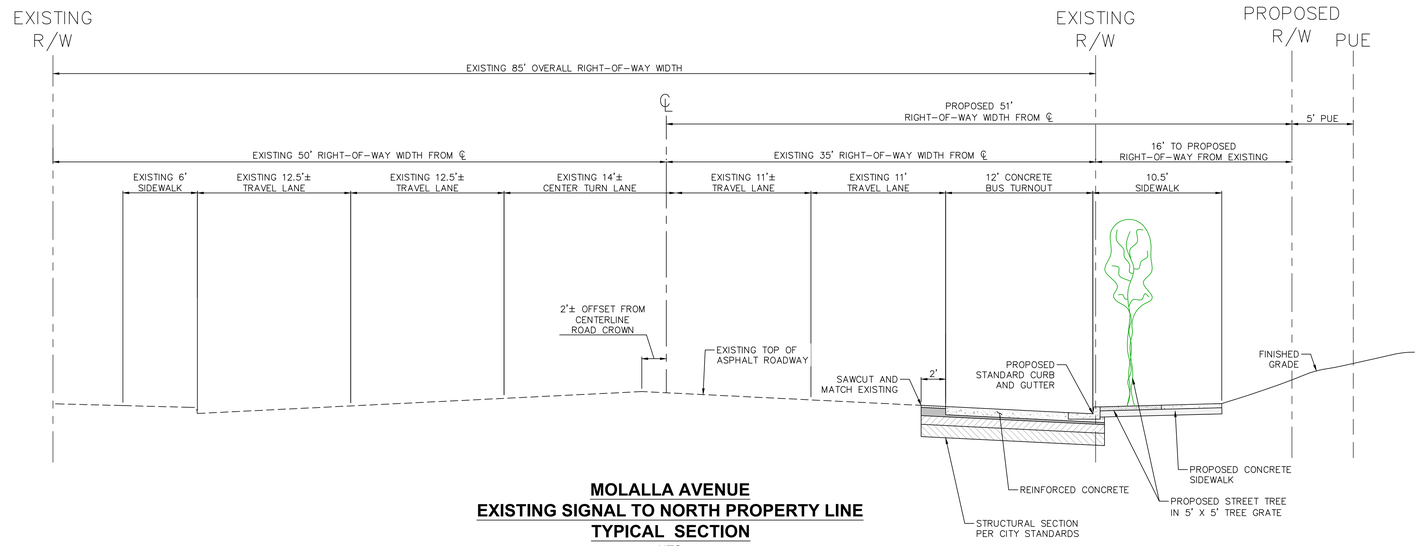


0 20 40 80

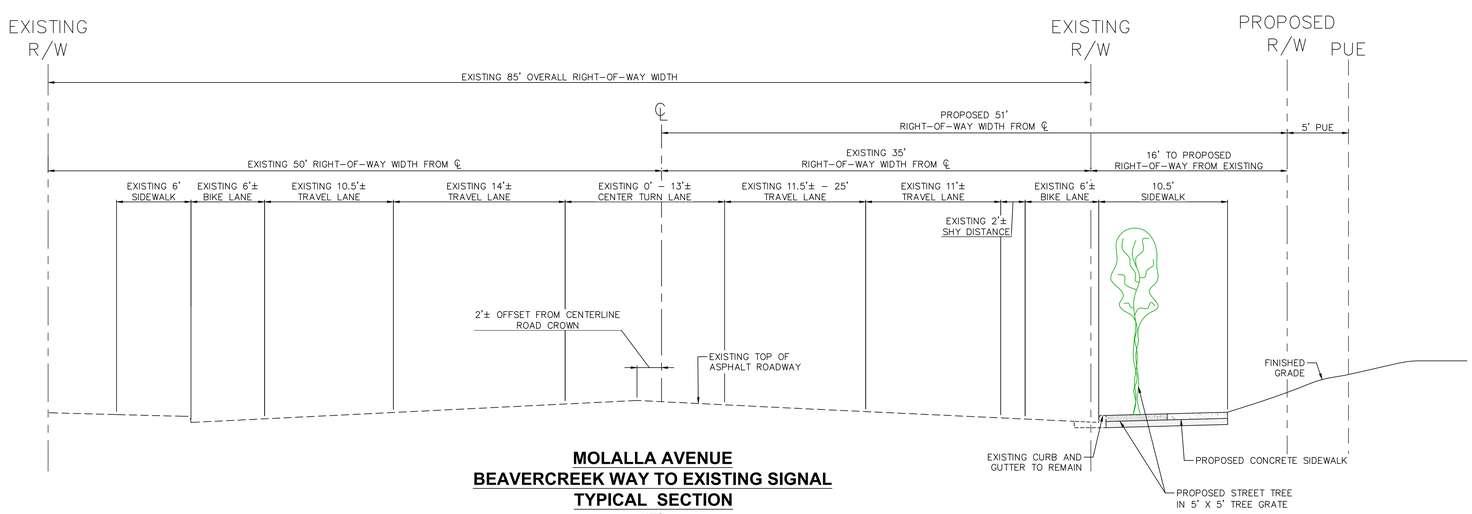
SCALE: 1 inch = 40 ft.

LEGEND

- PROPERTY LINE
- STANDARD CURB
- ROAD CENTER LINE
- 5' PUE
- CONCRETE SIDEWALK
- STREET TREE IN TREE GRATE – SEE LANDSCAPE PLAN
- DECORATIVE STREET LIGHT – SEE LIGHTING PLAN
- STREET LIGHT – SEE LIGHTING PLAN
- EXISTING STREET LIGHT – SEE LIGHTING PLAN



MOLALLA AVENUE
EXISTING SIGNAL TO NORTH PROPERTY LINE
TYPICAL SECTION
NTS



MOLALLA AVENUE
BEAVERCREEK WAY TO EXISTING SIGNAL
TYPICAL SECTION
NTS

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SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

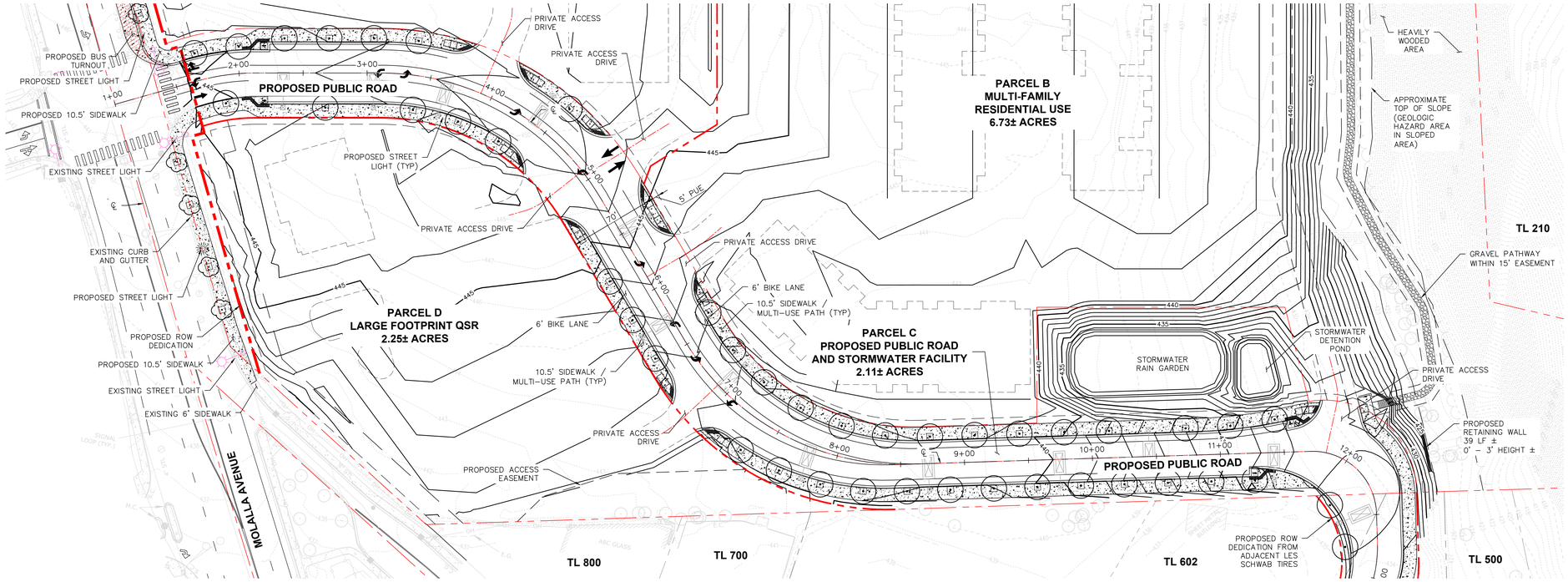
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

