CITY OF OREGON CITY
PLANNING COMMISSION
AGENDA

Hanlon Commission Chambers, Libke Public Safety Facility, 1234 Linn Ave, Oregon City
Monday, February 23, 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 COMMENTS ON NON-AGENDA ITEMS**
   This is for items not related to the public hearing. Please see the public comment guidelines below.
3. **PUBLIC HEARINGS**
   a. Park Place II Subdivision: File GLUA-24-034 / SUB-24-03 / GEO-24-07 / NROD-24-032: Natural Resources Overlay District Adjustment
4. **COMMUNICATIONS**
5. **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:**	February 23, 2026
From:	Pete Walter, Planning Manager		

SUBJECT:
Park Place II Subdivision: File GLUA-24-034 / SUB-24-03 / GEO-24-07 / NROD-24-032: Natural Resources Overlay District Adjustment

STAFF RECOMMENDATION:
Staff recommends the Planning Commission open the public hearing, and following the staff report, take public testimony, then continue the public hearing until March 23rd with the record open.

EXECUTIVE SUMMARY:
219-lot residential subdivision on 59.54 acres, partially located within the Natural Resources Overlay District (NROD) and the Geologic Hazard Overlay District. This residential subdivision application is subject to non-discretionary criteria in the OCMC. A portion of the proposed stormwater and sanitary sewer systems impact the Natural Resources Overlay District and require a discretionary review for adjustment pursuant to OCMC 17.49.200, a type III land use decision.

BACKGROUND:
Please see attached Type III Planning Commission Decision Staff Report. Staff is requesting a continuance to allow sufficient time for the Oregon City Natural Resources Committee to review the application at a regularly noticed NRC meeting and provide comments regarding the NROD application.

NEXT STEPS:

OPTIONS:

OREGON CITY
Community Development – Planning
695 Warner Parrott Road | Oregon City OR 97045
Ph (503) 722-3789

TYPE III PLANNING COMMISSION DECISION
STAFF RECOMMENDATION
February 16, 2026

HEARING DATE: **Planning Commission**
February 23rd 2026, 7:00 pm
Hanlon Commission Chambers, Robert Libke Public Safety Building
1234 Linn Ave, Oregon City, OR 97045

FILE NUMBERS: GLUA-24-034 / SUB-24-03 / GEO-24-07 / NROD-24-032

APPLICANT: Icon Construction & Development
1969 Willamette Falls Drive, Suite 260
West Linn, Oregon 97068

Submitted: 1/7/2025
Complete: 7/3/2025
120 Day Deadline: n/a
NOD: TBD

REPRESENTATIVE: Emerio Design
1500 Valley River Dr, Ste 100
Eugene, OR 97401

OWNERS: Redland Road LLC
Hidden Falls Development LLC

REQUEST: 219-lot residential subdivision on 59.54 acres, partially located within the Natural Resources Overlay District (NROD) and the Geologic Hazards Overlay District. This is a subdivision application that is subject to the non-discretionary criteria in the OCMC, that also proposes development of a portion of the sanitary sewer system in the Natural Resources Overlay District, which requires an adjustment pursuant to OCMC 17.49.200, requiring a Type III decision.

LOCATION: 16472/16582 S Livesay Road Oregon City, OR 97045
Clackamas County Assessor's Map No. 22E28D, Tax Lots 190, 100, 301, 3700, 302, 400 & 500

REVIEWERS: Pete Walter, Planning Manager
Erik Nichols, Project Engineer

ZONING: R-5 Medium Density Residential District
R-10 Medium Density Residential District
Natural Resources Overlay District
Geologic Hazards Overlay District

RECOMMENDATION: Staff recommends the Planning Commission open the public hearing on February 23, and following the staff report, take public testimony, then continue the public hearing until March 23rd with the record open.

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.

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Recommended Conditions of Approval
GLUA-24-034 / SUB-24-03 / GEO-24-07 / NROD-24-032

(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. 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. Access to Livesay Road is under the jurisdiction of Clackamas County. Facility or right-of-way improvements under jurisdiction of Clackamas County shall be reviewed and approved by Clackamas County before issuing construction permits. (DS)
2. The developer shall 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. 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)
4. A City issued erosion and sediment control permit shall be obtained prior to commencement of any earth disturbing activities. (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 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. The developer shall provide a Residential Lot Grading Plan adhering to the State of Oregon Structural Specialty Code, Chapter 18 and the Oregon City Public Works Stormwater and Grading Design Standards. (DS)
7. 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. (DS)
8. Local residential roads shall have a 54-foot right-of-way width with two (2) 16-foot shared space travel lanes, 5-foot sidewalks on both sides of the street, 5.5 foot landscape strips on both sides of the street, and 0.5-foot curbs. (DS)
9. Holly Lane shall be designed to be a collector residential road. It shall have 85 feet of public right-of-way, three (3) 11-foot travel lanes, 7-foot parking lanes on both sides of the street, 5-foot sidewalks on both sides of the street, 7.5-foot landscape strips on both sides of the street, 6-foot bicycle lanes on both sides of the street, and 0.5-foot curbing. (DS)

10. The identified Holly Lane cross-section through the pinch point shall be a reduced cross-section per the applicant's modification request. The Holly Lane pinch point shall have a 57-foot right-of-way, three (3) 11-foot travel lanes, 6-foot bike lanes on both sides of the street, 5-foot sidewalks on both sides of the street, 0.5-foot curbing, no parking aisles, and no landscape strips. (DS)
11. Private roads shall comply with the City's Street Design Standards. Private roads are to be constructed to the City standards identified in OCMC 16.12.016 for a local road. A modification from this standard has not been requested. (DS)
12. Alley cross sections shall comply with OCMC 16.12.016 and have at minimum a 20-foot right-of-way or access easement and a minimum of 16 feet of pavement. (DS)
13. The proposed ¾ local street section located primarily along tax lot 301, identifies an 8-foot-wide vehicular travel lane on the side of the street identified for future development. An 8-foot lane is not consistent with the City's Street Design Standards as identified in Section 3.1.1. The minimum travel lane width shall be 11 feet from the center line to the frontage of the future development. When the future lot is developed it will then be constructed to the standard local residential cross-section. The cross section from the center line to the proposed development with this application shall be consistent with local residential standards as identified in OCMC 16.12.016. (DS)
14. No retaining walls shall be allowed within the public right-of-way (both permanent and temporary). (DS)
15. Gravel roads and driveways are not an approved road type in Oregon City. The private gravel roads identified in Tracks L, H, and for proposed fire access shall be paved. A modification from the City's standard for private roads has not been requested. (DS)
16. Accessways shall be equal to the dimensions noted in OCMC 16.12.032.B. (DS)
17. 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. (DS)
18. A proportionate share fee contribution shall be collected for planned improvements at Holcomb Boulevard/Abernethy Road & Redland Road. The proposed development adds 164 trips during the PM peak hour to the intersection. Proportionate share contribution shall be based on the percentage of the developments impact on the year 2035 volume and expected project costs. (DS)
19. A proportionate share fee contribution shall be collected for planned improvements at OR 213 & Redland Road. The proposed development adds 96 trips during the PM peak hour to the intersection. Proportionate share contribution shall be based on the percentage of the developments impact on the year 2035 volume and expected project costs. (DS)
20. A proportionate share fee contribution shall be collected for planned improvements at Washington Street & 15th Street. The proposed development adds 50 trips during the PM peak hour to the intersection. Proportionate share contribution shall be based on the percentage of the developments impact on the year 2035 volume and expected project costs. (DS)
21. A proportionate share fee contribution shall be collected for planned improvements at Washington Street & 14th Street. The proposed development adds 40 trips during the PM peak hour to the intersection. Proportionate share contribution shall be based on the percentage of the developments impact on the year 2035 volume and expected project costs. (DS)

22. The Washington Street & Abernethy Road/17th Street westbound left turn lane shall be restriped to provide an additional 125 feet of vehicle queue storage. (DS)
23. Access easements shall be recorded on abutting properties. (DS)
24. Impacts to County right-of-way shall be permitted through Clackamas County. (DS)
25. 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)
26. The applicant shall provide street lights in conformance with all City standards, specifications, codes, and policies and as approved by Portland General Electric (PGE). (DS)
27. The applicant will provide lighting plans showing accessways lit per 16.12.032. (DS)
28. All accessways, proposed and existing, that intersect with a public sidewalk, shall be made Americans with Disabilities Act (ADA) compliant. An approved curb ramp design will need included on engineering plans following proper engineering technical standards prior to receiving a permit and beginning construction. (DS)
29. The proposed bridge shall provide public pedestrian and bicycle access consistent with the City's Trails Master Plan (October 2004, Pages 18-19) for innovative accessways with a minimum width of 8 feet. (DS)
30. At a minimum, the proposed bridged sewer shall be designed with pedestrian access to facilitate inspections and maintenance in order to reduce the impacts to the NROD area. (DS)
31. The applicant shall provide a landscaping plan showing street trees within the right of way and plantings within the proposed accessways. (DS) (P)
32. All driveways, new and existing, shall meet the minimum driveway spacing standards identified in Table 16.12.035.A. Approved driveway locations will need included on engineering plans prior to receiving a permit and beginning construction. (DS)
33. The proposed stormwater detention pond is located in the southeastern portion of the proposed development in Tract B. Tract B has a considerable area identified in the City's mapping system as a Natural Resource Overlay District (NROD) area. The applicant's stormwater design shall be consistent with OCMC 17.49.155 for facilities within the NROD area. (DS)
34. The applicant shall install the "bridged" sewer main (and any portion of the sewer installed within retaining walls or bulkheads) within a sleeve which will further protect the NROD from potential leakage and facilitate future maintenance. The bridged section of the sewer main shall be of a material consistent with the City's Sanitary Sewer and Design Standards or as approved by the City Engineer. (DS)
35. A public utility easement, sized to the City's Sanitary Sewer Design Standards, is required for sanitary sewer mains outside of the public Right-of-way. Additional easement space may be required to facilitate City maintenance vehicles access to the proposed sewer within the NROD area. (DS)
36. The applicant will need to show and provide access for the bridged sewer main. With the proposed sewer located within the Natural Resource Overlay District (NROD), the applicant shall mitigate the

permanent impacts needed to access and maintain the public sewer within the NROD per OCMC 17.49. NROD mitigation shall be outside of the City's utility easement. (DS)

37. Sanitary sewer manhole spacing shall not exceed the City's maximum of 400 feet per the City's Sanitary Sewer Design Standards unless otherwise approved by the City Engineer. (DS)
38. The proposed sewer system for this development shall take into account the final routing to Redland Road (per the City's Sewer Master Plan) and provide a design that can easily be rerouted in the future. (DS)
39. The development shall connect to Oregon City Water for this development for all areas below the elevation of 450ft. (DS)
40. 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)
41. The engineering plans shall provide a local benchmark, onsite, using the NAVD88 datum prior to receiving a permit and beginning construction. (DS)
42. The applicant shall provide scaled drawings showing a cross-section diagram, indicating depth, extent and approximate volume of all excavation and/or fills. These drawings shall be validated by the geotechnical engineer of record. (DS)
43. The application has provided conclusions and recommendations in their geotechnical report as required by 17.44.050.B.1. The applicant shall incorporate all such conclusions and recommendations into the final drawings for building and grading permits, as required by this section. (DS)
44. 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)
45. Final drawings for building and grading permits shall be submitted which comply with the requirements of the City's Geological Hazard Code OCMC 17.44; to minimize disturbance to natural topography, vegetation, and soils. (DS)
46. 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)
47. Any structural fill shall be designed by a geotechnical engineer licensed in Oregon in accordance with standard engineering practice. The structural fill design shall be provided prior to any fill being placed. The geotechnical engineer shall prepare a summary letter stating that the soils, structural fill and foundation-related project elements are in substantial conformance with their recommendations. The letter shall be signed and stamped by the geotechnical engineer licensed in the State of Oregon. (DS)

48. Final drawings for building and grading permits shall be submitted with final wall locations and designs completed by a licensed engineer. The City shall have the walls reviewed by a consultant and the applicant shall reimburse the City for the time spend and the City's consultant to review the design. (DS)
49. The applicant submitted drawings with preliminary road layouts. Cuts and fills were not detailed, but the project geotechnical report states that cuts and fills up to 24 feet high/deep are proposed. The geotechnical report also delineates a setback for any fill or structures, which some roads and lots extend beyond, out of compliance with the recommendations of the report. Final drawings for grading permits shall be submitted with final road layouts that comply with this section, including minimizing cuts and fills to that necessary for safe access and positive drainage control, and with the geotechnical report for setbacks. (DS)
50. Final drawings for grading permits shall be submitted with final lot layouts that comply with this section, including meeting the residential densities required based on slope gradients and landslides and their buffers as consistent with OCMC 17.44.060. (DS)
51. The applicant's geotechnical engineer shall respond to written comments provided by the City's peer reviewer prior to issuance of building permits. (DS)
52. Final drawings shall be submitted with final roads and lot layouts that comply with A., B., and C. of 17.44.070. The applicant shall verify adequate emergency services can be provided and the applicant shall revise the plans, if necessary, to accommodate emergency services as determined by the City. (DS)
53. All utilities shall be placed underground within roadbeds where practicable. Construction of utilities, especially in the northwest corner of the project area, as identified in the geotechnical report, shall follow the recommendations of the geotechnical report to minimize the effects of their construction on geologic hazards. (DS)
54. The geotechnical report found infiltration was not feasible, so the stormwater report requires lined detention facilities and "overdetention" to manage peak flows. Final drawings and supporting documents shall be submitted for the permanent and complete stormwater control plan that comply with this section. The project's civil engineer shall inspect the required features and certify that the system was constructed per the plans (DS)
55. The applicant shall submit final plans with disturbance areas delineated and that minimize vegetation removal and soil disturbance. Erosion control plans shall be submitted that comply with OCMC Chapter 17.47. Detailed review of construction plans will occur as part of the permit review, including erosion prevention measures per OCMC Chapter 17.47 to ensure the standards of this section are met. (DS)
56. The applicant shall provide additional written justification responding to the adjustment criteria of OCMC 17.49.200 to demonstrate that the standard is also met for the water quality facility encroachments and impacts into the NROD. (P)

The following conditions of approval shall be met to the satisfaction of the city during construction.

57. 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. (Also written in 16.12.029). (DS)

58. 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)
59. Dead-end stub streets that will connect to streets on adjacent sites in the future shall include barricade meeting Manual on Uniform Traffic Control Devices (MUTCD) and signage informing the public that the street is planned for future extension. (DS)
60. All new driveways shall have a concrete driveway approach 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. (DS)
61. 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)
62. 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)
63. 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)
64. The developer shall retain the services of a licensed geotechnical engineer to conduct inspections as recommended in the geotechnical report and plans. The geotechnical engineer shall provide reports to confirm that standards from Section 17.44.100 are met. The geotechnical engineer of record shall confirm that geologic conditions are consistent with the conditions assumed in the geotechnical hazard evaluation. If the conditions are different than assumed in the 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)
65. 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)
66. Prior to issuance of construction plans of the right-of-way improvements, the applicant shall submit a street tree plan which includes street trees planted in compliance with subsections A through H of this section. The Community Development Director may allow plantings in alternative locations or accept fee-in-lieu of planting pursuant to OCMC 12.08 if site or other constraints prevent meeting the required total number of tree plantings, however the total calculation of street trees shall not be reduced to less than 1 tree per 35 feet of street frontage. (P)
67. Conditions, covenants, and restrictions (CC&Rs) or similar legal instruments submitted with residential plats for final plat approval after July 1, 2019 shall not prohibit or impose additional restrictions on accessory dwelling units, duplexes, and/or internal conversions and after August 9, 2019 for all middle housing types to the extent permitted in the OCMC in place at the time of final

plat submittal, and shall not impose additional restrictions on those uses through any future amendment. (P)

68. Due to inevitable changes in the design of the proposed sewer crossing as it goes through engineering review, prior to construction and / or activities that include any grading, filling, tree removal or other impacts to the NROD regulated buffer the applicant shall provide a revised NROD mitigation plan that accurately calculates all impact areas within the NROD and proposed mitigation areas. (P/DS)

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.

69. 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 platting. (DS)
70. 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 platting. (DS)
71. The applicant shall note access controls on their plat with "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." (DS)
72. The applicant shall provide a covenant over the pedestrian and bicycle accessways and be responsible for the future maintenance and liability. (DS)
73. The development shall provide a 10-foot-wide 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 minimum 15-foot-wide public utility easement for City water, sewer or storm infrastructure. (DS).
74. Public improvements and all items from the city provided punch list shall be completed and accepted by the City prior to platting. (DS)
75. 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)
76. 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)
77. 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 platting. (DS)

78. The developer shall submit waiver of damages, indemnity and hold harmless agreement completed by all owners of property disturbed by the development. (DS)
79. 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. The City engineer has not allowed the permittee to provide a fee-in-lieu of actual construction of public improvements. (DS)
80. 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 platting. 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. (DS)
81. The applicant shall record any easements or maintenance agreements necessary to comply with the requirements of OCMC 16.08.050 – Flag Lots prior to recordation of the final plat. (P)
82. 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 standards in OCMC 17.41.130. The applicant has not proposed to preserve trees except for protected NROD areas and steep slope areas. (P)
83. Prior to issuance of any permit that would require tree removal, the applicant shall provide a revised 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. The applicant shall also provide a revised and updated count of the number of trees to be removed compared to the initial estimate of 1,584 and a revised and updated tree mitigation plan or cash-in-lieu that complies with OCMC 17.41. Per OCMC 17.41.060, removed trees that are proposed to be mitigated may be planted on-site, off-site in a location approved by the City, or pay a fee-in-lieu of planting. All replacement trees shall be either two-inch caliper deciduous or six-foot high conifer. 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. Due to their diminishing range in the region, Oregon white oak (*Quercus garryana*) trees, if removed, shall be replaced by the same species. The applicant shall complete Table 17.41.060-1 with the submittal of a revised tree mitigation plan. (P)
84. Per 17.49.100 A., include a protective covenant or other approved legal document for native trees to be protected prior to recordation of the final plat. (P)
85. Per 17.49.100 H., provide lighting details and show exterior lighting in relation to the NROD area. Prior to issuance of any building permits for homes adjacent to the NROD, lighting details shall be

provided in compliance with this section and a covenant or other approved legal instrument shall be recorded against all lots adjacent to the NROD that includes the exterior lighting standard. (P)

86. Per 17.49.140 F., if required, obtain all state and federal permits associated with impacts to wetlands. (P)
87. Per 17.49.155. A. prior to construction plan approval, provide evidence and plans indicating tree protection so that the forest canopy within the driplines of existing trees to remain shall not be disturbed. (P)

I. BACKGROUND:

Existing Conditions

The subject development site has frontage to the south on South Livesay Road, an existing public road under Clackamas County jurisdiction. Currently access to the subject property from the north is provided via stubbed streets from within the Tracy Heights, Wasco Acres and Trailview subdivisions (Journey Drive, Shartner Drive, and Cattle Drive).