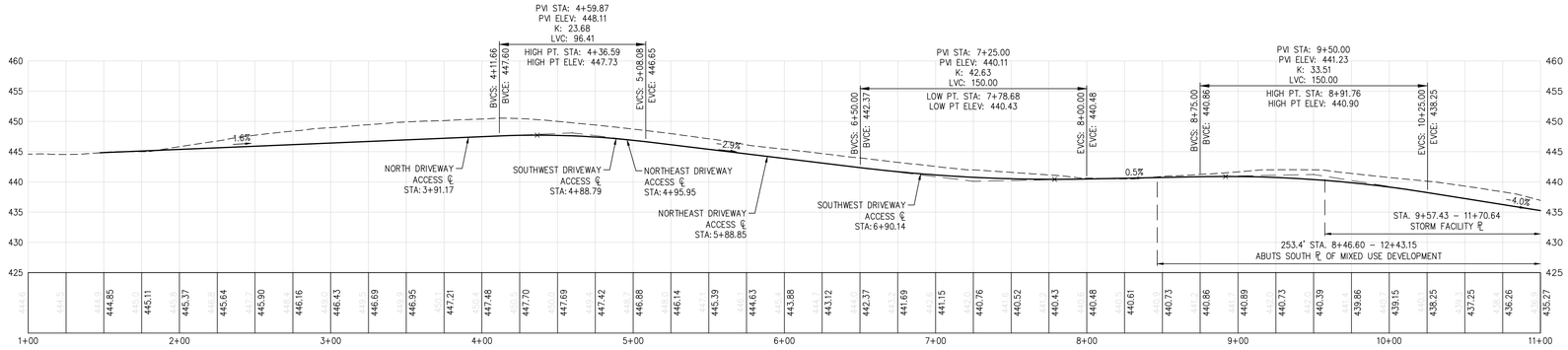
SHEET NAME

MOLALLA AVENUE STREET PLAN AND TYPICAL SECTIONS

SHEET NUMBER

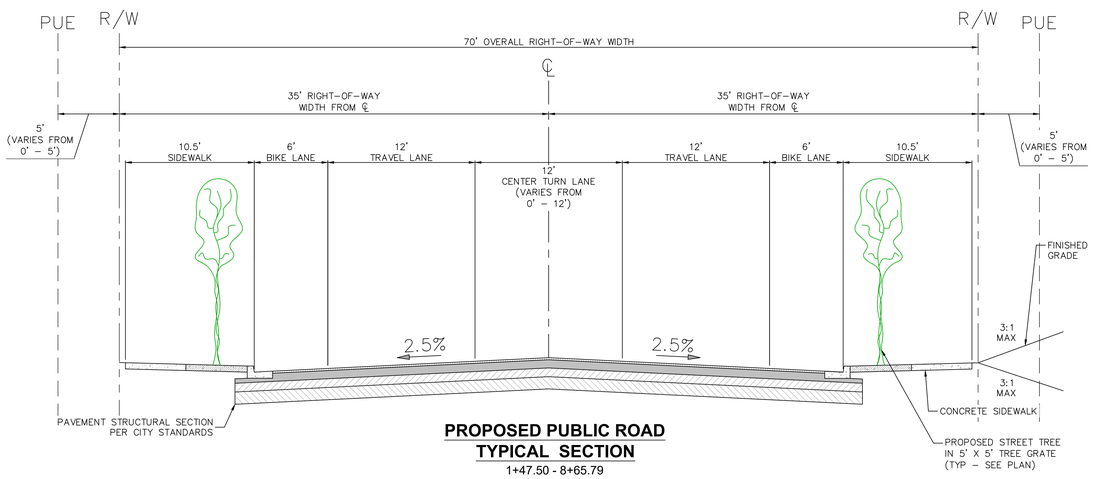
DDP-C1.1





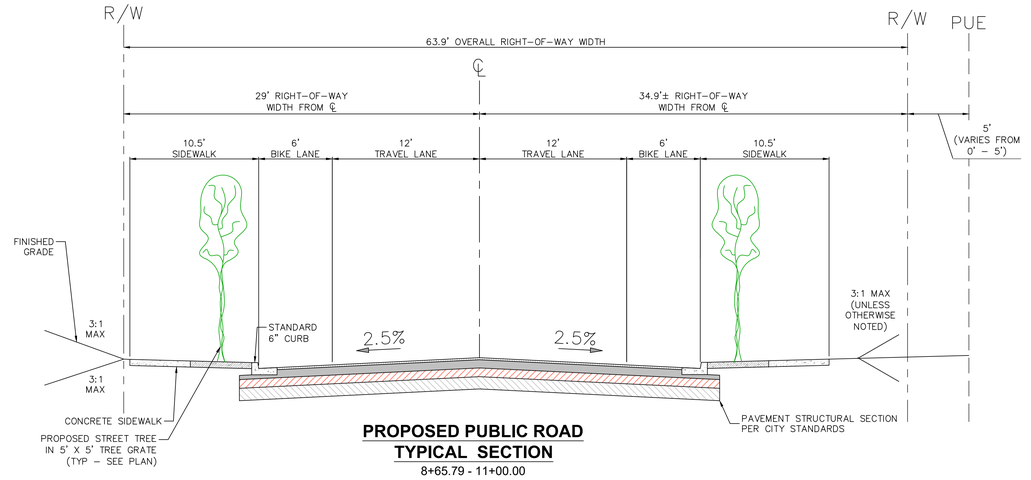
PROPOSED PUBLIC ROAD PROFILE

SCALE:
HORIZONTAL: 1" = 40'
VERTICAL: 1" = 10'



PROPOSED PUBLIC ROAD TYPICAL SECTION

1+47.50 - 8+65.79
NTS



PROPOSED PUBLIC ROAD TYPICAL SECTION

8+65.79 - 11+00.00
NTS

0 20 40 80
SCALE: 1 inch = 40 ft.

LEGEND

- PROPERTY LINE
- STANDARD CURB
- ROAD CENTER LINE
- 5' PUE
- CONCRETE SIDEWALK
- STREET TREES – SEE LANDSCAPE PLAN
- STREET TREE IN TREE GRATE – SEE LANDSCAPE PLAN
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SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

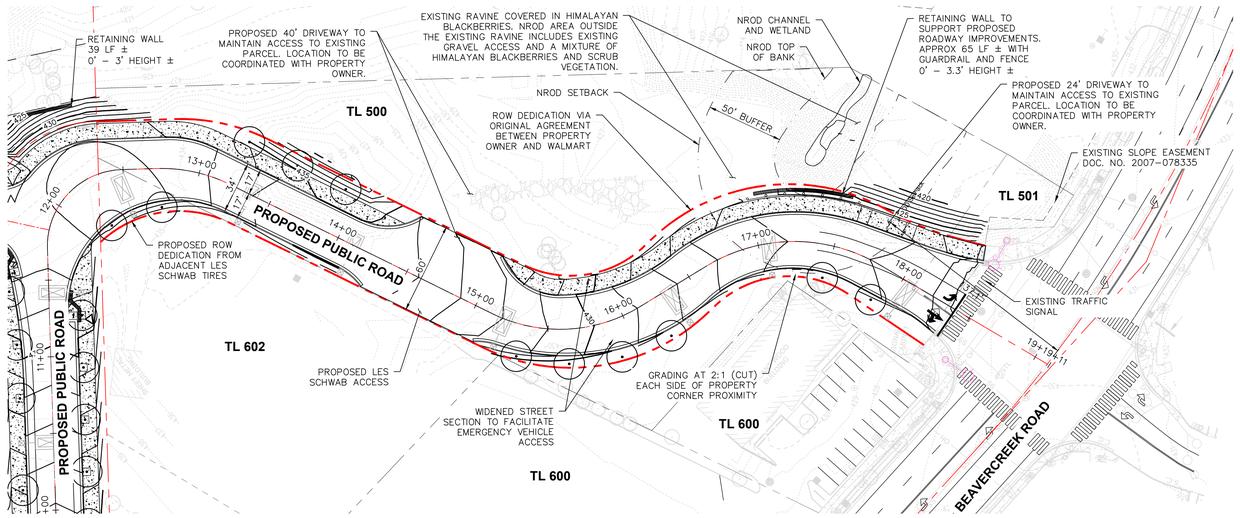
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

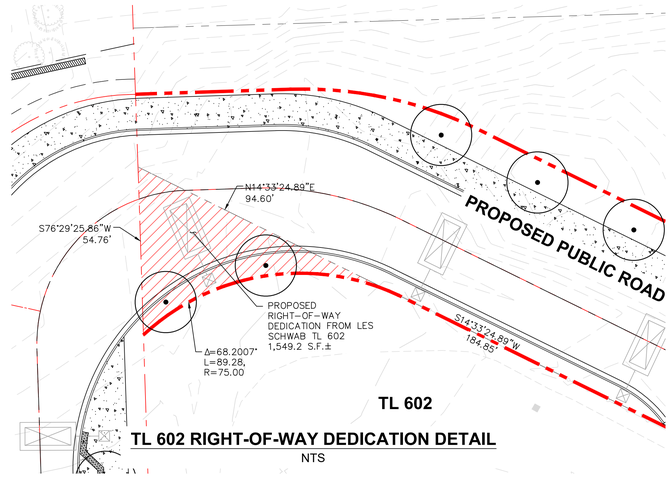
SHEET NAME

PROPOSED PUBLIC ROAD PLAN, PROFILE, AND TYPICAL SECTIONS

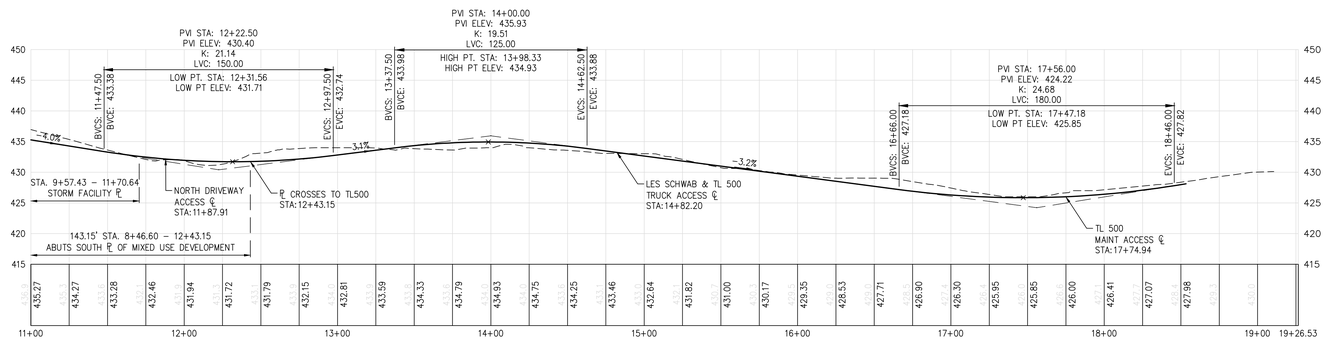
SHEET NUMBER

DDP-C1.2

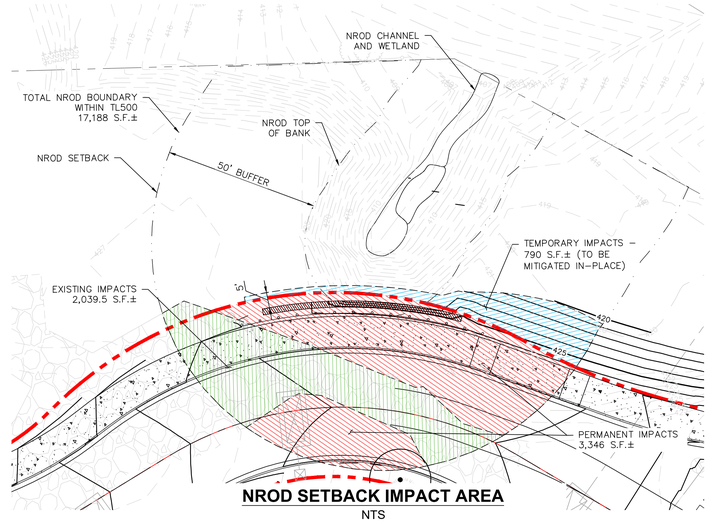




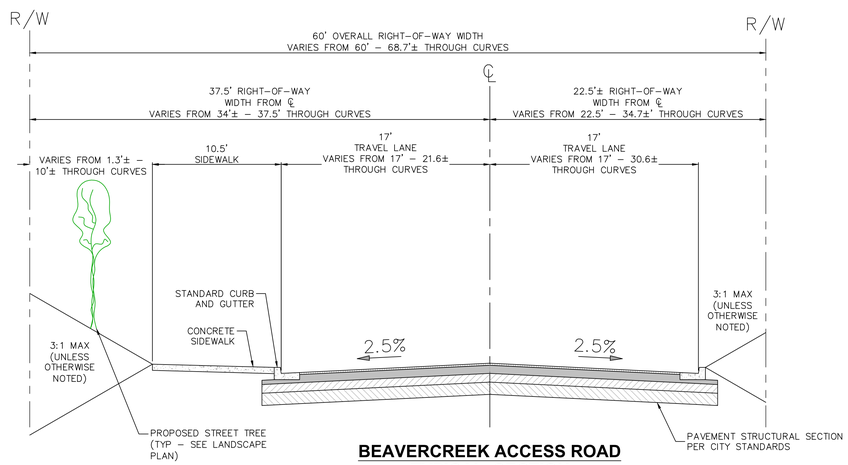
TL 602 RIGHT-OF-WAY DEDICATION DETAIL
NTS