The site has many trees but is not actively managed as a commercial timber operation or flagged for farm or forest tax deferral by the Assessor's Office.

Except for the known NROD and Geologic Hazard Overlays, there are no significant natural features (such as wetlands, creeks or cultural sites) located within the boundaries of the subject property indicated on any city inventory. Some small, isolated wetlands exist on the site that appear to have been manmade for irrigation associated with previous farm operations. These small wetlands are not connected to the NROD overlay and are proposed to be filled following all required permitting processes.

Natural Resources Overlay District

Portions of the site fall within the Natural Resources Overlay District due to off-site streams and habitat areas indicated on the City's adopted NROD map which have vegetated corridors that extend onto the subject property.

The applicant contracted Schott & Associates (S&A) to conduct a natural resource assessment to support a Type III NROD Permit for the proposed project including residential development, stormwater infrastructure, and an offsite sewer line connection. Portions of this property contain Natural Resource Overlay District (NROD) subject to Chapter 17.49 of the Oregon City Municipal Code (OCMC). The NROD report is intended to describe existing conditions and impact evaluation within the NROD boundary for residential development and sewer line west of the Park Place II development (West: T2S, R2E, Sec.28D, TL 500; Section 28CA, TL 2700; Figure 2) as well as for the proposed stormwater facility and adjacent development in the eastern portion of the site (East: T2S, R2E, Sec.28D, TL100, 3700; Figure 2). The NROD report provides a preliminary proposal and addresses Section 17.49.100 General Development Standards, Section 17.49.140 Standards for Utility Lines (for the West-Sewer Crossing), Section 17.49.155 Standards for Stormwater Facilities (for the East-Water Quality Facility), Section 17.49.160 Standards for Land Divisions, and Section 17.49.200, Adjustment from Standards.

Geologic Hazards Overlay District

Approximately 16 acres of the subject falls withing the adopted Geologic Hazards Overlay District because of presence of sloped areas >25% and known landslides. The site generally slopes southward draining into the Abernethy Creek watershed

Adjacent Zones and Land Uses

North: Single-family dwellings zoned R-10 & R-6 by Oregon City (Assessor Map 22E28AD)
South: Single-family dwellings zoned FU-10 by Clackamas County (Assessor Map 22E28D)
East: Single-family dwelling zoned FU-10 by Clackamas County (Assessor Map 22E27C)
West: Single-family dwellings zoned R-10 by Oregon City (Assessor Map 22E28AC) & Single-family dwelling zoned FU-10 by Clackamas County (Assessor Map 22E28CA)

Figure 1. Vicinity Map (Subject Properties highlighted)



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.

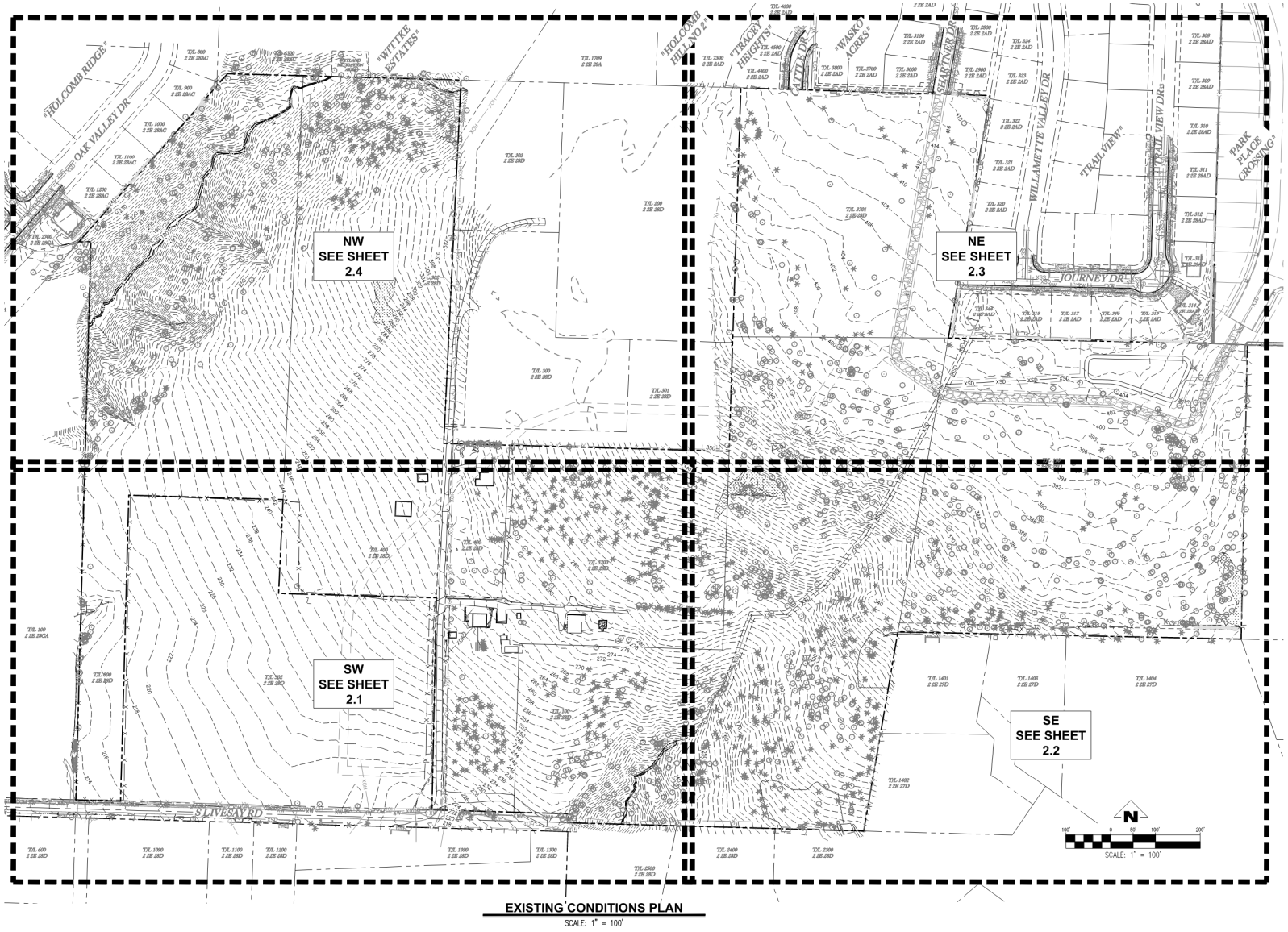
Map created 8/7/2025

N

0 400 800 Feet

1: 4,800

Figure 2: Existing Conditions Plan



Project Description

Icon Construction & Development, the applicant, is proposing a 219-lot subdivision on a 59.54-acre site identified as Clackamas County Assessor's Map No. 22E28D, Tax Lots 190, 100, 301, 302, 400, 500 & 3700 (Exhibit A); it can also be located by its addresses, 16472/16582 S Livesay Road. The site was annexed into the City in 2018 by Ordinance 18-1007.

The applicant proposes construction of new local streets and an extension of Holly Lane. Eventually, Holly Lane (Collector Street) will intersect with Holcomb Blvd once the property between the proposed northern terminus of Holly Lane and Holcomb Blvd is annexed into the City and developed. The southern terminus of Holly Lane will intersect with Livesay Road once Tax Lot 502 is developed in the future.

Natural Resources Overly District Impacts

The following description of NROD impacts is excerpted from the applicant's consultant's report.

West-Sewer Crossing

The sewer crossing area consists of a temporary utility easement extending from the northwest portion of the Park Place II development project northwest across a forested ravine to connect to an existing manhole at the intersection of Oak Valley Drive and Oak Valley Terrace (T2S, R2E, Section 28CA, Tax Lot 2700 and T2S R2E Section 28D, Tax Lot 500).

Single-family residential development was present at the top of the slope and on the north and west sides of the ravine. The ravine contains a perennial tributary to Tour Creek, which is a tributary to Abernethy Creek. The tributary was delineated by AKS Engineering and Forestry and concurred with by Oregon Department of State Lands (DSL; WD2021-0311). The NROD Map identifies a 200-foot Vegetated Corridor extending outward from the tributary at the bottom of the drainage.

Topography adjacent to the tributary was steep, generally greater than 25% slopes. Vegetation within the proposed impact areas was dominated by a deciduous forest community composed of predominantly bigleaf maple (*Acer macrophyllum*) with a shrub layer of hazelnut (Corylus cornuta), Himalayan blackberry (*Rubus armeniacus*), and English holly *(Ilex aquifolium*). On the south side of the ravine, vegetation was similar with the inclusion of sweet cherry (*Prunus avium*) trees.

East-Water Quality Facility (WQF)

The water quality facility is proposed to be located east of the intersection of S Livesay Road and Frank Avenue (T2S, R2E, Section 28D Tax Lot 100, 3700; Figure 2). An intermittent drainage, delineated by AKS, emerged from an outlet in the south-central portion of the site, extending southwest offsite (WD2021-0311). The NROD Map identifies a 200-foot Vegetated Corridor extending outward from the drainage (Figure 3).

This portion of the site was generally forested with a mixed coniferous-deciduous community including Douglas fir (*Pseudotsuga menziesii*), big leaf maple, Oregon ash (*Fraxinus latifolia*), sweet cherry, red alder (*Alnus rubra*), European white birch (*Betula pendula*), and grand fir (*Abies grandis*). The understory at the top of slope was heavily dominated by Himalayan blackberry with English

holly and hazelnut on the lower slopes. English ivy (Hedera helix) was heavily dominant in the southern portion of the site, covering the ground and extending into the tree canopy. Topography was characterized by a steep slope, becoming more gradual to the west and northwest.

The Planning Commission's purview for the purpose of this review is limited strictly to the discretionary review criteria of OCMC 17.49.200. All other aspects of this application have been reviewed by staff and found to comply with the applicable approval criteria.

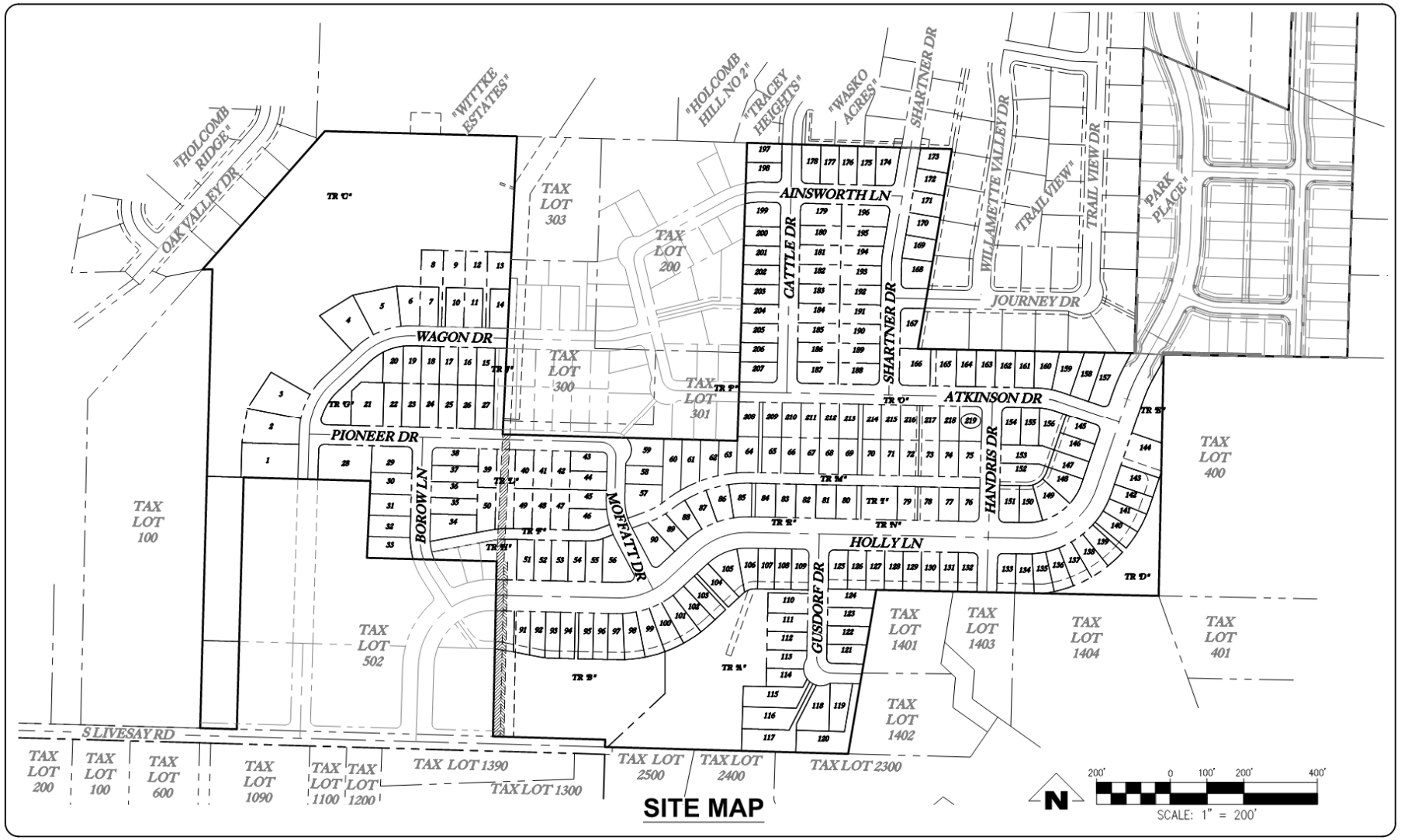


Figure 3: Proposed Subdivision Site Map

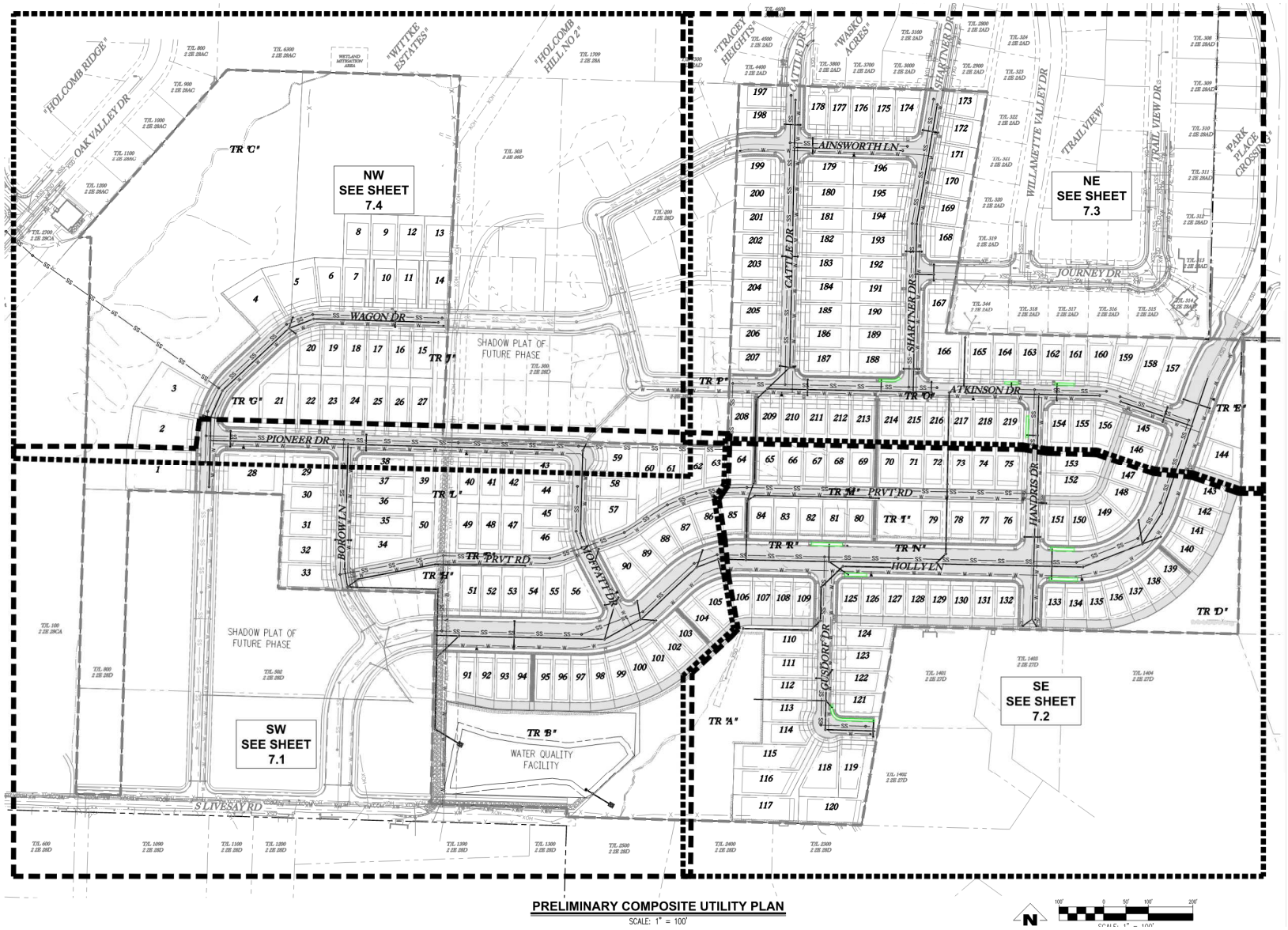


Figure 4: Proposed Composite Utility Plan

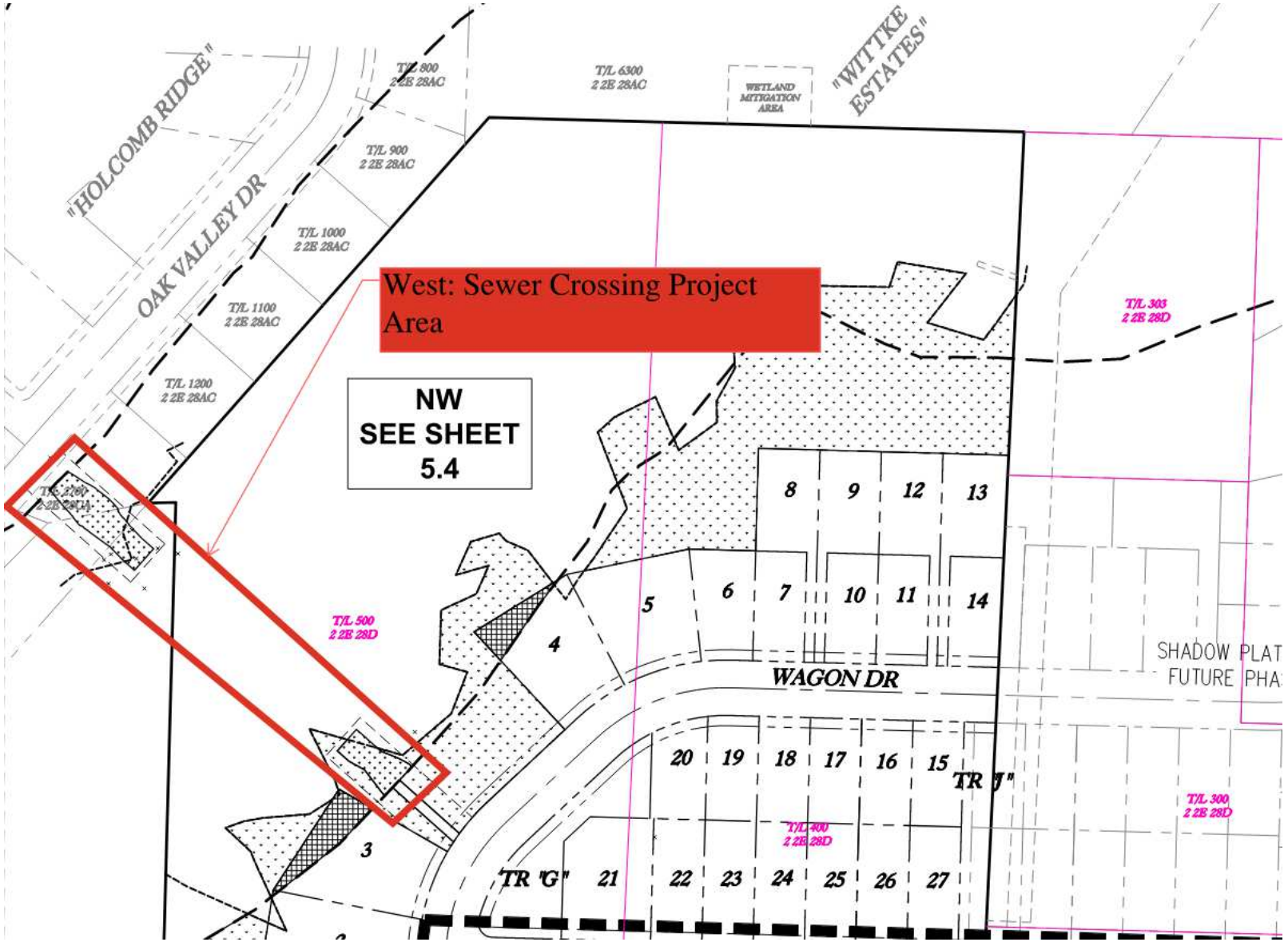


Figure 5: Excerpt of Proposed Natural Resource Overlay District Impacts – West Sewer Crossing Project Area