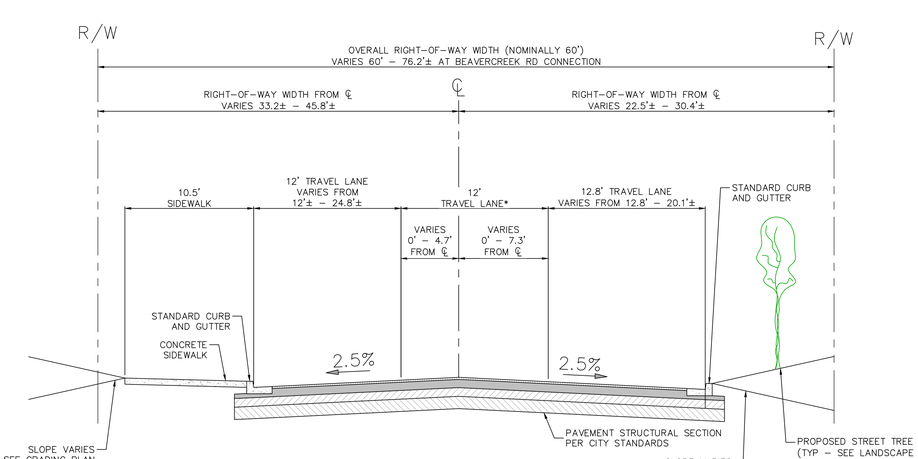
PROPOSED PUBLIC ROAD PROFILE
SCALE:
HORIZONTAL: 1" = 40'
VERTICAL: 1" = 10'



NROD SETBACK IMPACT AREA
NTS

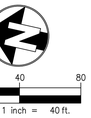


BEAVERCREEK ACCESS ROAD
TYPICAL SECTION
12+33.65 - 14+92.03
NTS



BEAVERCREEK ACCESS ROAD
TYPICAL SECTION
14+92.03 - 18+59
NTS

NOTES:
* CENTER TRAVEL LANE BEGINS AT STATION 17+39.33.



LEGEND

- PROPERTY LINE
- STANDARD CURB
- ROAD CENTER LINE
- 5' PUE
- CONCRETE SIDEWALK
- STREET TREES – SEE LANDSCAPE PLAN
- STREET TREE IN TREE GRATE – SEE LANDSCAPE PLAN
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CLIENT/OWNER

CYPRESS EQUITIES

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SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

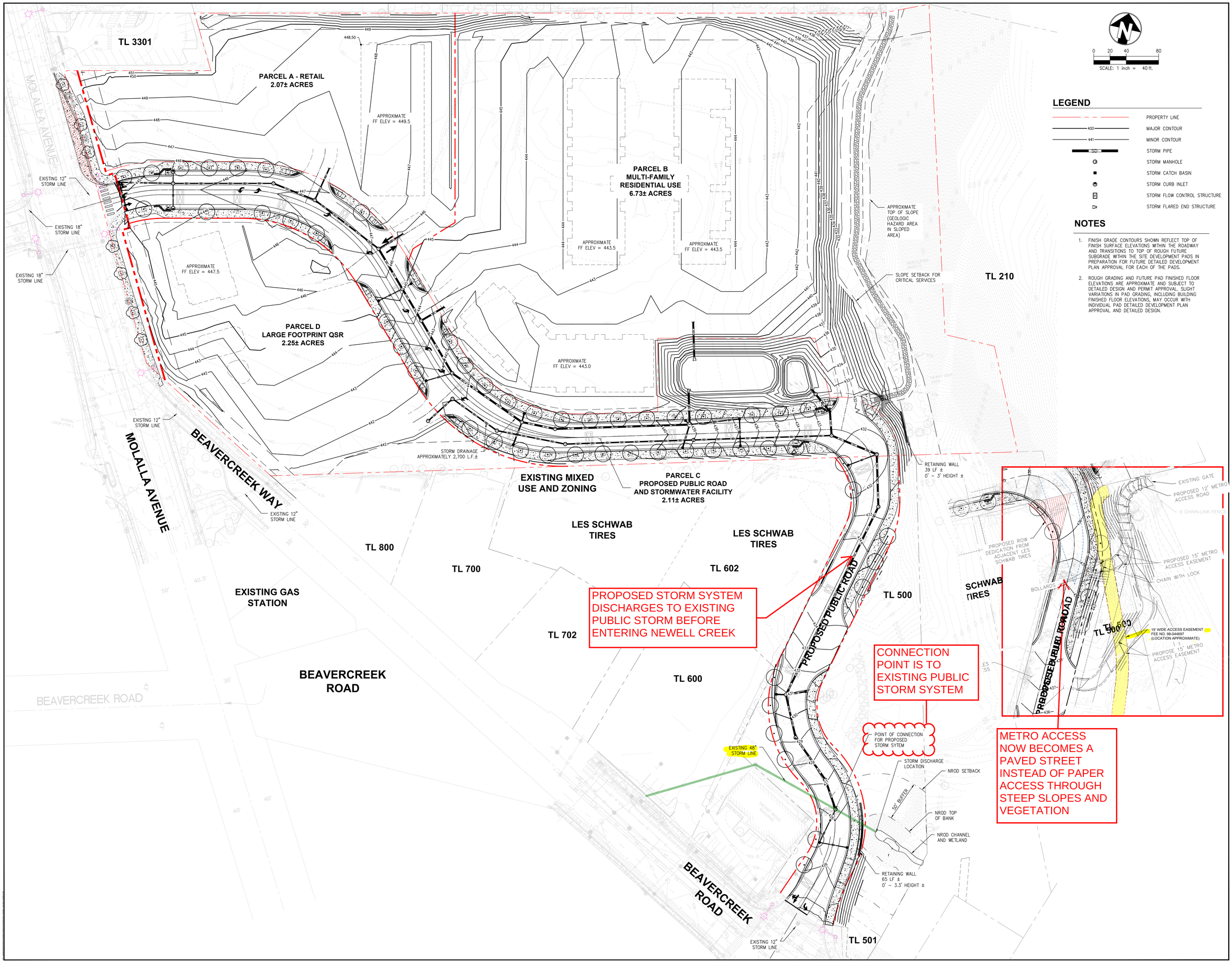
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

PROPOSED PUBLIC ROAD PLAN, PROFILE, AND TYPICAL SECTIONS

SHEET NUMBER

DDP-C1.3



0 20 40 80

SCALE: 1 inch = 40 ft.

LEGEND

- PROPERTY LINE
- 400 MAJOR CONTOUR
- 441 MINOR CONTOUR
- SD STORM PIPE
- STORM MANHOLE
- STORM CATCH BASIN
- STORM CURB INLET
- STORM FLOW CONTROL STRUCTURE
- STORM FLARED END STRUCTURE

NOTES

1. FINISH GRADE CONTOURS SHOWN REFLECT TOP OF FINISH SURFACE ELEVATIONS WITHIN THE ROADWAY AND TRANSITIONS TO TOP OF ROUGH FUTURE SUBGRADE WITHIN THE SITE DEVELOPMENT PADS IN PREPARATION FOR FUTURE DETAILED DEVELOPMENT PLAN APPROVAL FOR EACH OF THE PADS.
2. ROUGH GRADING AND FUTURE PAD FINISHED FLOOR ELEVATIONS ARE APPROXIMATE AND SUBJECT TO DETAILED DESIGN AND PERMIT APPROVAL. SLIGHT VARIATIONS IN PAD GRADING, INCLUDING BUILDING FINISHED FLOOR ELEVATIONS, MAY OCCUR WITH INDIVIDUAL PAD DETAILED DEVELOPMENT PLAN APPROVAL AND DETAILED DESIGN.

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811

SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

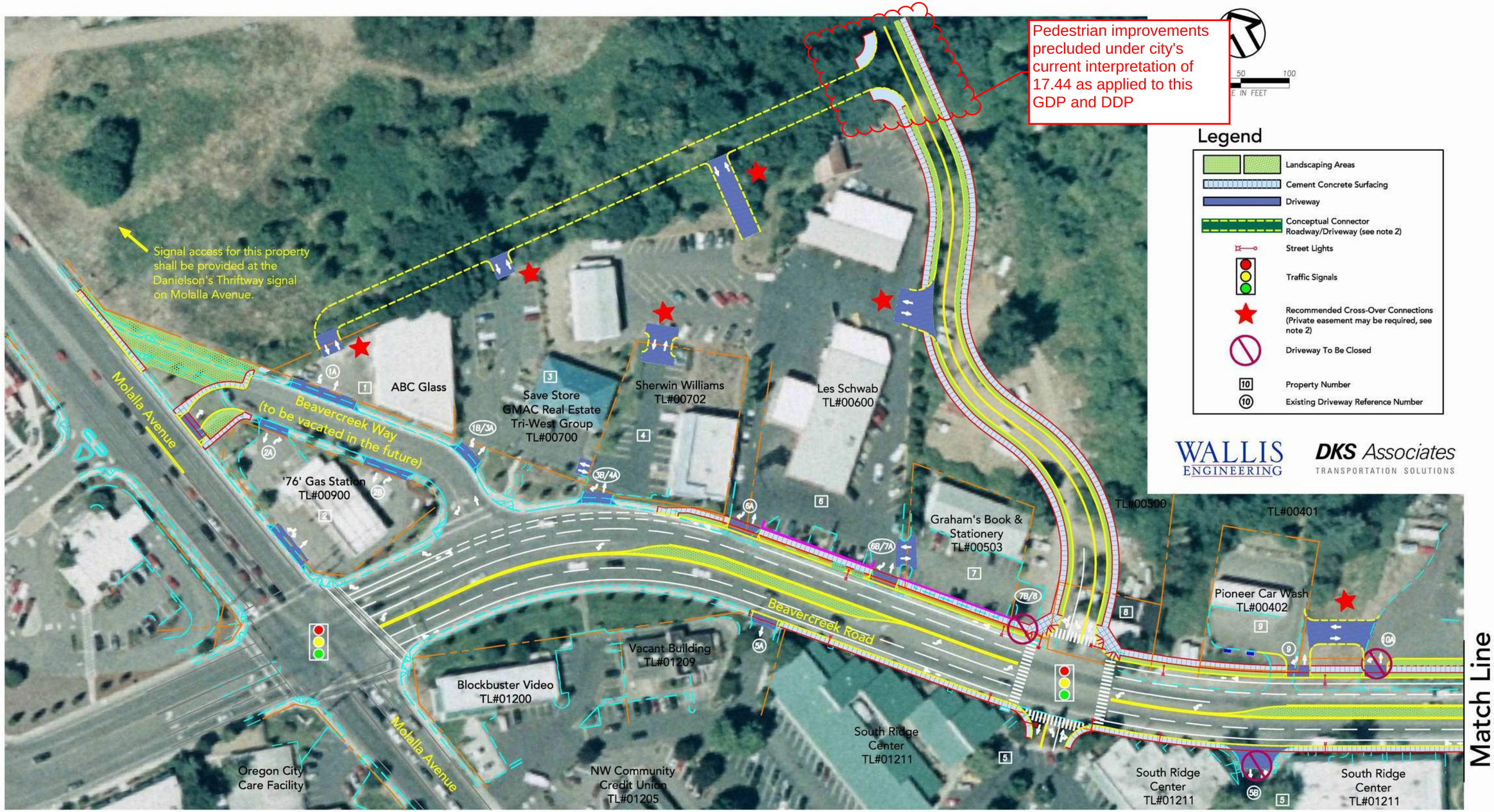
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

PRELIMINARY CIVIL GRADING AND DRAINAGE PLAN

SHEET NUMBER

DDP-C2.0



WALLIS ENGINEERING

DKS Associates
TRANSPORTATION SOLUTIONS

Notes:

1. The goal of the Long Term Access Management Plan is to reduce conflict points, improve safety, and increase vehicle capacity of Beavercreek Road. The specific objectives of the Long Term Access Management Plan are to provide all properties adjacent to Beavercreek Road connectivity to a signalized intersection on Beavercreek Road, and to close and/or consolidate driveways to reduce conflict points and improve overall safety.
2. Crossover agreements between properties shall be provided during redevelopment to meet the above goals and objectives. Locations of crossover connections have been shown conceptually. Final locations may be adjusted during the site plan process provided the goal of the Long Term Plan is met.
3. This plan shall be implemented as redevelopment and/or property consolidation occurs along Beavercreek Road.

Figure 8
Long-Term Access Management Plan

Adopted October 19, 2005
by Ordinance No. 05-1007
Page 1 of 2

STORMWATER
RAIN GARDEN

5' PUE

PROPOSED PUBLIC ROAD

PROPOSED STAIRS TO
ACCESS GRAVEL PATHWAY

RETAINING WALL
39 LF ±
0' – 3' HEIGHT ±

EXISTING GATE

PROPOSED 12' METRO
ACCESS ROAD

6' CHAIN-LINK FENCE

PROPOSED ROW
DEDICATION FROM
ADJACENT LES
SCHWAB TIRES

**TING MIXED USE
AND ZONING**

**CEL C
PUBLIC ROAD
ATER FACILITY
ACRES**

**LES SCHWAB
TIRES**

TL 602

TL 500

PROPOSED PUBLIC ROAD

PROPOSED LES
SCHWAB ACCESS

15' WIDE ACCESS EASEMENT
FEE NO. 98-044697
(LOCATION APPROXIMATE)

PROPOSE 15' METRO
ACCESS EASEMENT

4' BARBED WIRE FENCE

TL 600

PROPOSED 40' DRIVEWAY TO
MAINTAIN ACCESS TO
EXISTING PARCEL. LOCATION
TO BE COORDINATED WITH
PROPERTY OWNER. (40' R)

WIDENED STREET
SECTION TO FACILITATE
EMERGENCY VEHICLE
ACCESS

EXTG GRAVEL
ACCESS

GRADING EASEMENT
AGREEMENT
FEE NO. 2013-058815

ROW DEDICATION VIA
ORIGINAL AGREEMENT
BETWEEN PROPERTY
OWNER AND WALMART

NROD SETBACK

50' BUFFER

NROD TOP OF
BANK

NROD CHANNEL
AND WETLAND

TL 503

6' WOOD FENCE

STORM MANHOLE
RIM: 430.18'
IE 12" CPP (E): 423.15'
IE 36" CONC (S): 422.91'
IE 36" CONC (N): 422.62'

STORM MANHOLE
RIM: 424.51'
FULL OF DEBRIS

STORM MANHOLE AT INLET
RIM:
IE 12" CPP (E): 429.77'
426.57'

ROUND CATCH BASIN
RIM:
IE 12" CPP (W): 429.03'
426.40'

ACCESS AND UTILITY EASEMENT
(AS SHOWN ON EXHIBIT A, 5 OF 14
CASE NO. CV

PUBLIC UTILITY
EASEMENT

411.39'

0 10 20 40
SCALE: 1 inch = 20 ft.