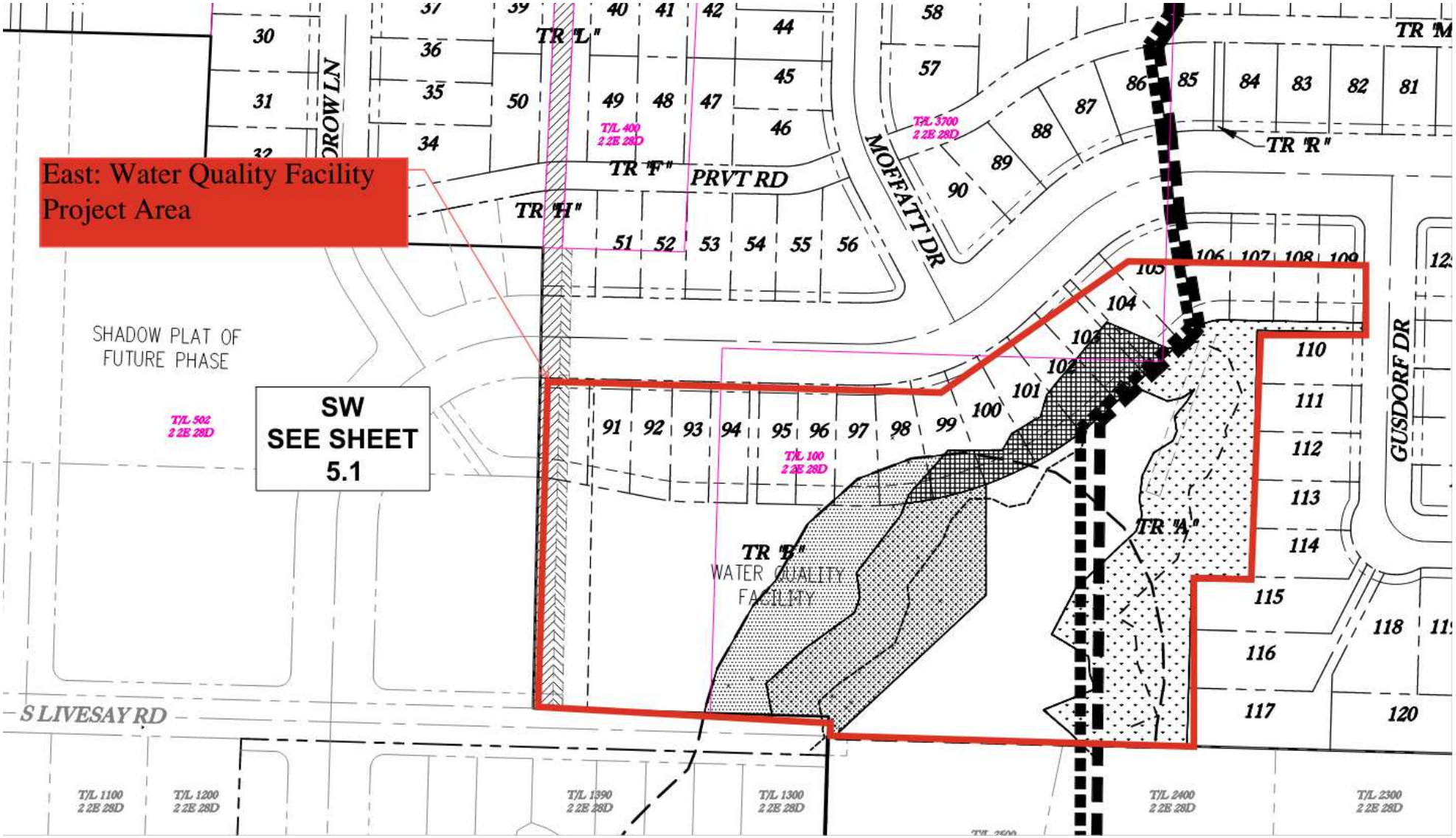


Figure 6: Excerpt of Proposed Natural Resource Overlay District Impacts – East Water Quality Facility Project Area



Figure 7: Excerpt of Proposed Natural Resource Overlay District Impacts – West Sewer Crossing Project Area

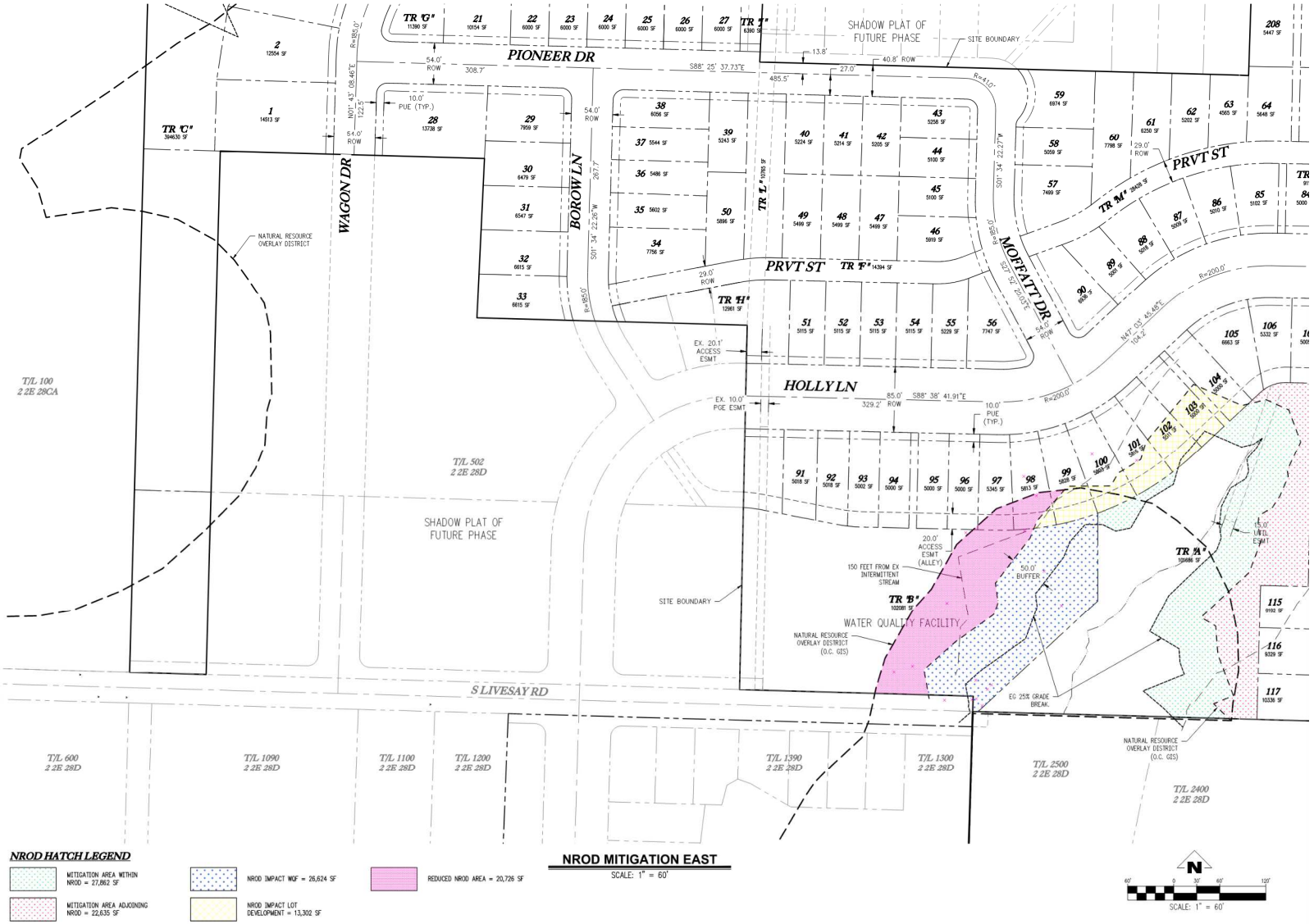


Figure 8: Excerpt of Proposed Natural Resource Overlay District Impacts – East Water Quality Facility Project Area

ATTACHMENT B – ARBORIST SITE MAP

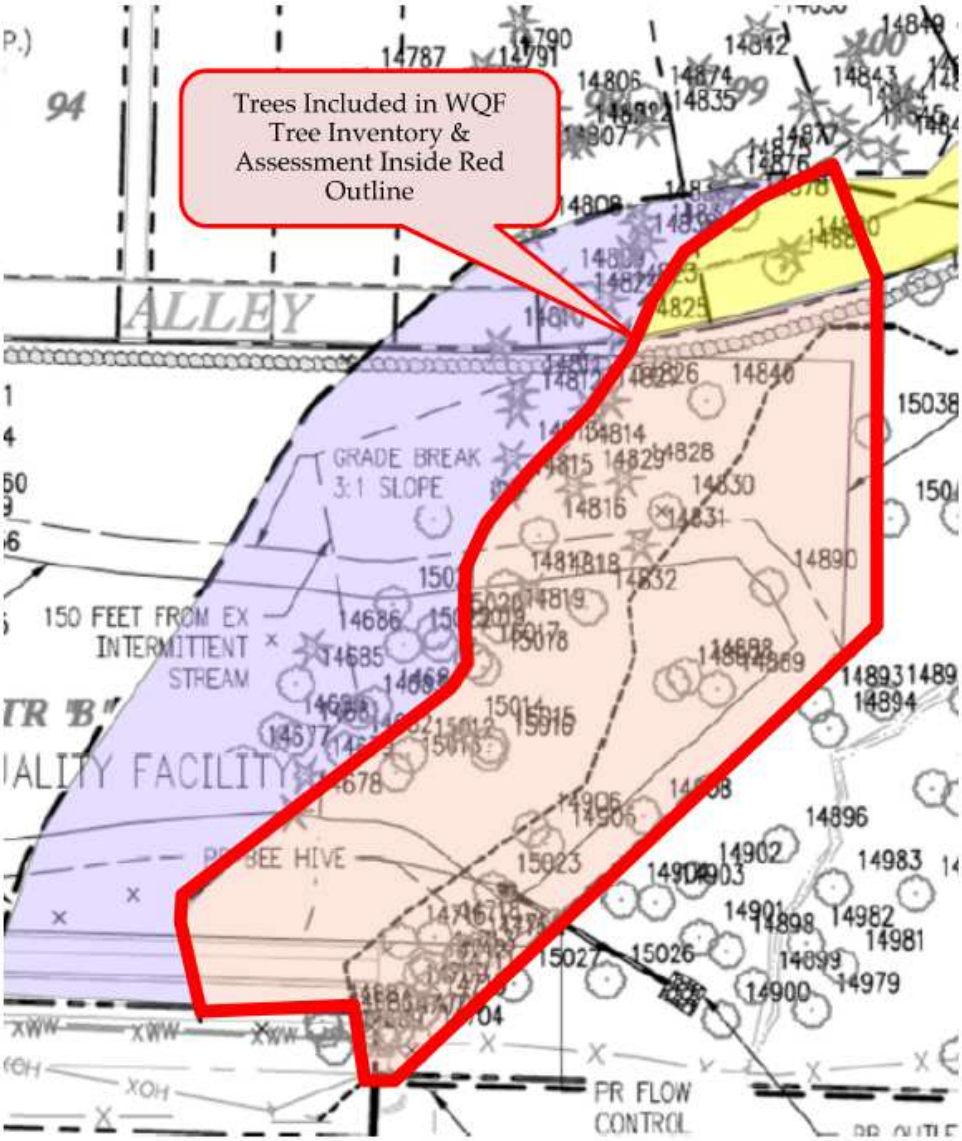


Figure 9: Excerpt of Tree Plan for East Water Quality Facility

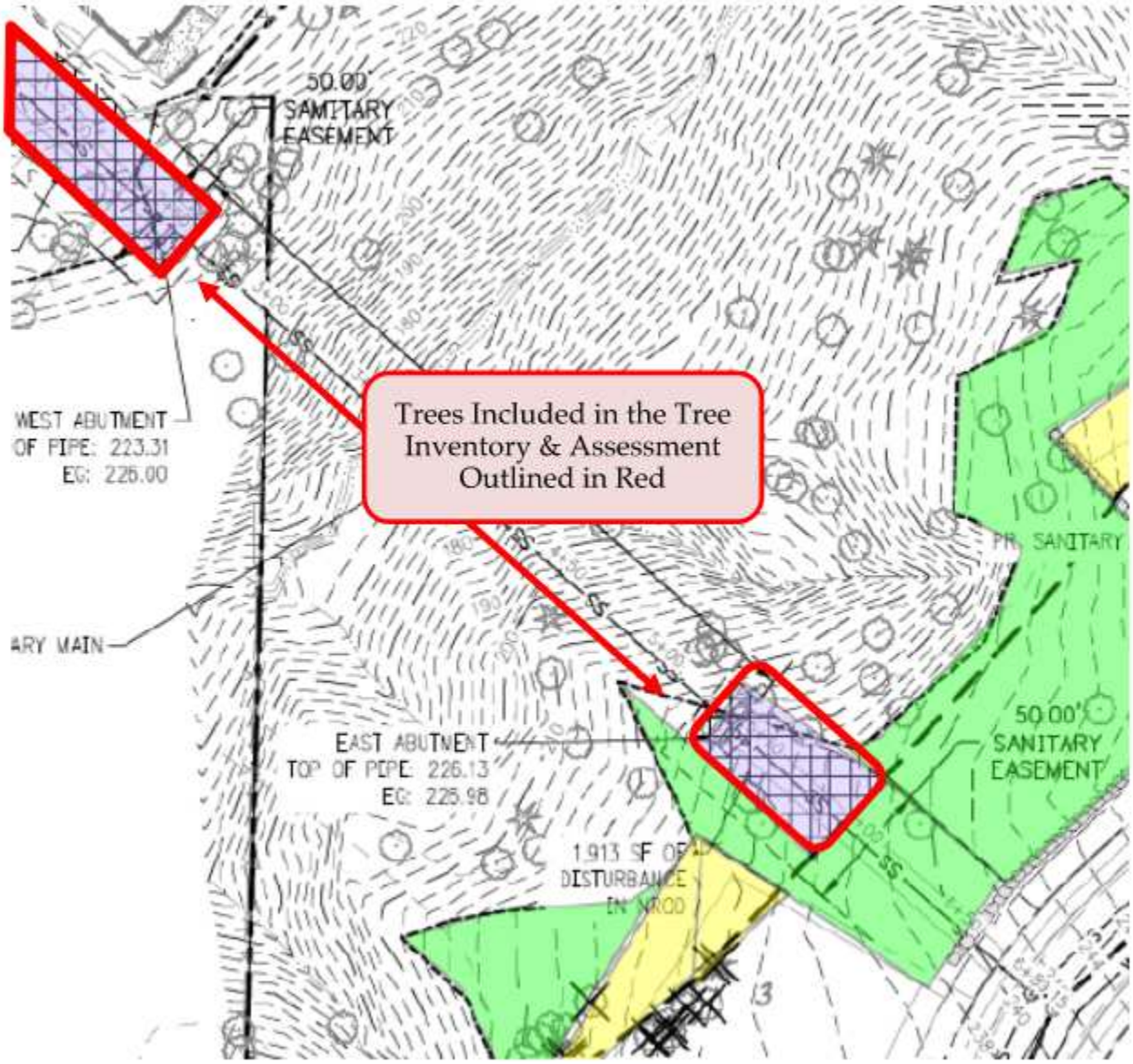


Figure 10: Excerpt of Tree Plan for West Sewer Crossing Area

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

2. **Public Comment**
   Public comments were submitted as of the date of publishing of this report from the following individuals and have been included in the public comment summary attached to this staff report, which includes responses from city staff.

   Mike Mueller
   Robert Tershel
   Dan Oliner and neighbors

   Additional public testimony will be made part of the record and summarized in the public comment summary attached to this report.

   None of the comments provided indicate 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:

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

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 public right of ways along Holcomb Blvd and the proposed dedicated streets.

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 this standard.

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 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: Not applicable. Existing sidewalk of the street abutting the development property is in good repair and the City has not found the need to make repairs at the at the time of application.