LEGEND

- PROPERTY LINE
- STANDARD CURB
- SIGHT DISTANCE AREA
- ROADWAY CENTERLINE
- DRIVEWAY INTERSECTION CENTERLINE
- CONCRETE SIDEWALK
- BUS TURNOUT AREA
- NROD MITIGATION AREA
- STREET TREES – SEE LANDSCAPE PLAN
- STREET TREE IN TREE GRATE – SEE LANDSCAPE PLAN
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PROJECT TEAM

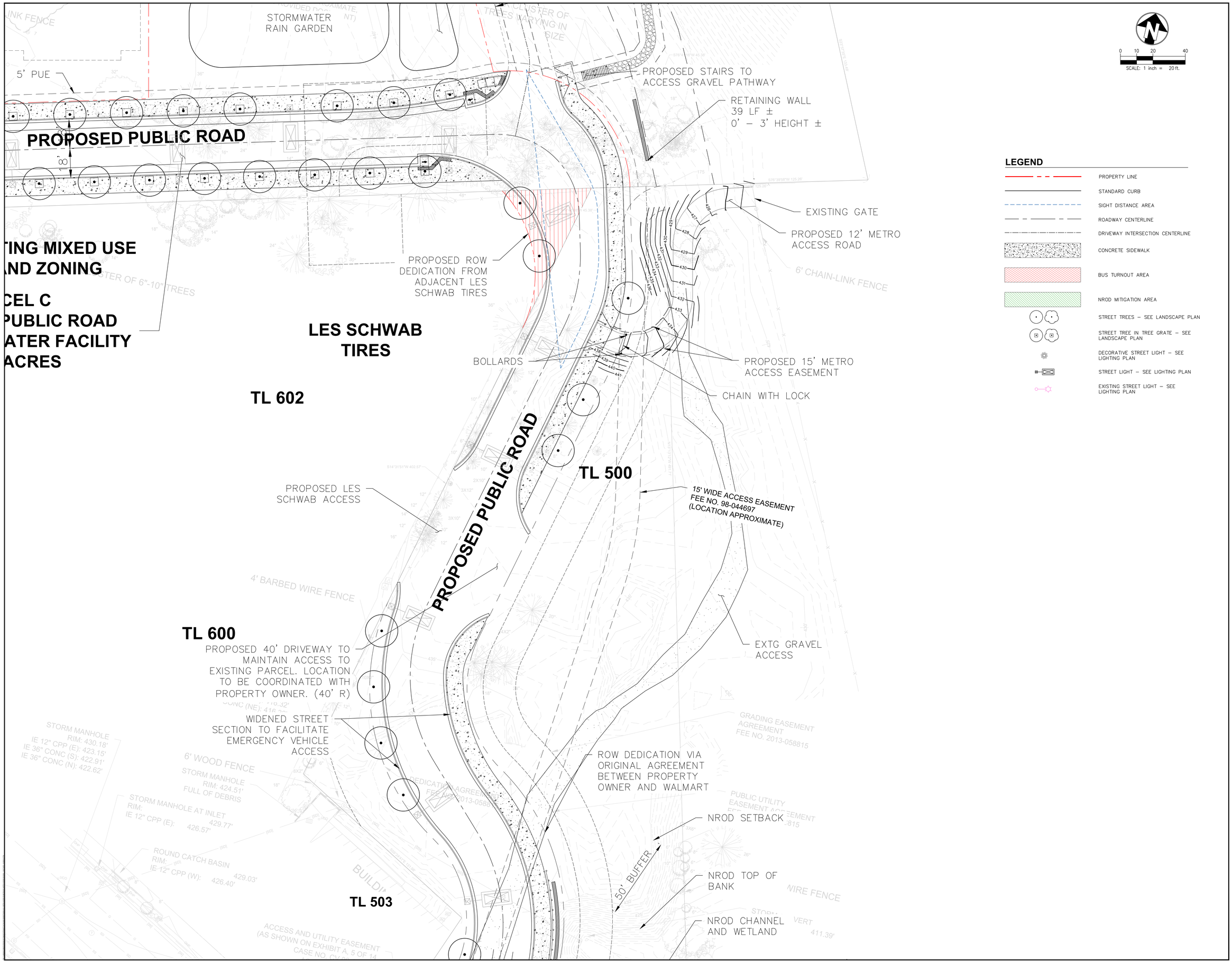
REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

METRO ACCESS ROAD EXHIBIT - OPTION 1

SHEET NUMBER

EXH-1.0



LEGEND

- PROPERTY LINE
- STANDARD CURB
- SIGHT DISTANCE AREA
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SECTION, TOWNSHIP, RANGE:

SECTION 16, TOWNSHIP 3 SOUTH, RANGE 2 EAST, W.M.

PROJECT TEAM

REVIEWED BY: S.FRANKLIN
DESIGNED BY: T.SHABRAM

SHEET NAME

METRO ACCESS ROAD EXHIBIT - OPTION 2

SHEET NUMBER

EXH-2.0

BEFORE THE PLANNING COMMISSION
OF
OREGON CITY

In the Matter of Applicant Cypress Acquisitions, LLC's application for: Masterplan General Development Plan Approval, Conditional Use Approval for Drive-Through Uses, and Maximum Parking Adjustment (1367 Molalla Avenue) – GLUA 25-00025, CU-25-00001, MAS-25-00001, PARK-25-00001); and application for Detailed Development Review-GLUA 25-0025, MAS 25-0002, GEO 25-0007	**FINAL WRITTEN ARGUMENT AND PROPOSED FINDINGS OF FACT**

INTRODUCTION

The Planning Commission at its April 13, 2026, hearing heard testimony from Cypress Acquisitions, LLC ("Cypress") that the last-minute change of position by Staff regarding the location of the Shared Path and development within the City's Landslide and Buffer Zone not only caught Cypress off guard, but would significantly impact and compromise its proposed development. Moving the Shared Path from the eastern portion of its property (as designated in the City's TSP) to another location compromises development of Parcel B. Limiting development within the City's Landslide and Buffer Zone, as staff has interpreted OCMC 17.44,

would make the proposed development uneconomical and not in compliance with the code as we'll explain below.

Cypress discussed how it had cooperatively worked with Staff for a year to acquire Staff's positive recommendations for approval only to have Staff change their positions as late as March 24, 2026. None of the last minute issues raised by Staff were ever discussed with Cypress representatives during its Pre-Application Conference nor in any conversations between City Staff and Cypress until Staff raised them on March 23rd and March 24th. Cypress respectfully requests the Planning Commission to confirm with Staff that this statement is accurate at its April 20th meeting.

Cypress made it clear, however, that while it was understandably upsetting, it wished to focus on solutions. As a result, Cypress provided the following solutions to the Planning Commission:

Shared Path

Mr. Franklin, Cypress's Project Engineer, showed the Planning Commission how Cypress could relocate the Shared Path. Mr. Williams, the Managing Director of Cypress, offered to dedicate an easement for the Shared Path and provide a fee in lieu of constructing it now. He emphasized,

as had Metro, it made no sense to build a "path to nowhere" under today's current conditions.