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 with condition. The applicant acknowledges this standard. No retaining walls shall be allowed within the public right-of-way (both permanent and temporary). **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

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 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. (Also written in 16.12.029). **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: not applicable. No obstructions are proposed within the right of way.

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 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.**

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 all street frontages as shown on the preliminary plans. The applicant indicates that the total street frontage is 15,156 linear feet.

15,156 feet ÷ 1 street tree / 35 feet = 433.

Four hundred and thirty-three (433) street trees are required to be planted or paid in fee-in-lieu of planting. The location and number of 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 street trees planted in compliance with subsections (A) through (H) of this section. The Community Development Director may allow plantings in alternative locations or accept fee-in-lieu of planting pursuant to OCMC 12.08 if site or other constraints prevent meeting the required total number of tree plantings, however the total calculation of street trees shall not be reduced to less than 1 tree per 35 feet of street frontage. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

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:

Finding: Not applicable. No existing street trees are proposed for removal. On-site tree removal is regulated by OCMC Chapter 17.41, addressed in this report. For brevity, the remaining sections of Chapter 12.08 have been omitted.

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.

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.

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: not applicable. The development has not proposed use of the land that requires additional management practices as defined in the Public Works Stormwater and Grading Design Standards.

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 applicant's submittal includes a stormwater management plan. Portions of the site may require modification during engineering design review. The developer shall 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. (Also written in the findings of section 12.04.270). **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 as proposed. The application has provided a tract on the preliminary plat for a public facility. Access has been proposed for maintenance. The City will maintain the facility after the maintenance period.

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. 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 platting. **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 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 platting. **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. 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 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.

Finding: complies as proposed. The applicant acknowledges the above standard and will provide the City with any required permits from other agencies.

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 as proposed. The applicant acknowledges the above standard and will provide the City with any required permits from other agencies.

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. The developer shall provide a Residential Lot Grading Plan adhering to the State of Oregon Structural Specialty Code, Chapter 18 and the Oregon City Public Works Stormwater and Grading Design Standards. **Staff has determined that it is**

possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.

CHAPTER 16.04 – LAND DIVISIONS – PROVISIONS AND ADMINISTRATION

16.04.010 - Purpose.

This title is enacted in compliance with ORS 92.010 through 92.160 to establish procedures and standards for partitioning and subdividing land within the city. These regulations, along with requirements of the city's underlying zoning, provide the dimensional requirements for building lots, street locations, street design, rights-of-way, location requirements for houses on residential lots, the provision of adequate open space for recreation and community facilities, and the basic requirements for the installation of public utilities, all with the aim of achieving:
A. A sufficient supply of needed housing with satisfactory living conditions in new subdivisions that comply with Statewide Planning Goal 10 and implementing administrative rules, guidelines and statutes;
B. The protection, conservation and proper use of the land;
C. The timely and efficient extension of public facilities and services without excessive expenditure of public funds in accordance with Statewide Planning Goals 11 and 14 and their implementing administrative rules and guidelines;
D. The simplification and greater accuracy of land descriptions;
E. The protection of property owners from excessive assessment for future utility installations and to provide a means of ensuring that property owners pay only their fair share of the cost of providing public facilities and services;
F. The protection of the health, safety and general welfare of the public;
G. Increased consumer protection by assuring that only those lots which have met city requirements and have been lawfully created through subdivision or partition approval are allowed to be advertised for sale;
H. Increased urban density and a livable design that achieves Metro-mandated requirements, while providing an enjoyable living and working environment; and
I. Safe, direct and convenient pedestrian and bicycle access, where reasonably possible within, from and between residential, commercial, industrial and institutional developments and neighborhood activity centers in accordance with Statewide Planning Goal 12 and the implementing administrative rule.

Finding: complies. The applicant understands the purpose of the land division regulations, and submitted all required information for the proposed subdivision.

16.04.020 – Conditions of land division approval.

The decision-maker may impose reasonable conditions of approval on any approval granted under this title to ensure that the application meets, or will meet, any application approval standard.

Finding: complies. Staff have recommended reasonable conditions of approval to ensure the application meets the applicable approval standards.

16.04.025 – Restrictions on sale of lots until process is complete.

A. No person shall negotiate to sell any lot in a subdivision until a preliminary plat has been approved pursuant to this title.
B. No person shall complete the sale of any lot in any subdivision until the final subdivision plat for the development has been approved under this title and properly recorded with the county.
C. Parcels subject to the partition process under this title may be advertised, and sales negotiated, prior to preliminary partition plat approval; however, no sale of any such lot may be completed until the city has granted final partition approval under this title and the plat is properly recorded with the county.

Finding: complies. The applicant states that they will comply with these requirements.

16.04.030 - Severability.

If any part of this title is for any reason held invalid or unconstitutional by a court of competent jurisdiction, that part shall be deemed separate from the balance of the title and the invalidation of any part of this title shall not affect the validity or enforceability of any of the title's remaining portions.

Finding: not applicable. This is not an approval standard, and the applicant has not indicated that any part of this title is invalid or unconstitutional.

16.04.035 – Nuisance – Violations and penalties.

Any act, omission or use of property in violation of the requirements of this chapter shall constitute a nuisance, a civil infraction and a code violation subject to the code enforcement provisions of Chapters 1.16, 1.20 and 1.24.

Finding: not applicable. No act, omission or use of property in violation of this chapter is proposed.

CHAPTER 16.08 – LAND DIVISIONS - PROCESS AND STANDARDS

16.08.025 - Preliminary plat—Required information.

The preliminary plat shall specifically and clearly show the following features and information on the maps, drawings, application form or attachments. The preliminary plat layout may be prepared by a civil engineer, architect, land use planner or similarly qualified professional. All maps and site drawings shall be at a minimum scale of one inch to fifty feet:

A. Site Plan. A detailed site development plan drawn to scale by a licensed professional based on an existing conditions plan drawn by a licensed surveyor. The site plan shall include the location and dimensions of lots, streets, existing and proposed street names, pedestrian ways, transit stops, common areas, parks, trails, open spaces, building envelopes and setbacks, all existing and proposed utilities and improvements including sanitary sewer, stormwater and water facilities, total impervious surface created (including streets, sidewalks, etc.), all areas designated as being within an overlay district and an indication of existing and proposed land uses for the site. If required by staff at the preapplication conference, a connectivity analysis shall be prepared by a transportation engineer licensed by the State of Oregon that describes the existing and future vehicular, bicycle and pedestrian connections between the proposed subdivision and existing or planned land uses on adjacent properties. The connectivity analysis shall include shadow plats of adjacent properties demonstrating how lot and street patterns within the proposed land division will extend to and/or from such adjacent properties and can be developed meeting the existing OCMC design standards and adopted Transportation System Plan, street design standards, and adopted concept plans, corridor and access management studies, engineering standards and infrastructure analyses.

B. Traffic/Transportation Plan. The applicant's traffic/transportation information shall include two elements:

1. A detailed site circulation plan showing proposed vehicular, bicycle, transit and pedestrian access points and connections to the existing system, circulation patterns and connectivity to existing rights-of-way or adjacent tracts, parking and loading areas and any other transportation facilities in relation to the features illustrated on the site plan; and

2. a traffic impact study prepared by a qualified professional transportation engineer, licensed in the state of Oregon, that assesses the traffic impacts of the proposed development on the existing transportation system and analyzes the adequacy of the proposed internal transportation network to handle the anticipated traffic and the adequacy of the existing system to accommodate the traffic from the proposed development. In the preparation of the traffic/transportation plan, the applicant shall reference the adopted transportation system plan. The Community Development Director may waive any of the foregoing requirements if determined that the requirement is unnecessary in the particular case.

C. Natural Features Plan and Topography, Preliminary Grading and Drainage Plan. The applicant shall submit a map illustrating all of the natural features and hazards on the subject property and, where practicable, within two hundred fifty feet of the property's boundary. The map shall also illustrate the approximate grade of the site

before and after development. Illustrated features shall include all proposed streets and cul-de-sacs, the location and estimated volume of all cuts and fills, and all stormwater management features. This plan shall identify the location of drainage patterns and courses on the site and within two hundred fifty feet of the property boundaries where practicable. Features that shall be illustrated shall include the following:
1. Proposed and existing street rights-of-way and all other transportation facilities;
2. All proposed lots and tracts;
3. All trees proposed to be removed prior to final plat with a diameter six inches or greater diameter at breast height (d.b.h);
4. All natural resource areas pursuant to OCMC 17.49, 17.48, 17.44, and 17.42;
5. The location of any known state or federal threatened or endangered species or wildlife habitat or other natural features listed on any of the City's official inventories; Oregon City Municipal Code 16.08 Land Divisions – Process and Standards Draft 3/18/22 Page 3 of 10
6. All historic areas or cultural features acknowledged as such on any federal, state or city inventory;

D. 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 other written demonstration that the applicant 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 any responsive 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. The Community Development Director may waive any of the foregoing requirements if the Community Development Director determines that the requirement is unnecessary in the particular case and that the intent of this chapter has been met.

Finding: complies. The applicant submitted all required information including a complete preliminary set of site plans, a stormwater drainage report, and a traffic impact analysis. Notice of the application was provided to SHPO and the confederated tribes listed at the time of the pre-application conference. Any comments received regarding recommendations for archeological monitoring have been or will be forwarded to the applicant. The applicant submitted an archeological Inadvertent Discovery Plan (IDP) which cites the National Historic Preservation Act and Oregon State Laws pertaining to cultural resources.

16.08.030 - Preliminary plat—Narrative statement.

In addition to the plans required in the previous section, the applicant shall also prepare and submit a narrative statement that addresses the following issues:
A. Description. A detailed description of the proposed development, including a description of proposed uses, number and type of residential units, allocation and ownership of all lots, tracts, streets, and public improvements, the structure of any homeowner's association, and each instance where the proposed subdivision will vary from some dimensional or other requirement of the underlying zoning district.

Finding: complies. The applicant submitted a detailed narrative description of the proposed development including the required items above. Notice of the application was provided to SHPO and the confederated tribes listed at the time of the pre-application conference. The applicant submitted an archeological inadvertent discovery plan (IDP) that references federal and Oregon state laws pertaining to archeological sites, cultural resources, objects or human remains. Any comments received regarding recommendations for archeological monitoring have been or will be forwarded to the applicant. The applicant is not proposing to vary or modify any dimensional standards or other requirements of the underlying zone districts.

B. Timely Provision of Public Services and Facilities. The applicant shall explain in detail how and when each of the following public services or facilities is, or will be, adequate to serve the proposed development by the time construction begins:

1. Water,

Finding: See findings from 16.12.095.

2. Sanitary sewer,

Finding: See findings from 16.12.095.

3. Storm sewer and stormwater drainage,

Finding: See findings from 16.12.095.

4. Parks, trails and recreation facilities, if determined to be necessary pursuant to the Oregon City adopted Trail Master Plan and / or Parks and Recreation Master Plan,

Finding: not applicable. A park in this location of Oregon City is identified in the Park Place Concept Plan, which was adopted in 2008 and amended the referenced park and trail plans. However, this application was submitted prior to the effective date of adoption of new clear and objective park and trail dedication requirements for the Park Place Concept Plan in the OCMC (Ordinance # 24-1010, Effective 2/26/2025). The issue of park dedication and trails was much discussed by the Planning Commission and City Commission during review of the originally proposed and subsequently withdrawn master plan for this area. Following LUBA's remand to the City to only apply clear and objective requirements to that master plan, the City adopted amended clear and objective standards for the Park Place Concept Plan area. The application is subject to the standards in place at the time of application. The applicant may voluntarily dedicate land pursuant to these requirements or work directly with the Parks Department to plan for future park facilities to serve this part of the city. SDCs for future parks projects throughout the city are collected with all building permits.

5. Traffic and transportation, and

Finding: See findings from 16.12.095.

6. Fire and police services

Finding: complies. The property is within Clackamas Fire District #1 which provides fire and emergency services. Oregon City Police Department serves the property in coordination with Clackamas County Sheriff's Department. Homeowners within the subdivision will pay taxes for these services.

Where adequate capacity for any of these public facilities and services is not demonstrated to be currently available, the applicant shall describe how adequate capacity in these services and facilities will be financed and constructed before recording of the plat.

Finding: complies. Public facilities and services have been shown to be adequate and this recommendation includes standard conditions of approval to ensure compliance.

C. Drafts of the proposed covenants, conditions and restrictions (CC&Rs), maintenance agreements, homeowner association agreements, dedications, deeds easements, or reservations of public open spaces not dedicated to the City, and related documents for the land division.

Finding: complies with conditions. Prior to plat recordation, the applicant shall provide drafts of the proposed covenants, conditions and restrictions (CC&Rs), maintenance agreements, homeowner association agreements, dedications, deeds easements, or reservations of public open spaces not dedicated to the City, and related documents for the land division. **The applicant can ensure this standard is met by satisfying the conditions of approval.**

D. Overall density of the land division and the density by dwelling type for each.

Finding: complies. See also findings under OCMC 16.12, 17.08 and 17.10. The proposed subdivision complies with the minimum and maximum density requirements as shown under sections 17.08.050 and 17.10.050 for the low and medium density residential zone districts.

16.08.045 - Frontage width requirement.

Each lot shall abut upon a street other than an alley for a width of at least twenty feet unless flag lots are provided pursuant to OCMC 16.08.050.

Finding: complies. All of the lots abutting a street (Hiram, Hunter, and Laurel Ridge Avenue) meet the minimum frontage width requirement of 20 feet. A small number of flag lots have been proposed in accordance with section 16.08.050.

16.08.050 - Flag lots.

A. Flag lots shall not be permitted except where the applicant can show that the existing parcel configuration, topographic constraints or the location of a pre-existing dwelling unit precludes a land division that meets the minimum density, dimensional standards of the underlying zone, and except where street connectivity is not practicable as determined by the City Engineer.
B. A shared joint accessway shall be provided unless the existing topography of the site or the pre-existing dwelling unit is located on the property to prevent a joint accessway. A perpetual reciprocal access easement and maintenance agreement shall be recorded for the joint accessway, in a form acceptable to the City Attorney.
C. Accessways shall have a pavement width of at least sixteen feet to service one or two units or twenty feet to service three or more units. A fire access corridor of at least twenty feet shall be provided to all parcels with a minimum pavement width of sixteen feet to service two units or twenty feet to service three or more units. At least six inches of shoulder on each side of the fire access corridor shall be provided in order that construction work does not infringe on adjacent properties. A narrower pavement width may be approved by the Fire District

and City Engineer. The City Engineer and/or Fire District may require that additional fire suppression devices be provided to assure an adequate level of fire and life safety. The City Engineer and/or Fire District may prohibit vehicular obstruction, including trees, fences, landscaping and structures within the fire access corridor.
If the proposed accessway exceeds one hundred fifty feet in length the accessway shall conform to Fire District standards and shall be paved to a minimum width of twenty feet unless an alternative is approved by the Planning Division and Fire District. If more than two units are served, a turnaround for emergency vehicles shall be provided. The turnaround shall be approved by the City Engineer and Fire District.
D. The pole portion of the flag lot shall connect to a street.
E. The pole shall be at least ten feet wide for the entire length.
F. The pole shall be part of the flag lot and shall remain under the same ownership as the flag portion of the lot.

Finding: complies with conditions. The proposed subdivision includes eight flag lots, which allow the subdivision to meet the density standards while minimizing excessive grading given the site's topography in this area of the project site. Four flag lots will be located near the northwest corner of the project area and another four will be near the southwest property boundary. Street connectivity is provided throughout the site, but due to the overlay district constraints, existing topography, and density requirements, creating additional right-of-way is not practical in these areas. Seven of the eight flag lots will share an accessway with an adjacent lot. These lots have flag poles ten feet wide for the entire length. One flag lot will not share its accessway but will have flagpole with a width of 20 feet. Pole access widths are shown on the submitted site plan and tentative plat sheets to demonstrate compliance with the above standard. Accessways are less than 150 feet to comply with fire access standards. Lot areas are shown for each flag lot and does not include the pole area in that calculation. The applicant shall record any easements or maintenance agreements necessary to comply with the requirements if this section prior to recordation of the final plat. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

16.08.053 Tracts

Tracts which cannot be developed with a home or office, commercial, residential, institutional, industrial, parking or other uses as determined by the City Engineer or Community Development Director are not subject to compliance with the dimensional standards of the zoning designation, frontage requirements, or flag lot standards.

Finding: complies. The proposed subdivision includes tracts for common open space, private roadways, alleys, pedestrian accessways and stormwater facilities. The location and dimensions of these tracts are shown on the attached tentative site plan. As proposed these tracts are not developable with residential units and are not subject to dimensional standards of the zoning designation, frontage requirements, or flag lot standards.

16.08.060 - Building sites.

A. The size, width, shape and orientation of building sites shall be rectangular or square to the maximum extent practicable.

Finding: complies. The size, width, shape and orientation of proposed building sites are rectangular or square to the maximum extent practicable due to proposed curved street frontages and topography. All proposed lots will have a buildable area rectangular in shape.

B. Sites abutting an alley shall gain vehicular access from the alley unless deemed impracticable by the decision maker.

Finding: complies. All lots abutting the alley gain access from the alleyway. Alleyways are shown for lots with frontage along Holly Lane to avoid direct vehicle access onto the collector where possible.

C. Adequate access for emergency services (fire and police) shall be provided.

Finding: complies. Clackamas Fire District was notified of the application, providing comments at the pre-application conference. The fire district will also be reviewing applicable plans at the time of civil engineering construction plan review to assure that there is adequate access for emergency services. The subdivision will provide new public streets to connect to the existing transportation system.

16.08.063 - Minimum density.

All layouts shall achieve at least the minimum density of the base zone for the net developable area as defined in OCMC 17.04. Alternatively, a site may be partitioned into two lots, though one of the lots shall not contain sufficient lot area to allow further division.

Finding: complies. The applicant proposes a density of 7.4 units/acre in the R-5 zone and 4.0 units/acre in the R-10 zoning designation. Minimum density standards are shown to be met and do not exceed the maximum density allowed. See also findings under OCMC 17.08.050 and 17.10.050.

16.08.065 – Lot size reduction.

A subdivision in the R-10, R-8, R-6, R-5, or R-3.5 dwelling district may utilize lot size reduction for up to twenty-five percent of the lots proposed for single-family detached residential or duplex use. Fractions resulting from the twenty-five percent calculation shall be rounded down. The reduced-size lots may be up to ten percent less than the required minimum lot area of the applicable zoning designation provided the average lot size of all proposed single-family detached residential or duplex lots meet the minimum requirement of the underlying zone. Any area within a powerline easement on a lot shall not count towards the lot area for that lot. Lot size reduction is only permitted through a subdivision or, master plan and planned unit developments processes and may not be used for minor partitions or any other residential uses.

The average lot area is determined by first calculating the total net developable area devoted to single-family detached dwelling units or duplexes, subtracting the powerline easement areas, open space, tracts, stormwater facilities, roads, right-of-way, or accessways and dividing that figure by the proposed number of single-family detached dwelling or duplex lots.

A lot that was created pursuant to this section may not be further divided unless the average lot size requirements are still met for the entire subdivision, except that lots developed with a duplex shall be eligible for a middle housing land division pursuant to OCMC 16.24.

When a lot abuts a public alley, an area equal to the length of the alley frontage along the lot times the width of the alley right-of-way measured from the alley centerline may be added to the area of the abutting lot in order to satisfy the lot area requirement for the abutting lot. It may also be used in calculating the average lot area.

Finding: not applicable. The applicant does not request any lot size reduction under this section.

16.08.070 - Through lots.

Through lots and parcels shall be avoided except where they are essential to provide separation of residential development from major arterials or to overcome specific disadvantages of topography of existing development patterns. A reserve strip may be required. A planting screen restrictive covenant may be required to separate residential development from major arterial streets, adjacent nonresidential development, or other incompatible

use, where practicable. Where practicable, alleys or shared driveways shall be used for access for lots that have frontage on a collector or minor arterial street, eliminating through lots.

Finding: complies. The proposal avoids through lots as far as practicable, however, lots 51-56 and 76-90 will have frontage on Holly Lane, a proposed collector street, and either Tract "F" or "M;" tracts that will contain private streets consisting of a 22-foot-wide roadway, curb, gutter, and a single 5-foot-wide sidewalk. These tracts will provide rear vehicle access for the previously mentioned lots in order to eliminate multiple accesses on a collector street (Holly Lane). In addition to providing rear vehicle access to those lots, these tracts will provide front vehicle access to Lots 47-50 and 60-75. No additional planting screen should be necessary as there will be a row of street trees along Holly Lane on both sides.

16.08.075 - Building site—Lot and parcel side lines.

The lines of lots and parcels, as far as is practicable, shall run at right angles to the street upon which they face, except that on curved streets they shall be radial to the curve.

Finding: complies. Lines of lots and parcels intersect street frontage property lines at right angles to the greatest extent possible. On curved streets, the front property lines are radial to the curve.

16.08.080 - Setbacks and building location.

This standard ensures that lots are configured in a way that development can be oriented toward streets to provide a safe, convenient and aesthetically pleasing environment for pedestrians and bicyclists. Residences oriented in this manner assure a sense of openness by avoiding the "bowling alley" effect caused by uninterrupted, continuous privacy fences along higher volume streets. The objective is for lots located on a neighborhood collector, collector or minor arterial street to locate the front yard setback on and design the most architecturally significant elevation of the primary structure to face the neighborhood collector, collector or minor arterial street,

A. The front setback of all lots located on a neighborhood collector, collector or minor arterial shall be orientated toward the neighborhood collector, collector or minor arterial street.

Finding: complies. This standard applies to all lots and homes that abut the proposed Holly Lane collector street. Review for compliance will be confirmed at the time of building permit review. The applicant's site plans indicate compliance with the setback standard.

B. The most architecturally significant elevation of the residence shall face the neighborhood collector, collector or minor arterial street.

Finding: not applicable. "Architecturally significant" is not defined in the code and is not a clear and objective standard, therefore it does not apply. Compliance with applicable residential design standards and setbacks will be further reviewed with residential building permit applications.

C. On corner lots located on the corner of two local streets, the main façade of the dwelling may be oriented towards either street.

Finding: not applicable. Compliance with applicable residential design standards and setbacks for corner lots will be reviewed with residential building permit applications.

D. The decision maker may approve an alternative design, consistent with the intent of this section, where the applicant can show that existing development patterns preclude the ability to practically meet this standard.

Finding: not applicable. Alternative designs are not proposed.

16.08.085 - Division of large lots.

Where land is to be divided into lots or parcels capable of redivision in accordance with this chapter, the Community Development Director shall require an arrangement of lots, parcels, buildings on lots, utilities and streets which facilitates future redivision. In such a case, development limitations including building locations and setback lines may be required and made a matter of record in order to preserve future right-of-way or building sites.

Finding: complies. This standard was written prior to the adoption of newer standards for Middle Housing Land Division. The applicant has not proposed further land division at this time. The applicant states that there are two areas outside of the project area. Both areas are labeled on the submitted site plan sheets (see sheets 6-6.4), and a shadow plat has been drawn for those areas to show how they could be divided consistently with surrounding development. Further division may also be proposed pursuant to the Middle Housing Land Division standards and process in OCMC Chapter 16.24.

16.08.095 - Prohibition on Additional Private Restrictions on Housing Types.

Private restrictions on the provision of accessory dwelling units-duplexes, or internal conversions executed after July 1, 2019 and all middle housing types after August 9, 2019 shall be prohibited. Conditions, covenants, and restrictions (CC&Rs) or similar legal instrument submitted with residential plats submitted for final plat approval after July 1, 2019 shall not prohibit or impose additional restrictions on accessory dwelling units, duplexes, and/or internal conversions and after August 9, 2019 for all middle housing types to the extent permitted in the OCMC in place at the time of final plat submittal, and shall not impose additional restrictions on those uses through any future amendment.

Finding: complies with condition. No CC&Rs have been proposed that prohibit accessory dwelling units, internal conversions or middle housing types. Any CC&Rs will be reviewed for compliance with this section prior to final plat. **It is reasonable, likely and practicable that the applicant can meet this standard through compliance with 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. Access to Livesay Road is under the jurisdiction of Clackamas County. Facility or right-of-way improvements under jurisdiction of Clackamas County shall be reviewed and approved by Clackamas County before issuing construction permits. **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 a land division development; 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.

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 as proposed. The applicant has requested a modification for Holly Lane as it passes between a narrow section (pinch point) of the proposed property between tax lot 0314 and tax lot 400. This modification request would maintain the standard collector road travel section for vehicles, bicycles and pedestrians. The proposed reduced cross section in this pinch point would remove the landscape strip and on street parking. This modification was previously granted for the portion of the pinch point in Phase I of the Applicant's development. The City takes no exception to the modification request for Holly Lane within the pinch point area as it meets the criteria noted above.

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: not applicable. No Type I modification has been requested.

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:
A. Pre-Design Meeting;
B. Final Engineering Plans, Stamped and Signed by an Oregon Licensed Professional Engineer;
C. 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 general 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 applicant has identified cross sections within the plan set for the proposed streets. New streets shall be consistent with the City standards as identified in OCMC 16.12.016. Specifically, the proposed streets cross sections shall be as follows:

Local residential roads shall have a 54-foot right-of-way width with two (2) 16-foot shared space travel lanes, 5-foot sidewalks on both sides of the street, 5.5 foot landscape strips on both sides of the street, and 0.5-foot curbs.

Holly Lane shall be designed to be a collector residential road. It shall have 85 feet of public right-of-way, three (3) 11-foot travel lanes, 7-foot parking lanes on both sides of the street, 5-foot sidewalks on both sides of the street, 7.5-foot landscape strips on both sides of the street, 6-foot bicycle lanes on both sides of the street, and 0.5-foot curbing.

The identified Holly Lane cross-section through the pinch point shall be a reduced cross-section per the applicant's modification request. The Holly Lane pinch point shall have a 57-foot right-of-way, three (3) 11-foot travel lanes, 6-foot bike lanes on both sides of the street, 5-foot sidewalks on both sides of the street, 0.5-foot curbing, no parking aisles, and no landscape stripes.

Private roads shall comply with the City's Street Design Standards. Private roads are to be constructed to the City standards identified in OCMC 16.12.016 for a local road. A modification from this standard has not been requested.

Alley cross sections shall comply with OCMC 16.12.016 and have at minimum a 20-foot right-of-way or access easement and a minimum of 16 feet of pavement.

The proposed ¾ local street section located primarily along tax lot 301, identifies an 8-foot-wide vehicular travel lane on the side of the street identified for future development. An 8-foot lane is not consistent with the City's Street Design Standards as identified in Section 3.1.1. The minimum travel lane width shall be 11 feet from the center line to the frontage of the future development. When the future lot is developed it will then be constructed to the standard local residential cross-section. The cross section from the center line to the proposed development with this application shall be consistent with local residential standards as identified in OCMC 16.12.016.

Gravel roads and driveways are not an approved road type in Oregon City. The private gravel roads identified in Tracks L, H, and for proposed fire access shall be paved. A modification from the City's standard for private roads has not been requested.

The proposed sewer connecting the development to the existing sewer on Oak Valley Drive, is proposed to be installed via a bridge alignment over the NROD area and existing stream. This proposed bridge location is consistent with the City's adopted Park Place Concept plan for connecting this neighborhood to Oak Valley Drive as well as the City's Trails Master Plan. The proposed bridge shall provide public pedestrian and bicycle access consistent with the City's Trails Master Plan for innovative accessways with a minimum width of 8 feet.

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 Classi-fication	Compre-hensive Plan Designation	Right-of-Way Width	Pave-ment 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.

Road Classi-fication	Compre-hensive Plan Designation	Right-of-Way Width	Pave-ment 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
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. The submitted plan did not address the requirements of the section 16.12.016. See specific cross sections in OCMC 16.12.015 above. Impacts to County right-of-way shall be permitted with Clackamas County. **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 with condition. The submitted plan did not address the requirements of the section 16.12.016. See comments above for 16.12.015 regarding private road cross-sections. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

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 submitted plan did not address the requirements of the section 16.12.016. See comments above for 16.12.015 regarding private road cross-sections. **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 street lights in conformance with all City standards, specifications, codes, and policies and as approved by Portland General Electric (PGE). The applicant shall submit a photometric plan. **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: complies with condition. The submitted plan did not address the requirements of the section 16.12.016. See comments above for 16.12.015 regarding private road cross-sections. **Staff**

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

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: applicable. See 16.12.015 above regarding dimensions for vehicle access easements and alleyways.

H. Vehicular and pedestrian easements shall allow for public access and shall comply with all applicable pedestrian access requirements.

Finding: applicable. The applicant's plans note that the alleys will be in installed within access easements.

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.
B. The City may grant a permit for the adjoining owner to access through the access control.
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)."
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: complies with condition. "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." **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

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.

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. Properties abutting Holly Lane (a collector) have rear access either from alley ways or from private roadways. This standard is met.

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: applicable. The applicant has acknowledged this standard.

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 with condition. The applicant proposes a ¾ street for Pioneer Drive. See comments under 16.12.015 above regarding lane sizing. The applicant also proposes to install a wall within the public right-of-way on the north side of Pioneer Drive. No walls will be permitted within public right-of-way. If walls are needed to support the construction of new streets they shall be located on private property outside of 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.**

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.
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.
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.
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.
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: complies with condition. Dead-end stub streets that will connect to streets on adjacent sites in the future shall include barricade meeting Manual on Uniform Traffic Control Devices (MUTCD) and signage informing the public that the street is planned for future extension. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

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: applicable. Alleys are 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. See Mobility Standards below under 16.12.033. **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 as proposed. Streets proposed and the existing streets adjacent to the development are laid out in a manner that promotes pedestrian and bicycle circulation.

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 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 platting. **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. Off-street pedestrian and bicycle accessways are proposed where vehicular or public street access is impractical. See OCMC 16.12.015 and 16.12.095 for additional comments and conditions regarding the proposed sewer bridge. **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 as proposed. The layout of the proposed development shows accessways free of horizontal obstructions with geometry meeting the applicable code.

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: complies with condition. The layout of the proposed development shows accessways with proper visibility. However, several accessways appear to be below the standard width of 15 feet as noted above in 16.12.032.B.1. The applicant has not made a modification request to reduce the size of the City's standard dimensions for an accessway. Accessways shall be equal to the dimensions noted in OCMC 16.12.032.B. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

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 does not yet show accessways with proper lighting. The applicant will provide lighting plans showing accessways lit per 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.**

E. Accessways shall comply with Americans with Disabilities Act (ADA).

Finding: complies with condition. Curb-tight sidewalk is proposed. A new driveway through this type of sidewalk will impact the sidewalk. All accessways, proposed and existing, that intersect with a public sidewalk, shall be made Americans with Disabilities Act (ADA) compliant. An

approved curb ramp design will need included on engineering plans following proper engineering technical 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.**

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 current plans do not show landscaping within the proposed accessways. The applicant shall provide a landscaping plan showing street trees within the right of way and plantings within the proposed accessways. **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: complies as proposed. The layout of the proposed development shows pedestrian and bicycle accessways with bollards preventing unauthorized motorized traffic.

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 as proposed. The layout of the proposed development shows pedestrian and bicycle accessways with proper materials.

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 alternative design has been proposed 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. All access easements shall be recorded on abutting properties. **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 Conditions. The City's transportation engineering consultant has reviewed the applicant's TIS. The following were key findings based on the developments impacts to the City's transportation systems:

The development is expected to generate 143 (35 in, 108 out) a.m. peak hour trips, 200 (126 in, 74 out) p.m. peak hour trips, and 1,972 weekday trips.

Approximately 82% of site trips are expected to travel to/from the west along Holcomb Boulevard (40% to/from the north along OR 213, 25% to/from the west along Abernethy Road, 8% to/from the south along OR 213, 4% to/from the southeast along Redland Road, and 5% to/from destinations along west Holcomb Boulevard).
Approximately 18% of site trips are expected to travel to/from the east along Holcomb Boulevard.

An average annual growth rate of 0.75%, which was based on ODOT's Future Highway Volume Tables, was applied for all volumes on OR 213 and the segment of Redland Road between OR 213 and Holcomb Boulevard. For all other roadways, an average annual growth rate of 1.0% per year was applied to address background growth.

Trips from the following in-process developments were included in background volumes:

- Park Place Crossing Phase I (PR-000247-2024 / GLUA-24-00018 / SUB-24-00001)
- Serres Farm Master Plan
- Thimble Creek South Phase I
- Clackamas Heights Redevelopment
- Abernathy Place
- North End Commercial Development

Based on the most recent five years of available crash data, no significant safety hazards were identified at the study intersections, and no safety mitigations are recommended.

Sight distance and access spacing standards appear to be met at the existing site access intersection (Holcomb Boulevard & Winston Drive).

Left turn lane warrants and preliminary traffic signal warrants at the unsignalized study intersections were evaluated. No left turn lane warrants or signal warrants were met.

The operations analysis assumed a third southbound through lane at OR 213 & Redland Road, per Condition of Approval 47 from the Clackamas County Courthouse Project (GLUA-22-00033), would be constructed under both background and build (year 2028) conditions. The operations analysis also included scenarios that modeled the alternative mitigation of a third eastbound left turn lane at OR 213 & Redland Road under both background and build (year 2028) conditions.

A queuing analysis showed that all study intersections can meet performance standards under all analysis scenarios with the planned capacity improvements described in the following bullets:

Holcomb Boulevard/Abernethy Road & Redland Road – Proportionate share fee contribution required

OR 213 & Redland Road – Proportionate share fee contribution required

Washington Street & Abernethy Road/17th Street

Recommendation: restripe roadway to extend westbound left turn lane and provide more vehicle queue storage

Washington Street & 15th Street – Proportionate share fee contribution required

Washington Street & 14th Street – Proportionate share fee contribution required

The following conditions of approval will be required for the proposed development:

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 shall be collected for planned improvements at Holcomb Boulevard/Abernethy Road & Redland Road. The proposed development adds 164 trips during the PM peak hour to the intersection. Proportionate share contribution shall be based on the percentage of the developments impact on the year 2035 volume and expected project costs.

A proportionate share fee contribution shall be collected for planned improvements at OR 213 & Redland Road. The proposed development adds 96 trips during the PM peak hour to the intersection. Proportionate share contribution shall be based on the percentage of the developments impact on the year 2035 volume and expected project costs.

A proportionate share fee contribution shall be collected for planned improvements at Washington Street & 15th Street. The proposed development adds 50 trips during the PM peak hour to the intersection. Proportionate share contribution shall be based on the percentage of the developments impact on the year 2035 volume and expected project costs.

A proportionate share fee contribution shall be collected for planned improvements at Washington Street & 14th Street. The proposed development adds 40 trips during the PM peak hour to the intersection. Proportionate share contribution shall be based on the percentage of the developments impact on the year 2035 volume and expected project costs.

The Washington Street & Abernethy Road/17th Street westbound left turn lane shall be restriped to provide an additional 125 feet of vehicle queue storage.

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. Approved driveway locations will need included on engineering plans 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. 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: complies with condition. All driveways, new and existing, shall meet the minimum driveway spacing standards identified in Table 16.12.035.A. Approved driveway locations will need included on engineering plans 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.**

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: Not applicable. The development has not proposed nonresidential or multi-family residential use driveways that generate high traffic volumes.

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 included on engineering plans 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.**

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 with condition. All new driveways shall have a concrete driveway approach 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. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

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 10-foot-wide 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 minimum 15-foot-wide public utility easement for City water, sewer or storm infrastructure. See additional easement conditions for the proposed sewer under 16.12.095 below. **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: not applicable. No easements for unusual facilities are required for this development.

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: complies as proposed. The applicant proposes to modify a manmade stormwater easement to direct stormwater to within the proposed stormwater system. The outfall will remain consistent with existing.

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 applicant proposes access easements for the proposed alleys.

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 as proposed. See findings under OCMC 17.49 and 16.08.025 and 16.08.030.

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. (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.**

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 and 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: complies 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 ten-foot wide 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 proposed development has identified both private and public streets that are in general consistent with the City's standard cross section (see conditions und 16.12.015). The development is also consistent with the City's TSP project D48 which is to construct Holly Lane and provide street connections to the existing Journey Drive and Cattle Drive. The development's proposed alleys and private roads are also consistent with the City's standards to reduce driveway access to collector roads, in this case Holly Lane.

The proposed street layout will impact geological hazard areas within the property. As identified in section 17.44 below the applicant will have to submit updated plans and reports showing how cuts and fills will be appropriately mitigated within the geological hazard areas.

Detailed review of the proposed street curvatures, slopes and intersection angles will occur as part of the technical design review process prior to issuance of permits.

Additional offsite improvements will be required as identified in 16.12.033 above.

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. The development shall extend the stormwater main within the development, to and through the development property frontage, for future connection of upgradient properties to the existing public stormwater system. See findings from section 13.12 for the design of stormwater management facilities to serve the development. The proposed stormwater detention pond is located in the southeastern portion of the proposed development in Tract B. Tract B has a considerable area identified in the City's mapping system as a Natural Resource Overlay District (NROD) area. The applicant's stormwater design shall be consistent with OCMC 17.49.155 for facilities within the NROD area. **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's site plan shows sewer connections for all proposed properties within the new subdivision. Sanitary sewer sizing will be reviewed as part of the engineering permitting process to confirm adequate capacity and correct slopes.