The land value of the dedication would be $200,000. The fee in lieu would be approximately $80,000 based upon the City's calculations in Staff's Revised Report. Mr. Williams believed this approach was fair, appropriate and represented Cypress's proportionate share associated with the Shared Path.

Proposed Development in the City's Landslide and Buffer Zone

Mr. Williams emphasized that Staff's change of position to significantly limit any development in this area would be economically devastating to the proposed project. He and Mr. Franklin also emphasized that relocating the Shared Path, as proposed at the hearing, would be adversely affected by Staff's change of position on this issue. Additionally, the Project's Storm Water Facility, that will control water discharge in this area, is located in the Landslide and Buffer Zone.

The Cypress Project Team explained that their Geotechnical Report from Terracon demonstrated that the proposed development in this area would be feasible and adequate to prevent landslides or damage to property in compliance with OCMC 17.44.060.L.

In particular, Terracon's Report demonstrated that with implementation of its report and recommendations, the proposed development would avoid disturbance of mapped landslide areas; use engineered stabilization measures where required; provide factors of safety exceeding minimum industry standard and, therefore, exceeding code requirements; prevent increased hazard to adjacent properties (in fact improve the condition of downslope properties from a shallow landslide risk); and provide long-term geological stability of the proposed development.

The City's Geotechnical Engineer confirmed that the technical analysis by Terracon was sound (conference call with City Staff, City Attorney, City's Geotechnical Engineer on April 1). City Staff confirmed the same at the hearing.

Staff, however, stated that OCMC 17.44.060.L did not permit such development despite everyone's agreement that it would be safe and actually improve the condition in this area by controlling drainage.

The City Attorney advised the Planning Commission it was her interpretation of the City's Code that any development in this area was

limited and would not allow the proposed development notwithstanding the fact it would be safe and appropriate.

Mr. Hathaway advised the Planning Commission it was Cypress's interpretation that OCMC 17.044.060.L did permit the City to allow the proposed development since everyone agreed that the science and engineering was correct. He stated that OCMC 17.44.060.L was a procedural vehicle for the City's Geotechnical Engineer and Staff to exercise discretion to permit such development within the Landslide and Buffer Zone.

Based on the foregoing, Mr. Hathaway stated it was his opinion that a favorable resolution of the interpretation of the City's Code would enable Cypress to proceed with its proposed solutions. The Planning Commission agreed that a key issue was whether the City's Code could be interpreted to permit the proposed solutions.

Mr. Hathaway advised Staff this week that he would provide the Planning Commission his Interpretation Assessment by Friday at 4:00 p.m., so the Planning Commission would be able to review it prior to its deliberations on April 20th.

INTERPRETATION ASSESSMENT

The question is whether OCMC 17.44.060.L permits the City to exercise its discretion and permit development within a City's Landslide and Buffer Zone if there is supporting documentation that such development is appropriate based on an acceptable Geotechnical Report.

It is the City Attorney's opinion that OCMC 17.44.060.L does not provide the City any flexibility in permitting Cypress to build within the City's Landslide and Buffer Zone as proposed despite everyone's agreement such development would be safe (and even better). The City Attorney stated that OCMC 17.44.060.L did not provide for a "variance" or "adjustment" to the City's Geologic Hazard Standards.

Cypress representatives responded stating it was their opinion that OCMC 17.44.060.L was not a "variance" or "adjustment" standard but the clear right of the City to exercise its discretion and permit the proposed development within the Landslide and Buffer Zone if the science and engineering supported such proposed development. It is our opinion that OCMC 17.44.060.L does provide the City flexibility. It is not an absolute rigid standard as described below.

The following Interpretation Assessment supports Cypress's position and enables the Planning Commission to approve Cypress's proposed development in this area. Our Interpretation Assessment will review the key provisions of the OCMC Chapter 44 (Geologic Hazards) and provide findings that the Planning Commission can adopt in support of Cypress's position. It is intended to be a guide to assist the Planning Commission in making its interpretation.

TEXT ASSESSMENT

OCMC 17.44.010 - Intent and purpose.

The Intent and Purpose of the provisions of OCMC Chapter 17.44 are:

A. To ensure that activities in geologic hazard areas are designed based on detailed knowledge of site conditions in order to reduce the risk of private and public losses;

B. To establish standards and requirements for the use of lands within geologic hazard areas;

C. To provide safeguards to prevent undue hazards to property, the environment, and public health, welfare, and safety in connection with use of lands within geologic hazard areas;

D. To mitigate risk associated with geologic hazard areas, not to act as a guarantee that the hazard risk will be eliminated, nor as a guarantee that there is a higher hazard risk at any location. Unless otherwise provided, the geologic hazards regulations are in addition to generally applicable standards provided elsewhere in the Oregon City Municipal Code.

Finding: These Intent and Purpose statements are the centerpiece for the Planning Commission's interpretation of OCMC 17.44.060.L. Everything is measured by these Intent and Purpose Statements. OCMC 17.44.010.A-D speak to a **DESIGN** solution, not a limitation imposed by a line on a map or a surface impact limitation without regard to any site-specific conditions that may exist that could otherwise be addressed by a **DESIGN** solution.

Terracon's Geotechnical Report satisfies each of these elements, considering site-specific **DESIGN** parameters and has been accepted by City Staff.

OCMC 17.44.050 - Development—Application requirements and review procedures and approvals.

A. A geological assessment and geotechnical report that specifically includes, but is not limited to:

1. Comprehensive information and data regarding the nature and distribution of underlying geology, the physical and chemical properties of existing soils and groundwater; an opinion of site geologic stability, and conclusions regarding the effect of geologic conditions on the proposed development…."

2. Information and recommendations regarding existing local drainage, proposed permit activity impacts on local drainage, and mitigation to address adverse impacts;

3. Comprehensive information about site topography;

4. Opinion as to the adequacy of the proposed development from an engineering standpoint;

5. Opinion as to the extent that instability on adjacent properties may adversely affect the project;

6. Description of the field investigation and findings, including logs of subsurface conditions and laboratory testing results;

7. Conclusions regarding the effect of geologic conditions on the proposed development, tree removal, or grading activity;

8. Specific requirements and recommendations for plan modification, corrective grading, and special techniques and systems to facilitate a safe and stable site;

9. Recommendations and types of considerations as appropriate for the type of proposed development:

10. Scaled drawings that describe topography and proposed site work, including:

    a. Natural physical features, topography at two or ten-foot contour intervals locations of all test excavations or borings, watercourses both perennial and intermittent, ravines and all existing and man-made structures or features all fully dimensioned, trees six-inch caliper or greater measured four feet from ground level, rock outcroppings and drainage facilities;

    b. All of the features and detail required for the site plan above, but reflecting preliminary finished grades and indicating in cubic yards whether and to what extent there will be a net increase or loss of soil.

c. A cross-section diagram, indicating depth, extent and approximate volume of all excavation and fills.

Finding: The Terracon Geological Report meets all of the above requirements and has been accepted by Staff.

11. For properties greater than one acre and any property that has any portion of its property existing within a mapped landslide, where the activity is not exempted by Section 17.44.035, a preliminary hydrology report, prepared by a suitably qualified and experienced hydrology expert, addressing the effect upon the watershed in which the proposed development is located; the effect upon the immediate area's stormwater drainage pattern of flow, the impact of the proposed development upon downstream areas and upon wetlands and water resources; and the effect upon the groundwater supply.