However, the applicant proposes to connect the development's sanitary sewer to the existing sewer system on Oak Valley Drive. To do so, the applicant will have to cross a Natural Resource Overlay District (NROD) area, a ravine, and a tributary of Tour Creek. The applicant's plan set shows that the sewer line will be crossing Tour Creek with bridge abutments. The applicant's narrative responses note that the sewer will be bridged to make this crossing. The physical extent of the bridge and whether it is feasible is still unclear. The applicant has not provided a detail on what a "bridged" sewer line will entail. Additional information is needed to determine if it can technically be accomplished.

The proposed "bridged" sewer will be in a difficult location to maintain as it lies across a ravine and over the stream in the Natural Resource Overlay District (NROD). If the sewer breaks or requires repair, significant impacts to the NROD may occur. Furthermore, the proposed "bridged" sewer is an atypical facility within the City's sewer system. As such, future maintenance and replacement will be an additional burden on the City than a typical sewer line. The following conditions are required for the site's sewer system:

The applicant shall install the "bridged" sewer main (and any portion of the sewer installed within retaining walls or bulkheads) within a sleeve which will further protect the NROD from potential leakage and facilitate future maintenance. The bridged section of the sewer main shall be of a material consistent with the City's Sanitary Sewer and Design Standards or as approved by the City Engineer.

There are no permanent easements identified in the plan set for the proposed public sewer connection to Oak Valley Drive. A public utility easement, sized to the City's Sanitary Sewer Design Standards, is required for sanitary sewer mains outside of the public Right-of-way. Additional easement space may be required to facilitate City maintenance vehicles access to the proposed sewer within the NROD area.

Permanent maintenance access will be needed for the sewer main**.** The applicant will need to show and provide access for the bridged sewer main. With the proposed sewer located within the Natural Resource Overlay District (NROD), the applicant shall mitigate the permanent impacts needed to access and maintain the public sewer within the NROD per OCMC 17.49. NROD mitigation shall be outside of the City's utility easement

Sanitary sewer manhole spacing shall not exceed the City's maximum of 400 feet per the City's Sanitary Sewer Design Standards unless otherwise approved by the City Engineer.

The proposed bridged sewer shall be designed with pedestrian and bicycle access to facilitate inspections and maintenance in order to reduce the impacts to the NROD area.

As noted above, the proposed development plans to connect to the Oak Valley Drive sewer system. The City agrees with this interim approach. However, the final sewer connection for the Park Place area will ultimately be on Redland Road downhill from this proposed development (per the City's Sewer Master Plan and The Park Place Concept Plan). The proposed sewer system for this development shall take into account the final routing to Redland Road (per the City's Sewer Master Plan) and provide a design that can easily be rerouted in the future.

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's narrative notes that the proposed water utilities for this development are split between two water providers. The development shall connect to Oregon City Water for this development for all areas below the elevation of 450ft.

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 platting. **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: complies as proposed. The applicant proposes providing an oversized stormwater facility in order to accommodate future development in the area. The applicant has not requested reimbursement, however, it is eligible per the procedures of OCMC 13.20.

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 created by the proposed subdivisions or partitions.

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 platting. **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 Section 17.50.140 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 Section 17.50.141 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 platting. **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 17.08 LOW DENSITY RESIDENTIAL DISTRICTS

17.08.010 - Designated.

The R-10, R-8 and R-6 residential districts are designed for low density residential development.

Finding: complies. The application includes one parcel that is zoned R-10.

17.08.020 - Permitted uses.

Permitted uses in the R-10, R-8 and R-6 districts are:
A. Single-family detached residential units;
B. Accessory uses, buildings and dwellings;
C. Duplexes;
D. Triplexes;
E. Quadplexes;
F. Townhouses;
G. Cottage clusters;
H. Residential homes;
I. Parks, playgrounds, playfields and community or neighborhood centers;
J. Home occupations;
K. Family day care providers;
L. Farms, commercial or truck gardening and horticultural nurseries on a lot not less than twenty thousand square feet in area (retail sales of materials grown on-site is permitted);
M. Temporary real estate offices in model homes located on and limited to sales of real estate on a single piece of platted property upon which new residential buildings are being constructed;
N. Transportation facilities.

Finding: complies. The applicant proposes to construct single-family detached residential units within the R-10 zone allowed in OCMC 17.08.020.

17.08.025 - Conditional uses.

The following uses are permitted in the R-10, R-8 and R-6 districts when authorized by and in accordance with the standards contained in OCMC 17.56:

A. Golf courses, except miniature golf courses, driving ranges or similar commercial enterprises;
B. Bed and breakfast inns/boarding houses;
C. Cemeteries, crematories, mausoleums and columbariums;
D. Child care centers and nursery schools;
E. Emergency service facilities (police and fire), excluding correctional facilities;
F. Residential care facilities;
G. Private and/or public educational or training facilities;
H. Public utilities, including sub-stations (such as buildings, plants and other structures);
I. Religious institutions;
J. Assisted living facilities; nursing homes and group homes for over fifteen patients;

Finding: not applicable. The applicant has not proposed a conditional use.

17.08.040 - Dimensional standards.

Dimensional standards in the R-10, R-8 and R-6 districts are as follows:

Table 17.08.040

Standard	R-10	R-8	R-6
Minimum lot size1 Single-family detached, Duplex & Triplex Quadplex and Cottage cluster Townhouse	 10,000 sq. ft. 10,000 sq. ft. 1,500 sq. ft.	 8,000 sq. ft. 8,000 sq. ft. 1,500 sq. ft.	 6,000 sq. ft. 7,000 sq. ft. 1,500 sq. ft.
Finding: complies. Smallest lot size proposed: 11,011 sf.			
Maximum height: All, except	35 ft., except	35 ft., except	35 ft., except
Cottage cluster unit	25 ft.	25 ft.	25 ft.
Finding: not applicable. Building height compliance to be reviewed at building permit application.			
Maximum building lot coverage All, except With ADU Cottage cluster	 40%, except 45% None	 40%, except 45% None	 40%, except 45% None
Finding: not applicable. Building lot coverage to be reviewed at building permit application.			
Minimum lot width All, except Townhouse	 65 ft., except 20 ft.	 60 ft., except 20 ft.	 50 ft., except 20 ft.
Finding: complies. Smallest width proposed: approximately 83’.			

Minimum lot depth All, except Townhouse	 80 ft., except 75 ft.	 75 ft., except 75 ft.	 70 ft., except 70 ft.
Finding: complies. Smallest depth proposed: 108'.			
Minimum front yard setback All, except Porch Cottage cluster	 20 ft., except 15 ft. 10 ft.	 15 ft., except 10 ft. 10 ft.	 10 ft., except 5 ft. 10 ft.
Finding: not applicable. Setback compliance to be reviewed at building permit application.			
Minimum interior side yard setback: All, except Townhouse	 8 ft., except 0 ft. (attached) /8 ft. (side)	 7 ft., except 0 ft. (attached) /7 ft. (side)	 5 ft., except 0 ft. (attached) /5 ft. (side)
Finding: not applicable. Setback compliance to be reviewed at building permit application.			
Minimum corner side yard setback	10 ft.	10 ft.	10 ft.
Finding: not applicable. Setback compliance to be reviewed at building permit application.			
Minimum rear yard setback All, except Porch Cottage cluster/ADU	 20 ft., except 15 ft. 10 ft.	 20 ft., except 15 ft. 10 ft	 20 ft., except 15 ft. 10 ft
Finding: not applicable. Setback compliance to be reviewed at building permit application.			
Garage setbacks	20 ft. from ROW, except 5 ft. from alley	20 ft. from ROW, except 5 ft. from alley	20 ft. from ROW, except 5 ft. from alley
Finding: not applicable. Setback compliance to be reviewed at building permit application.			

Notes:
1. For land divisions, lot sizes may be reduced pursuant to OCMC 16.08.065.
2. Accessory structures may have reduced setbacks pursuant to OCMC 17.54.010.B.
3. Public utility easements may supersede the minimum setback.

Finding: not applicable. The applicant has not proposed any lot size reductions pursuant to OCMC 16.08065. Setback compliance to be reviewed at building permit application.

17.08.035 – Prohibited uses.

Prohibited uses in the R-10, R-8 and R-6 districts are:
A. Any use not expressly listed in OCMC 17-08-020, 17.08.025 or 17.08.030;
B. Marijuana businesses.

Finding: not applicable. The applicant has not proposed any prohibited uses.

17.08.045 - Exceptions to setbacks.

A. Projections from buildings. Ordinary building projections such as cornices, eaves, overhangs, canopies, sunshades, gutters, chimneys, flues, sills or similar architectural features may project into the required yards up to twenty-four inches.

Finding: not applicable. Setback compliance to be reviewed at building permit application.

B. Through lot setbacks. Through lots having a frontage on two streets shall provide the required front yard on each street. The required rear yard is not necessary.

Finding: not applicable. The applicant did not propose any through lots within the R-10 zone district.

17.08.050 - Density standards.

A. Density standards in the R-10, R-8 and R-6 districts are as follows:
Table 17.08.050

Standard	R-10	R-8	R-6
Minimum net density: All	3.5 du/acre	4.4 du/acre	5.8 du/acre
Except cottage clusters	4 du/acre	4.4 du/acre	5.8 du/acre
Maximum net density: All	4.4 du/acre	5.4 du/acre	7.3 du/acre
Except townhouses	17.4 du/acre	21.6 du/acre	25 du/acre

B. Exceptions.
1. Any dwelling units created as accessory dwelling units do not count towards the minimum or maximum density limits in Table 17.08.050.
2. Duplexes, triplexes and quadplexes shall count as a single dwelling unit for the purposes of calculating maximum net density. Total dwelling units within a development may count for the purposes of calculating minimum net density.
3. Cottage clusters are exempt from maximum net density standards.

Finding: complies. Within the R-10 zoned portion of the site, the applicant proposes a density of 4 dwelling units per acre. No density exceptions are proposed with this application.

CHAPTER 17.10 MEDIUM DENSITY RESIDENTIAL DISTRICTS

17.10.010 – Designated.

The R-5 and R-3.5 residential districts are designed for medium density residential development.

Finding: complies. The applicant has proposed medium density residential development within the R-5 zone district.

17.10.020 - Permitted uses.

Permitted uses in the R-5 and R-3.5 districts are:
A. Single-family detached residential units;
B. Accessory uses, buildings and dwellings;
C. Duplexes;
D. Triplexes;
E. Quadplexes;
F. Townhouses;
G. Cottage clusters;
H. Manufactured home parks or subdivisions in the R-3.5 district only;
I. Residential homes;
J. Parks, playgrounds, playfields and community or neighborhood centers;
K. Home occupations;
L. Family day care providers;
M. Farms, commercial or truck gardening and horticultural nurseries on a lot not less than twenty thousand square feet in area (retail sales of materials grown on-site is permitted);
N. Temporary real estate offices in model homes located on and limited to sales of real estate on a single piece of platted property upon which new residential buildings are being constructed;
O. Transportation facilities.

Finding: complies. The applicant proposes a subdivision for the construction of single-family detached and attached residential units. Further review of the unit type will take place at the time of building permit activity.

17.10.025 - Conditional uses.

The following uses are permitted in the R-5 and R-3.5 districts when authorized by and in accordance with the standards contained in OCMC 17.56:
A. Golf courses, except miniature golf courses, driving ranges or similar commercial enterprises;
B. Bed and breakfast inns/boarding houses;
C. Cemeteries, crematories, mausoleums and columbariums;
D. Child care centers and nursery schools;
E. Emergency service facilities (police and fire), excluding correctional facilities;
F. Residential care facilities;
G. Private and/or public educational or training facilities;
H. Public utilities, including sub-stations (such as buildings, plants and other structures);
I. Religious institutions;
J. Assisted living facilities; nursing homes and group homes for over fifteen patients.
K. Live/work dwellings.

Finding: not applicable. The applicant has not proposed any conditional uses.

17.10.030 - Master plans.

The following use is permitted in the R-3.5 district when authorized by and in accordance with the standards contained in OCMC 17.65.
A. Multifamily residential.

Finding: not applicable. None of the proposed development is in the R-3.5 district, and the applicant has not proposed multi-family uses.

17.10.035 – Prohibited uses.

Prohibited uses in the R-5 and R-3.5 district are:

A. Any use not expressly listed in OCMC 17.10.020, 17.10.025 or 17.10.030.
B. Marijuana businesses.

Finding: not applicable. No prohibited uses are proposed.

17.10.040 - Dimensional standards.

Dimensional standards in the R-5 and R-3.5 districts are as follows:
Table 17.10.040

Standard	***R-5***
Minimum lot size1 Single-family detached and duplex Triplex Quadplex and Cottage cluster Townhouse	 5,000 sq. ft. 5,000 sq. ft. 7,000 sq. ft. 1,500 sq. ft.
Finding: complies with condition. Proposed lots 63, 70, and 214 are slightly less than 5,000 square feet in area, but can easily be adjusted. The applicant shall assure that all lots comply with the applicable dimensional standards for the zone district prior to approval of a final plat. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**	
Maximum height: All, except	35 ft., except
Cottage cluster unit	25 ft.
Finding: not applicable. Building height will be reviewed at the time of building permit application.	
Maximum building lot coverage Single-family detached and all duplexes With ADU Triplex, quadplex and townhouse Cottage cluster	 50% 60% 70% None
Finding: not applicable. Lot coverage will be reviewed at the time of building permit application.	
Minimum lot width All, except Townhouse	 35 ft., except 20 ft.
Finding: complies. Smallest width proposed: 38 ft.	
Minimum lot depth	70 ft.

Finding: complies. Smallest depth proposed: 87.4 ft.	
Minimum front yard setback All, except Porch	 10 ft., except 5 ft.
Finding: not applicable. Setback compliance to be reviewed at building permit application.	
Minimum interior side yard setback: All, except Townhouse	 5 ft., except 0 ft. (attached) /5 ft. (side)
Finding: not applicable. Setback compliance to be reviewed at building permit application.	
Minimum corner side yard setback	7 ft.
Finding: not applicable. Setback compliance to be reviewed at building permit application.	
Minimum rear yard setback All, except Porch Cottage cluster ADU	 20 ft., except 15 ft. 10 ft. 10 ft.
Finding: not applicable. Setback compliance to be reviewed at building permit application.	
Garage setbacks	20 ft. from ROW, except 5 ft. from alley
Finding: not applicable. Setback compliance to be reviewed at building permit application.	

Notes:
1. For land divisions, lot sizes may be reduced pursuant to OCMC 16.08.065.
2. Public utility easements may supersede the minimum setback.

Finding: not applicable. The applicant has not proposed any lot size reductions pursuant to OCMC 16.08065. Setback compliance to be reviewed at building permit application.

17.10.045 - Exceptions to setbacks.

A. Projections from buildings. Ordinary building projections such as cornices, eaves, overhangs, canopies, sunshades, gutters, chimneys, flues, sills or similar architectural features may project into the required yards up to twenty-four inches.

Finding: not applicable. Setback compliance to be reviewed at building permit application.

B. Through lot setbacks. Through lots having a frontage on two streets shall provide the required front yard on each street. The required rear yard is not necessary.

Finding: not applicable. Setback compliance to be reviewed at building permit application.

17.10.050 - Density standards.

A. Density standards in the R-5 and R-3.5 districts are as follows:

Table 17.10.050

Standard	R-5	R-3.5
Minimum net density	7.0 du/acre	10 du/acre
Maximum net density All, except Townhouse	 8.7 du/acre 25 du/acre	 12.4 du/acre 25 du/acre

Finding: complies. The proposed density is 7.4 du/acre which is within the required minimum and maximum density range permitted for the R-5 zone.

B. Exceptions.
1. Any dwelling units created as accessory dwelling units do not count towards the minimum or maximum density limits in Table 17.10.050.
2. Duplexes, triplexes and quadplexes shall count as a single dwelling unit for the purposes of calculating maximum net density. Total dwelling units within a development may count for the purposes of calculating minimum net density.
3. Cottage clusters are exempt from maximum net density standards.

Finding: complies. No exceptions are requested at this time, however, the applicant may propose any of the housing types permitted in the zone subject to these exceptions.

17.10.060 - Conversion of Existing Duplexes.

Any conversion of an existing duplex unit into two single-family attached dwellings shall be reviewed for compliance with the land division requirements in Title 16 and the underlying zone district.

Finding: not applicable. No existing duplexes are proposed for conversion.

CHAPTER 17.21 RESIDENTIAL STANDARDS – PARK PLACE CONCEPT PLAN AREA

17.21.010 Purpose.

The intent of this chapter is to ensure new development implements the goals and policies of the Park Place Concept Plan area and the historic architectural styles of Oregon City. Appropriate architectural styles include: Western Farmhouse/Vernacular, Bungalow, Queen Anne Vernacular and Foursquare. The 2006 Historic Review Board's Design Guidelines for New Construction include additional architectural descriptions of historic single-family structures in Oregon City.



Western Farmhouse/Vernacular



Bungalow (Craftsman)



Foursquare



Queen Anne Vernacular

17.21.020 Applicability.

This chapter applies to all new detached single-family residential units, duplexes, triplexes, quadplexes, townhouses, accessory dwelling units, and cottage clusters located within the Park Place Concept Plan areas. Additions to homes existing prior to the adoption of this chapter in a concept plan area or new - residences outside of a concept plan area may choose review under this section or OCMC 17.14, OCMC 17.16, or OCMC 17.20 as applicable.

Residential plans that conform to the following standards may be approved as a Type I Decision. Residential plans that require approval of an exemption shall be processed as a Type II Land Use decision at time of land division or building permit application.

Finding: The applicant did not seek any residential design plan exemptions as part of this application. Compliance with the above section will be determined prior to issuance of building permits.

Pursuant to SB 1537 (2024) – Mandatory adjustment exception, where requested as part of an application for housing, local governments must grant adjustments/waivers to certain design and development standards (including historic preservation overlay required protections).

Oregon City submitted an exemption request to the Housing Accountability and Production Office (HAPO) on December 30, 2024. During the review of the city's application, the residential mandatory adjustment provisions of Senate Bill 1537 (2024 Session) do not apply until the HAPO issues a final decision, which will occur before October 16, 2025. The Housing Accountability and Production Office (HAPO or 'Office') has completed its review. HAPO has approved the city's exemption request with seven conditions, including a required notice for all prospective housing applicants.

The applicant is eligible to request flexibility to one or more standards. In order to continue utilizing a local process for adjustments to housing development and design standards in lieu of a state-prescribed process under Senate Bill 1537, the city is required to maintain a flexible and accommodating approval process as a condition of the exemption approval.

The remainder of the 17.21 code section has been omitted for brevity.

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.

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.

Finding: applicable. This application is subject to the approval standards in OCMC 16.08 for Land Divisions, therefore OCMC 17.41 applies.

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.

Finding: complies. Portions of the subject site fall within the Natural Resources Overlay District (NROD), which regulates tree removal within the NROD per OCMC 17.49 as discussed in the findings under OCMC 17.49 addressed in this report. No conflicts have been identified.

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.

Finding: not applicable. No exemptions are requested.

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.

Finding: complies with condition. The applicant has indicated they wish to comply with this standard through a combination of Options 1, 2 and 4. The applicant proposes to remove 1,584 trees from the site due to the extensive grading necessary to develop the property. Given the number of trees proposed to be removed, a portion is proposed to be replanted within open space tracts, but most tree mitigation is to be via Option 4, cash-in-lieu of planting. Open space tracts are proposed to preserve trees and steep slope areas. Prior to issuance of any permit that would require tree removal, the applicant shall provide a revised 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. The applicant shall also provide a revised and updated count of the number of trees to be removed compared to the initial estimate of 1,584 and a revised and updated tree mitigation plan or cash-in-lieu that complies with OCMC 17.41. Per OCMC 17.41.060, removed trees that are proposed to be mitigated may be planted on-site, off-site in a location approved by the City, or pay a fee-in-lieu of planting. All replacement trees shall be either two-inch caliper deciduous or six-foot high conifer. 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. Due to their diminishing range in the region, Oregon white oak (*Quercus garryana*) trees, if removed, shall be replaced by the same species. The applicant shall complete Table 17.41.060-1 with the submittal of a revised tree mitigation plan. **It is reasonable, likely and practicable that the applicant can meet this standard through compliance with the conditions of approval.**

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.

Finding: complies with condition. See finding above under 17.41.050.

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.

Tree Replacement Requirements Table 17.41.060-1.

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.

Finding: complies with condition. See also finding above under 17.41.050**.** The applicant shall complete the Table below for trees being removed based on the Tree Replacement Requirements in Table 17.41.060-1 with the submittal of a revised tree mitigation plan.

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.

Finding: complies with condition. See finding above under 17.41.050.

D. Replacement tree planting standards.
1. All replacement trees shall be either two-inch caliper deciduous or six-foot high conifer.
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.
3. Due to their diminishing range in the region, Oregon white oak (Quercus garryana) trees, if removed, shall be replaced by the same species.

Finding: complies with condition. See finding above under 17.41.050.

E. All existing tree(s) in the tract shall be protected by a permanent restrictive covenant or easement approved in form by the City.

Finding: Not applicable. Except for NROD and steep slope areas, no existing trees are proposed to be preserved on the development, therefore this standard does not apply. The applicant has proposed to remove trees within the construction area of the sewer line crossing and water quality detention facility which are partially located within the Natural Resources Overly District. Please see separate findings under OCMC 17.49 in this report.

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.

Finding: not applicable. The applicant has not proposed an alternative mitigation plan.

17.41.080 - Tree preservation within subdivisions and partitions—Dedicated tract (Option 2).

Finding: complies with condition. See finding above under 17.41.050.

17.41.110 - Tree protection by restrictive covenant (Option 3).

Finding: not applicable. The applicant did not choose Option 3.

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.

Finding: complies with condition. See finding above under 17.41.050.

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.
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.

Finding: complies with condition. 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 standards in OCMC 17.41.130. The applicant has not proposed to preserve trees except for protected NROD areas and steep slope areas.

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 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 information and recommendations regarding local drainage, impacts and mitigation per 17.44.050.A.2; 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 as proposed. The application has provided all of the information listed in 17.44.050.A.2; however, detailed review of the report will occur as part of the permit review and revisions may be requested.

3. Comprehensive information about site topography;

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.

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 sufficient information listed in 17.44.050.A.9 as applicable to the subdivision application; 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 applicant provided drawings showing cross-section diagrams, but they did not indicate depth, extent, and approximate volume of all excavation and/or fills. The applicant shall provide scaled drawings showing a cross-section diagram, indicating depth, extent and approximate volume of all excavation and/or fills. These drawings shall be validated by the geotechnical engineer of record. **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 as proposed. The application included "Preliminary Stormwater Report for Park Place 2 Subdivision" by Emerio Design, LLC, dated 09/06/2024, which meets the requirements of 17.44.050.A.11; however, detailed review of the report will occur as part of the permit review and revisions may be requested.

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 conclusions and recommendations in their report as required by 17.44.050.B.1. The applicant shall incorporate all such conclusions and recommendations into the final drawings for building and grading permits, as required by 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 with Conditions. The project is a subdivision application with preliminary grading plans. Final drawings for building and grading permits shall be submitted which comply with the requirements of this section; to minimize disturbance to natural topography, vegetation, and soils. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

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 Conditions. The project is a subdivision application with preliminary grading plans. Final drawings for building and grading permits shall be submitted which comply with the requirements of this section; to minimize the number and size of cuts and fills**. 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 Conditions. The project is a subdivision application with preliminary grading plans. Final drawings for building and grading permits shall be submitted which comply with the requirements of this section; to minimize the number and size of cuts and fills. **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 with condition. Any structural fill shall be designed by a geotechnical engineer licensed in Oregon in accordance with standard engineering practice. The structural fill design shall be provided prior to any fill being placed. The geotechnical engineer shall prepare a summary letter stating that the soils, structural fill and foundation-related project elements are in substantial conformance with their recommendations. The letter shall be signed and stamped by the geotechnical engineer licensed 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.**

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. The geotechnical report provided conceptual recommendations for retaining walls to support unstable slopes. Final drawings for building and grading permits shall be submitted with final wall locations and designs completed by a licensed engineer. The City shall have the walls reviewed by a consultant and the applicant shall reimburse the City for the time spend and the City's consultant to review the design. **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 with condition. The applicant submitted drawings with preliminary road layouts. Cuts and fills were not detailed, but the project geotechnical report states that cuts and fills up to 24 feet high/deep are proposed. The geotechnical report also delineates a setback for any fill or structures, which some roads and lots extend beyond, out of compliance with the recommendations of the report. Final drawings for grading permits shall be submitted with final road layouts that comply with this section, including minimizing cuts and fills to that necessary for safe access and positive drainage control, and with the geotechnical report for setbacks. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

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 with condition. The applicant submitted drawings with preliminary lot locations, but without slope categories indicated. Final drawings for grading permits shall be submitted with final lot layouts that comply with this section, including meeting the densities required based on slope gradients and landslides and their buffers. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

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 applicant submitted drawings with preliminary lot locations, but without slope categories indicated. Final drawings for grading permits shall be submitted with final lot layouts that comply with this section, including meeting densities (1.); grading, stripping, and impermeable surfaces (2.); cuts into slopes (3); and allowed development within slopes over thirty-five percent (4). **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. 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. (Also written in section 17.44.050.B.3). **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 with condition. The applicant submitted drawings with preliminary road and lot locations. Final drawings shall be submitted with final roads and lot layouts that comply with A., B., and C. of this section. The applicant shall verify adequate emergency services can be provided and the applicant shall revise the plans, if necessary, to accommodate emergency services as determined 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.**

17.44.080 - 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 utilities shall be placed underground within roadbeds where practicable. Construction of utilities, especially in the northwest corner of the project area, as identified in the geotechnical report, shall follow the recommendations of the geotechnical report to minimize the effects of their construction on geologic hazards. **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. The applicant submitted a stormwater report for the development. The geotechnical report found infiltration was not feasible, so the stormwater report requires lined detention facilities and "overdetention" to manage peak flows. Final drawings and supporting documents shall be submitted for the permanent and complete stormwater control plan that comply with this section. The project's civil engineer shall inspect the required features and certify that the system was constructed per the plans. **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 with condition. The applicant shall submit final plans with disturbance areas delineated and that minimize vegetation removal and soil disturbance. Erosion control plans shall be submitted that comply with OCMC Chapter 17.47. Detailed review of construction plans will occur as part of the permit review, including erosion prevention measures per OCMC Chapter 17.47 to ensure the standards of this section are met. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

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 submit final grading and erosion control plans that delineate areas of disturbed vegetation on steep slopes and proposed replanting, in compliance with this section. Detailed review of the plans will occur as part of the permit review, including replanting vegetation to ensure this standard is met. **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. The applicant shall submit final grading and erosion control plans that delineate areas of tree protection, in compliance with this section. Detailed review of the plans will occur as part of the permit review, including tree protection to ensure this standard is met. **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 with condition. The applicant shall submit final grading and erosion control plans that delineate areas of disturbance or physical impacts to watercourses and measures to prevent disturbance, in compliance with this section. Detailed review of the plans will occur as part of the permit review to ensure this standard is met. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

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 with condition. The applicant submitted drawings with preliminary lot locations, but without slope categories indicated. Final drawings for grading permits shall be submitted with final lot layouts that confirm all lots shall have adequate building envelopes on slopes of 35 percent or less. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

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 as recommended in the geotechnical report and plans. The geotechnical engineer shall provide reports to confirm that standards from Section 17.44.100 are met. The geotechnical engineer of record shall confirm that geologic conditions are consistent with the conditions assumed in the geotechnical hazard evaluation. If the conditions are different than assumed in the 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. The 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 17.49 – NATURAL RESOURCES OVERLAY DISTRICT (NROD)

The applicant is seeking approval of a Type III Natural Resources Overlay District Review for the 219-lot subdivision on 16472 and 16582 S. Livesay Road Clackamas County Map T2S-R2E-Section 28 Tax Lots 100, 190, 302, 400, 500, 3700, and 3701). The applicant is proposing to install a sanitary sewer line over a ravine and stormwater facilities within the NROD boundary, which per OCMC 17.49.090(H) requires a Type III NROD permit.

The City's consultant David Evans and Associates reviewed the applicant's updated NROD report dated January 2026, prepared by Schott & Associates. DEA previously reviewed the submitted NROD section of the narrative (July 1, 2025), plan set, and *Preliminary Stormwater Report* (September 6, 2024) prepared by Emerio Design, LLC.

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: the project proposes utilities within the NROD; therefore, the use is not allowed outright and is subject to OCMC 17.49.090.

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:
G. Land divisions provided they meet the following standards, and indicate the following on the final plat:
2. All public and private utilities (including water lines, sewer lines or drain fields, and stormwater disposal facilities) are located outside the NROD

Finding: the project proposes utilities within the NROD; therefore, the use is not allowed outright and is subject to OCMC 17.49.090.

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:
D. Land divisions when not exempted by OCMC 17.49.080, subject to the applicable standards of OCMC 17.49.160.
H. Utility lines subject to OCMC 17.49.140.

Finding: complies with conditions. The project proposes utilities within the NROD; therefore, the proposed land division is not exempted by OCMC 17.49.080 and the proposed utility lines are subject to OCMC 17.49.140. The proposal is allowed under prescribed conditions. However, the proposed sanitary sewer line would cross a ravine outside right-of-way. Therefore, per OCMC 17.49.140 D., the application must be processed as a Type III.

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):

Finding: The general development standards apply only to the proposed stormwater facility. The other utility lines are subject to OCMC 17.49.140 and the land division is subject to OCMC 17.49.160.

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;

Finding: complies with conditions. The applicant responded agreeing to comply with this standard for the stormwater facility. Trees listed to be removed are identified in the arborist report and comply with the standards. The applicant shall provide a covenant for native trees to be protected prior to final plat recordation. **It is reasonable, likely and practicable that the applicant can meet this standard through compliance with the conditions of approval.**

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;

Finding: complies with conditions. The applicant intends to comply with 17.41 through a Cash-in-Lieu of Planting option instead of Removal and Replanting, Preservation Tracts, or Protection. The applicant shall provide a revised mitigation plan prior to final plat recordation. **It is reasonable, likely and practicable that the applicant can meet this standard through compliance with the conditions of approval.**

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);
Finding: The applicant only proposes planting native vegetation. This standard is met.

D. Grading is subject to installation of erosion control measures required by the city;

Finding: complies as proposed. See findings under OCMC 17.47. A tentative grading and erosion control plan was submitted with the plan set. The city will review the erosion control plan for consistency with standards.

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;

Finding: not applicable. The base zone setback is not proposed to be reduced.

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;

Finding: not applicable. The residential R-5 and R-10 zones do not include a maximum setback. No changes to the base zone setbacks is proposed.

G. Fences in compliance with OCMC 17.49.080.N;

Finding: not applicable. The applicant did not propose any fencing around the stormwater facility other than silt fence during construction. Any fences shall be reviewed for compliance with this section.

H. Exterior lighting shall be placed or shielded so that they do not shine directly into resource areas;

Finding: complies with conditions. The applicant has agreed to comply with this standard. The applicant shall provide lighting details and show exterior lighting in relation to the NROD area. Prior to issuance of any building permits for homes adjacent to the NROD, lighting details shall be provided in compliance with this section and a covenant or other approved legal instrument shall be recorded against all lots adjacent to the NROD that includes the exterior lighting standard. **It is reasonable, likely and practicable that the applicant can meet this standard through compliance with the conditions of approval.**

I. If development will occur within the one hundred-year floodplain, the standards of OCMC 17.42 shall be met; and

Finding: Not applicable. The development is not within the one-hundred year floodplain.

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 proposed mitigation for the Water Quality Facility (WQF) meets the standards for 17.49.190. Due to inevitable changes in the design of the proposed sewer crossing as it goes through engineering review, prior to construction and / or activities that include any grading, filling, tree removal or other impacts to the NROD regulated buffer the applicant shall provide a revised NROD mitigation plan that complies with this standard. **It is reasonable, likely and practicable that the applicant can meet this standard through compliance with the conditions of approval.**

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	Width of Vegetated
		from Water Feature	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 twenty-five percent or more slope.
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.
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 with conditions. There are two drainages on the property. The drainage by the WQF drains to Abernethy Creek and is intermittent. The applicant does not state the distance from the starting point to the top of the ravine, but on the plan, shows the vegetated corridor as the grade break plus 50 feet, likely because the break in the ravine varies, although it does break before the 150 feet. The required vegetated corridor for the Abernethy Creek drainage on the west side of the stream, where work is proposed, varies from approximately 115 feet to 180 feet wide. The applicant only proposes mitigation work on the east side of the stream, where the required vegetation corridor is narrower. The second drainage is perennial and drains to Tour Creek, and has slopes greater than 25 percent for more than 150 feet. Therefore, the required vegetated corridor is 200 feet. Due to inevitable changes in the design of the proposed sewer crossing as it goes through engineering review, prior to construction and / or activities that include any grading, filling, tree removal or other impacts to the NROD regulated buffer the applicant shall provide a revised NROD mitigation plan that complies with this standard. **It is reasonable, likely and practicable that the applicant can meet this standard through compliance with the conditions of approval.**

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;

Finding: not applicable. The proposal does not include private connections to utility lines within the NROD.

B. The disturbance area for the upgrade of existing utility lines shall be no greater than fifteen feet wide;

Finding: not applicable. No utility lines are proposed for upgrade.

C. New utility lines shall be within the right-of-way, unless reviewed under subsection D.

Finding: not applicable. The proposed new utility lines are not within the right-of-way, and therefore must be 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.

Finding: not applicable. the proposed sanitary sewer line would cross a ravine outside right-of-way. Therefore, the application must be processed as a Type III. Please see findings under OCMC 17.49.200,

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;

Finding: not applicable. The proposal shows no impacts within the ordinary high water mark of a stream. No state or federal permits are required.

F. The Division of State Lands must approve any work that requires excavation or fill in a wetland;

Finding: complies with conditions. The applicant shall obtain any state and federal permits associated with impacts to wetlands prior to construction. **It is reasonable, likely and practicable that the applicant can meet this standard through compliance with the conditions of approval.**

G. Native trees more than ten inches in diameter shall not be removed unless it is shown that there are no feasible alternatives; and

Finding: complies as proposed. The applicant provided a maximum number of trees (23) greater than ten inches in diameter that could be removed but did not determine the exact number that will be removed. According to the applicant, the only alternative route to avoid the trees and the NROD would require one mile of new sewer line to be built. This standard is met.

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.

Finding: complies as proposed. Based on the plant set the applicant provided, the application complies with the ratio of trees to be replaced for the varying sizes of trees. The applicant's revised NROD report (January 2026) includes native plant species, quantities, size, and spacing in Table 4. This standard is met.

I. Mitigation is required, subject to OCMC 17.49.180 or 17.49.190.

Finding: complies with conditions. The applicant submitted a mitigation plan in accordance with 17.49.190. Due to inevitable changes in the design of the proposed sewer crossing as it goes through engineering review, prior to construction and / or activities that include any grading, filling, tree removal or other impacts to the NROD regulated buffer the applicant shall provide a revised NROD mitigation plan that complies with this standard. **It is reasonable, likely and practicable that the applicant can meet this standard through compliance with the conditions of approval.**

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.

Finding: complies with conditions. The applicant states that disturbance within the existing forest canopy is unavoidable and trees will be mitigated for as outlined in the mitigation plan. It does not appear that the activity will disturb the drip line of the trees to remain. Prior to approval of construction plans, the applicant shall provide tree protection details on the plans that comply with this standard. **It is reasonable, likely and practicable that the applicant can meet this standard through compliance with the conditions of approval.**

B. Only vegetation from the Oregon City Native Plant List shall be planted within these facilities.

Finding: complies with conditions. The applicant's revised NROD report (January 2026) includes native plant species, quantities, size, and spacing in Table 4. This standard is met.

C. Mitigation is required, subject to OCMC 17.49.180 or 17.49.190.

Finding: complies with conditions. The applicant submitted a mitigation plan in accordance with 17.49.180. Mitigation Option 2 will be used as the disturbance area is greater than an acre. Due to inevitable changes in the design of the proposed sewer crossing as it goes through engineering review, prior to construction and / or activities that include any grading, filling, tree removal or other impacts to the NROD regulated buffer the applicant shall provide a revised NROD mitigation plan that complies with this standard. **It is reasonable, likely and practicable that the applicant can meet this standard through compliance with the conditions of approval.**

D. The stormwater facility may encroach up to one-half the distance of the NROD corridor.

Finding: complies with condition. See findings under 17.49.200. The water quality facility will encroach more than one-half the distance of the NROD corridor. The application does not meet this standard, so the proposed development shall be processed as a Type III application. **It is reasonable, likely and practicable that the applicant can meet this standard through compliance with the conditions of approval.**

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.

Finding: complies with conditions. See findings under 17.49.200. The water quality facility will impact greater than one thousand square feet so the proposed development will be processed as a Type III application pursuant to OCMC 17.49.200. **It is reasonable, likely and practicable that the applicant can meet this standard through compliance with the conditions of approval.**

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.

Finding: not applicable. The applicant intends to meet the NROD standards. No other landscaping standards apply.

G. The design of the stormwater facility shall be subject to OCMC 13.12.

Finding: See findings under OCMC 13.12.

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:

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.

Finding: complies as proposed. The applicant proposes mitigation as a separate tract. This standard is met.