Finding: Langan, the Project Engineers (through Mr. Franklin), submitted a Storm Water Report that included a Hydrology Report.

B. Review procedures and approvals require the following:

1. Examination to ensure that:

a. Required application requirements are completed;

b. Geologic assessment and geotechnical report procedures and assumptions are generally accepted; and

c. All conclusions and recommendations are supported and reasonable.

2. Conclusions and recommendations stated in an approved assessment or report shall then be directly incorporated as permit conditions or provide the basis for conditions of approval for the regulated activity.

3. All geologic assessments and geotechnical reports shall be reviewed by an engineer certified for expertise in geology or geologic engineering and geotechnical engineering, respectively, as determined by the city. The city will prepare a list of prequalified consultants for this purpose. The cost of review by independent review shall be paid by the applicant.

Finding: The City reviewed Terracon's Geological Report and determined it satisfied all of the above requirements.

C. The city engineer may waive one or more requirements of subsections A and B of this section if the city engineer determines that site conditions, size or type or development of grading requirements do not warrant such detailed information. If one or more requirements are waived, the city engineer shall, in the staff report or decision, identify the waived provision(s), explain the reasons for the waiver, and state that the waiver may be challenged on appeal and may be denied by a subsequent review authority.

Finding: The City did not waive any of the above requirements.

Overall OCMC 17.44.050 Finding: The entire section of OCMC 17.44.050 outlines the requirements of a detailed Geotechnical Analysis, including specific recommendations, techniques, and systems to facilitate a safe and stable site for the type of proposed development. OCMC 17.44.050.B.2 indicates that the conclusions and

recommendations stated in an approved assessment or report shall then be directly incorporated as permit conditions or provide the basis for conditions of approval for the regulated activity. This requirement is unambiguous.

OCMC 17.44.060 - Development standards

The following standards shall apply to the review of any development proposal subject to this chapter.

OCMC 17.44.060.L provides as follows:

> The review authority shall determine whether the proposed methods of rendering a known or potential hazard site safe for construction, including proposed geotechnical remediation methods, are feasible and adequate to prevent landslides or damage to property and safety.
>
> The review authority shall consult with the City's geotechnical engineer in making this determination. Costs for such consultation shall be paid by the applicant.
>
> The review authority may allow development in a known or potential hazard area **as provided in this chapter** if specific findings are made that the specific provisions in the design of the proposed development will prevent landslides or damage. The review authority may impose any conditions, including limits on type or intensity of land use, which it determines are necessary to assure that landslides or property damage will not occur. (Empasis Added)

Finding: The DDP Staff report indicates on page 76 that the applicant believes that OCMC 17.44.060.L gives City Staff the authority to grant a "variance" or otherwise "adjust" the otherwise applicable development standards. That is not at all what Cypress is arguing. Cypress is not seeking a "variance" or "adjustment". A "variance" or "adjustment" is not required to allow the City to accept Terracon's Geological Report pursuant to OCMC 17.44.060.L. Section L speaks for itself and states outright that there can be a **DESIGN** solution—as there is in this review.

It is Cypress's position that OCMC 17.44.060.L carries equal weight with the rest of the Development Code Provisions within Chapter 17.44, and specifically within OCMC 17.44.060. Section "L" is not intended to have less meaning than either Sections "H" or "I". It is at the same level and includes within it the specific requirement that the review authority **shall** determine whether the proposed methods of rendering a known or potential hazard site safe for construction, including proposed geotechnical remediation methods, are feasible and adequate to prevent landslides or damage to property and safety.

Further, Section "L" specifically states that:

> "[The] review authority may allow development in a known or potential hazard area **as provided in this chapter** if specific findings are made that the specific provisions in the **DESIGN** of the proposed development will prevent landslides or damage."

The DDP Staff Report references the clarifying term "**as provided in this chapter"** in OCMC 17.44.060.L noting that this is a key term and emphasizing that term only permits development that is otherwise authorized in OCMC Chapter 17.44. Cypress suggests that the City has misconstrued the use of this term.

Staff ignores the fact that the provisions of OCMC 17.44.060.L that allow the City to exercise its discretion enabling development within the Landslide and Buffer Zone <u>are</u> part of OCMC Chapter 17.44. Therefore, OCMC 17.44.060.L, which permits the City to exercise its discretion to allow the proposed development, is development in a known or potential hazard area as provided in Chapter 17.44. As a result, the City is not precluded from permitting development within a Landslide and Buffer Zone if a Geotechnical Report is accepted by the City.

The Staff's DDP findings attempt to justify the City's position stating that Cypress's interpretation of OCMC 17.44.060.L would inject subjectivity

into the City's decision-making process that is somehow inappropriate. First, this position is irrelevant since OCMC 17.44.060.L speaks for itself and allows development within a Landslide and Buffer Zone. Second, any exercise of "subjectivity" has specific guardrails under the City's Code that clearly defines the City's obligation in how it exercises its discretion.

CONCLUSION

Based on the foregoing, Cypress respectfully requests the Planning Commission to interpret OCMC 17.44.060.L in a manner that will allow the City to permit the proposed development within the City's Landslide and Buffer Zone based on Terracon's Geological Report. This interpretation will allow the Planning Commission to relocate the Shared Path and allow the proposed development within the City's Landslide and Buffer Zone.

Cypress's Interpretation achieves the following:

1. It provides the City absolute discretion (with appropriate guard rails) to determine whether the design of a proposed development would prevent landslides or damage.
2. It allows the City to impose conditions to assure that landslides or property damages will not occur.

3. It achieves the legislative intent behind protecting the public's health, safety and welfare;
4. It provides a dedicated easement for the Shared Path and a fee in lieu in the amount of $80,000 if the proposed project is allowed to proceed. It is unlikely that the proposed project (or any other project) will be able to proceed if Cypress's proposed solutions cannot be implemented. As a result, the City will lose an opportunity to acquire property and create a fund for future construction of its Shared Path.
5. It allows much needed housing in Oregon City; and
6. It allows this property to finally develop which will change the current condition of the area.

Cypress understands the potential dilemma confronting your Planning Commission in its interpretation of OCMC 17.44.060.L. Having been a local government attorney, I appreciate the relationship between your Planning Commission and Staff. It is often times difficult for a Commission to render a different decision than recommended by Staff. We believe this is one of those times.

Your Planning Commission has the authority to make an independent decision in the review of Cypress's applications. Cypress believes that your acceptance of its interpretation is not only legally defensible but allows your Planning Commission to implement Cypress's solutions to address the problems it did not expect.

PROPOSED MOTIONS

Based on the foregoing, Cypress respectfully requests the Planning Commission to make and adopt the following Motions:

(1) The Planning Commission moves to accept Cypress's Interpretation of the City's Municipal Code.

(2) The Planning Commission further moves to approve Cypress's relocation of the Shared Path including its agreement to dedicate an easement and provide a fee in lieu rather than require Cypress to construct the Shared Path.

(3) The Planning Commission also moves to approve Cypress's development in the City's Landslide and Buffer Zone including the future construction of the Shared Path and its Storm Water System.

(4) The Planning Commission lastly moves to approve the above-entitled applications subject to the Staff's Revised Reports as modified by the Planning Commission's acceptance of the relocation of the Shared Path and Cypress's development within the City's Landslide and Buffer Zone.

DATED this 17th day of April 2026.

HATHAWAY LARSON LLP

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