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: complies with conditions. Prior to recording the final plat for this land division the applicant shall provide appropriate documentation that provides for protection and ownership of NROD areas in a form approved by the Community Development Director. **It is reasonable, likely and practicable that the applicant can meet this standard through compliance with the conditions of approval.**

17.49.180 Mitigation standards.

The following standards (or the alternative standards of OCMC 17.49.190) apply to required mitigation:

Finding: the applicant has followed the standards for 17.49.190.

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.*

Finding: The report has documented the existing condition of the vegetated corridor as degraded.

B. The proposed mitigation shall occur at a minimum two-to-one ratio of mitigation area to proposed disturbance area;

Finding: complies with conditions. The applicant provides the impact and mitigation areas in Tables 2 and 3 in the NROD report and the planting details in Table 4. The applicant is applying removal of invasive species and replacing with a native seed mix toward the required 2:1 mitigation ratio. This standard is met. The applicant does not show plantings on a plan. Due to inevitable changes in the design of the proposed sewer crossing as it goes through engineering review, prior to construction and / or activities that include any grading, filling, tree removal or other impacts to the NROD regulated buffer the applicant shall provide a revised NROD mitigation plan that complies with this standard. **It is reasonable, likely and practicable that the applicant can meet this standard through compliance with the conditions of approval.**

C. The proposed mitigation shall result in a significant improvement to good existing condition as determined by a qualified environmental professional;

Finding: complies with conditions. The proposed mitigation should result in a significant improvement by removing invasive species and planting native trees and shrubs. Due to inevitable changes in the design of the proposed sewer crossing as it goes through engineering review, prior to construction and / or activities that include any grading, filling, tree removal or other impacts to the NROD regulated buffer the applicant shall provide a revised NROD mitigation plan that complies with this standard. **It is reasonable, likely and practicable that the applicant can meet this standard through compliance with the conditions of approval.**

D. There shall be no detrimental impact on resources and functional values in the area designated to be left undisturbed;

Finding: complies with conditions. The proposed mitigation plan should not have any detrimental impact on resources and functional values. Due to inevitable changes in the design of the proposed sewer crossing as it goes through engineering review, prior to construction and / or activities that include any grading, filling, tree removal or other impacts to the NROD regulated buffer the applicant shall provide a revised NROD mitigation plan that complies with this standard. **It is reasonable, likely and practicable that the applicant can meet this standard through compliance with the conditions of approval.**

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;

Finding: complies as proposed. The proposed mitigation does not include any alterations or replacements of development in a stream channel, wetland, or other water body and therefore meets this standard.

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.

Finding: complies with conditions. The proposed mitigation will occur on site adjacent to the impacts and therefore meets this standard. Due to inevitable changes in the design of the proposed sewer crossing as it goes through engineering review, prior to construction and / or activities that include any grading, filling, tree removal or other impacts to the NROD regulated buffer the applicant shall provide a revised NROD mitigation plan that complies with this standard. **It is reasonable, likely and practicable that the applicant can meet this standard through compliance with the conditions of approval.**

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:

Finding: These standards apply only to the sanitary sewer line, not the stormwater facility. The proposed sanitary sewer line would cross a ravine outside right-of-way. Therefore, per OCMC 17.49.140 D., all of the OCMC 17.49.200 criteria A-F must be met for approval. The Schott & Associates preparers of the NROD report are qualified environmental professionals. The application meets this standard.

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;

Finding: There are no feasible alternatives for the sewer line, so this standard has been met.

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;

Finding: complies with conditions. This standard is met for the sewer line. The applicant did not respond to this section for the additional standards that are not met for the water quality facility as discussed above. The applicant shall provide written justification responding to the adjustment criteria to demonstrate that the standard is also met for the water quality facility impacts into the NROD. **It is reasonable, likely and practicable that the applicant can meet this standard through compliance with the conditions of approval.**

C. The proposed use or activity proposes the minimum intrusion into the NROD area that is necessary to meet development objectives;

Finding: This standard is met, as the proposed sewer line will only impact vegetation within the NROD to place the line.

D. Fish and wildlife passage will not be impeded;

Finding: The proposed work will not impede fish or wildlife passage as the sewer line will be suspended over the ravine. This standard is met.

E. With the exception of the standard(s) subject to the adjustment request, all other applicable NROD standards can be met; and

Finding: The application meets the applicable standards with conditions and therefore meets this standard.

F. The applicant has proposed adequate mitigation to offset the impact of the adjustment.

Finding: complies with conditions. The applicant has proposed adequate mitigation of the sewer line to offset the impact of adjustment. The applicant did not respond to this section for the additional standards that are not met for the water quality facility as discussed above. The applicant shall provide written justification responding to the adjustment criteria to demonstrate that the standard is also met for the water quality facility impacts into the NROD. **It is reasonable, likely and practicable that the applicant can meet this standard through compliance with the conditions of approval.**

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.

Finding: please see finding under OCMC 17.50.030 below.

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
Final plat	X				
Geologic hazards		X			

Modifications of residential design standards		X			
Natural resource overlay district exemption	X				
Natural resource overlay district review		X	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				
Subdivision		X			X

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.

Finding: This application involves three separate land use permits; 1) a residential subdivision, 2) geologic hazard overlay district review, and 3) natural resources overlay district (NROD) adjustment review. Pursuant to new state housing laws[1], residential development applications may only be reviewed using clear and objective approval criteria except those areas of a development site that are protected natural resources and hazards and regulated by the City's overlay districts. The applicant has proposed an adjustment to NROD standards pursuant to OCMC 17.49.200 which requires that this application be approved by the Planning Commission through a Type III process.

Only those discrete aspects of the application that require or allow discretionary approval are within the purview of the Planning Commission. Staff has provided findings for compliance with clear and objective review criteria in this report where applicable.

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.

Finding: portions of the development site are within the geologic hazards overlay district regulated under OCMC 17.44 and the natural resources overlay district under OCMC 17.49. Please see findings under OCMC 17.44 and 17.49 in this report.

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.

[1] OAR 660-008-0015 **https://oregon.public.law/rules/oar_660-008-0015**

Finding: complies. The applicant attended the required pre-application conference (file PA-24-019) on July 2, 2024, and included the pre-application conference summary notes with their application.

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.

Finding: complies. The pre-application conference was held July 2, 2024 and the application was submitted January 7, 2025.

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.

Finding: the applicant understands that staff has not waived any code requirements.

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 with condition. The applicant attended the regular meeting of the Park Place Neighborhood Association on August 18, 2025. The applicant shall submit a copy of the meeting flyer, postcard or other correspondence used, and a summary of issues discussed at the meeting.

It is reasonable, likely and practicable that the applicant can meet this standard through compliance with the conditions of approval.

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.

Finding: complies. The application was initiated by the contract purchaser and signed by all the record property owners.

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.

Finding: complies as proposed. The applicant requested that the City deem the application complete pursuant to ORS 227.178(2)(a) or (b), effective July 3, 2025. The applicant has waived the deadline for the decision.

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: not applicable. This application does not include, nor does it require an amendment to the comprehensive plan or land use regulations. The application does not propose any affordable units pursuant to subsections (1), (2), or (3) of this section. The application is subject to the approval standards in place at the time of submittal, except that under state law the applicant elect to be reviewed under the current code if desired.

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: The applicant requested that the City deem the application complete pursuant to ORS 227.178(2)(a) or (b), effective July 3, 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: not applicable. As this is a Type III decision, public notices were prepared and sent in accordance with section (B) below.

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.

Finding: complies. Public notices were prepared and sent in accordance with this section.

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. Public notices were posted in accordance with this section.

17.50.110 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.

Finding: complies. This is a Type III decision of the Planning Commission.

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.

Finding: complies. Planning Commission will hold a public hearing pursuant to the procedures of this section. Any appeal of the Planning Commission's decision to the City Commission shall be subject to a City Commission appeal hearing per OCMC 17.50.190 – Appeals.

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.

Finding: Staff has recommended reasonable conditions of approval to ensure that all applicable approval standards can be met.

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. The City engineer has not allowed the permittee to provide a fee-in-lieu of actual construction of public improvements. **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 platting. 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.

III. CONCLUSION AND RECOMMENDATION

Based on the analysis and findings as described above, staff concludes that the proposed development located at 16472 and 16582 S Livesay Road Oregon City, OR 97045 and the following properties with NO SITUS address and identified Clackamas County Assessor's Map No. 22E28D, Tax Lots 190, 100, 301, 3700, 302, 400 & 500, 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 of Planning Files GLUA-24-034 / SUB-24-03 / GEO-24-07 / NROD-24-032 with conditions, based upon the findings and exhibits contained in this staff report.

EXHIBITS:

1. Public Hearing Notice
2. Submitted Land Use Application Form
3. Revised Narrative January 16, 2026
4. Narrative Exhibit A. Tax Map
5. Narrative Exhibit B. Aerial Photo

6. Narrative Exhibit C. Zoning Map
7. Natural Resources Overlay District (NROD) Report
8. PlansRev2025.07.03
9. Archeological Monitoring Report
10. Composite Site Plan
11. Drainage Report (includes Geologic Report)
12. Pre-Application Conference Notes
13. Traffic Impact Study
14. Comments from David Evans and Associates
15. Public Comments
16. Public Comment Summary and Staff Reponses

OREGON CITY

Community Development – Planning

221 Molalla Ave. Suite 200 | Oregon City OR 97045
Ph (503) 722-3789 | Fax (503) 722-3880

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)
❑ Compatibility Review	❑ Extension	❑ Annexation
❑ Lot Line Adjustment	❑ Detailed Development Review	❑ Code Interpretation / Similar Use
❑ Non-Conforming Use Review	❑ Geotechnical Hazards	❑ Concept Development Plan
❑ Natural Resource (NROD) Verification	❑ Minor Partition (<4 lots)	❑ Conditional Use
❑ Site Plan and Design Review	❑ Minor Site Plan & Design Review	❑ Comprehensive Plan Amendment (Text/Map)
	❑ Non-Conforming Use Review	❑ Detailed Development Plan
	❑ Site Plan and Design Review	❑ Historic Review
	☑ Subdivision (4+ lots)	❑ Municipal Code Amendment
	❑ Minor Variance	❑ Variance
	❑ Natural Resource (NROD) Review	❑ Zone Change

File Number(s): _____

Proposed Land Use or Activity: 219-Lot subdivision proposed 16472 S. Livesay Road and16582 S. Livesay Road.

Project Name: Park Place Crossing II Number of Lots Proposed (If Applicable): 219

Physical Address of Site: 16472 S. Livesay Road and16582 S. Livesay Road.

Clackamas County Map and Tax Lot Number(s): 22E28D TL: 100, 190, 302, 400, 500, 3700, & 3701

Applicant(s):

Applicant(s) Signature: Harlan Borow

Applicant(s) Name Printed: Harlan Borow Date: 11/27/2024

Mailing Address: Icon Construction 1969 Willamette Falls Drive Suite 260 West Linn, OR 97068

Phone: 503-713-8627 Fax: _____ Email: harlan@iconconstruction.net

Property Owner(s):

Property Owner(s) Signature: _____

Property Owner(s) Name Printed: Redland Road LLC Date: 11/27/2024

Mailing Address: 1969 Willamette Falls Drive Suite 260 West Linn, OR 97068

Phone: 503-522-0888 Fax: _____ Email: mark@iconconstruction.net

Representative(s):

Representative(s) Signature: _____

Representative (s) Name Printed: Jennifer Arnold Date: 5/28/24

Mailing Address: 1500 Valley River Drive Suite 100 Eugene, OR 97401

Phone: 503-746-8812 Fax: _____ Email: jarnold@emeriodesign.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 parties willingness to comply with all code requirements.

www.orcity.org/planning

Park Place Crossing II

Prepared for:
Icon Construction & Development

Prepared by:

EMERIO
ENGINEERING ▪ SURVEYING ▪ DESIGN
1500 Valley River Drive, Suite 100
Eugene, OR 97401
503.746.8812
emeriodesign.com

December 3, 2024
Revised: July 1, 2025

Project Summary

Request:	Application for a 219-lot subdivision.
Location and Map Number:	16472/16582 S Livesay Road Oregon City, OR 97045 Clackamas County Assessor's Map No. 22E28D, Tax Lots 190, 100, 301, 3700, 302, 400 & 500
Applicant/Owner:	Icon Construction & Development Harlan Borow 1969 Willamette Falls Drive, Suite 260 West Linn, OR 97068 Phone: 503-657-0406 X160 Email: harlan@iconconstruction.net
Engineer/Planner:	Emerio Design, LLC 1500 Valley River Drive Suite 100 Eugene, OR 97401 503-746-8812 Engineer: Dan Boultinghouse, PE dboultinghouse@emeriodesign.com Planner: Jennifer Arnold jarnold@emeriodesign.com

Exhibits
A – Tax Map
B – Aerial Photograph
C – Zoning Map

I. Project Description

Icon Construction & Development, the applicant, is proposing a 219-lot subdivision following the standard process on a 59.54-acre site identified as Clackamas County Assessor's Map No. 22E28D, Tax Lots 190, 100, 301, 302, 400, 500 & 3700 (Exhibit A); it can also be located by its addresses, 16472/16582 S Livesay Road. The site was annexed into the City in 2018 by Ordinance 18-1007. The base zones applied to the property are Low Density Residential (R-10) and Medium Density Residential (R-5). Overlays impacting the project site include Geologic Hazards Overlay specific to Slopes. The future extension of Holly Lane is shown to encroach this overlay area which will stabilize slope.

The proposed development conforms to all applicable sections of the Oregon City Municipal Code (OCMC). This application provides findings of fact that demonstrate conformance with all applicable standards of the previously mentioned governing regulations. Applicable criteria of the OCMC will appear in *italics* followed by the applicant's responses in **bold** font.

II. Existing Conditions

As its address would suggest, the subject property has frontage on S Livesay Road, an existing public road. Access to the subject property is provided via existing stubbed streets within the Trailview neighborhood (Journey Drive, Shartner Drive, and Cattle Drive). The applicant proposes construction of new local streets and an extension of Holly Lane. Eventually, Holly Lane (Collector Street) will intersect with Holcomb Blvd once the property between the proposed northern terminus of Holly Lane and Holcomb Blvd is annexed into the City and developed. The southern terminus of Holly Lane will intersect with Livesay Road once Tax Lot 502 is developed in the future.

The subject site has several steep sloped areas but generally slopes down to the south with some undulation. The site has many trees but not for a current commercial operation or farm deferral by the Assessor's Office. There are no significant natural features located within the boundaries of the subject property. Small wetlands exist on the site, but some appear to have been manmade for irrigation associated with previous farm operations. The wetlands are proposed to be filled following all required permitting processes. For adjacent zones and land uses refer to Exhibit B for an aerial photograph and Exhibit C for a zoning map:

North: Single-family dwellings zoned R-10 & R-6 by Oregon City (Assessor Map 22E28AD)

South: Single-family dwellings zoned FU-10 by Clackamas County (Assessor Map 22E28D)

East: Single-family dwelling zoned FU-10 by Clackamas County (Assessor Map 22E27C)

West: Single-family dwellings zoned R-10 by Oregon City (Assessor Map 22E28AC) & Single-family dwelling zoned FU-10 by Clackamas County (Assessor Map 22E28CA)

III. Title 12 – Streets, Sidewalks and Public Places

Chapter 12.04 - *STREETS, SIDEWALKS AND PUBLIC PLACES*

12.04.003. *Definitions*

Whenever the words or terms and their derivatives are used in this chapter, they shall be given the meaning set forth in OCMC 17.04, unless the context dictates applying a different meaning.

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.*

Response: The applicant acknowledges and understands jurisdiction and management of public rights-of-ways as described above.

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.

Response: The above standard is understood and acknowledged by the applicant.

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.

Response: The above standard is understood and acknowledged by the applicant.

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.*

Response: The above standard is understood and acknowledged by the applicant.

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.*

Response: The above standard is understood and acknowledged by the applicant.

12.04.033. *City may do work.*

If repair of the sidewalk is not completed within ninety days after the service of notice, the public works director shall carry out the needed work on the sidewalk. Upon completion of the work, the public works director shall submit an itemized statement of the cost of the work to the finance director. The city may, at its discretion, construct, repair or maintain sidewalks deemed to be in disrepair by the public works director for the health, safety, and general welfare of the residents of the city.

Response: The above standard is understood and acknowledged by the applicant.

12.04.034. *Assessment of costs.*

Upon receipt of the report, the finance director shall assess the cost of the sidewalk work against the property adjacent to the sidewalk. The assessment shall be a lien against the property and may be collected in the same manner as is provided for in the collection of street improvement assessment.

Response: The above standard is understood and acknowledged by the applicant.

12.04.040. *Sidewalks—Enforcement.*

Any person whose duty it is to maintain and repair any sidewalk, as provided by this chapter, and who fails to do so shall be subject to the enforcement procedures of OCMC 1.16, 1.20 and 1.24. Failure to comply with the provisions 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.

Response: The above standard is understood and acknowledged by the applicant.

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.

Response: The above standard is understood and acknowledged by the applicant.

12.04.060. *Retaining walls—Maintenance.*

When a retaining wall is necessary to keep the earth from falling or sliding onto the sidewalk or into a public street and the property owner or person in charge of that property fails or refuses to build such a wall, such shall be deemed a nuisance. The violation of any provision of this chapter is subject to the code enforcement procedures of OCMC 1.16, 1.20 and 1.24.

Response: The above standard is understood and acknowledged by the applicant. However, it does not seem that retaining walls serving this purpose will be required.

12.04.070. *Removal of sliding dirt.*

It shall be the duty of the owner of any property as mentioned in OCMC 12.04.050, and in case the owner is a nonresident, then the agent or other person in charge of the same, to remove from the street or sidewalk or both as the case may be, any and all earth or dirt falling on or sliding into or upon the same from the property, and to build and maintain in order at all times, the retaining wall as herein required; and upon the failure, neglect or refusal of the land owner, the agent or person in charge of the same to clean away such

earth or dirt, falling or sliding from the property into the street or upon the sidewalk, or both, or to build the retaining wall, shall be deemed guilty of a misdemeanor.

Response: The above standard is understood and acknowledged by the applicant. The applicant submitted a geotechnical report which provided the data to inform the proposed subdivision design.

12.04.080. *Excavations—Permit required.*

It shall be unlawful for any person to dig up, break, excavate, disturb, dig under, or undermine any public street or alley, or any part thereof or any macadam, gravel, or other street pavement or improvement without first applying for and obtaining from the engineer a written permit so to do.

Response: The applicant anticipates having approved permits in hand prior to starting site development work on the subject site. The above standard is understood and acknowledged by the applicant.

12.04.090. *Excavations—Permit restrictions.*

The permit shall designate the portion of the street to be so taken up or disturbed, together with the purpose for making the excavation, the number of days in which the work shall be done, and the trench or excavation to be refilled and such other restrictions as may be deemed of public necessity or benefit.

Response: The above standard is understood and acknowledged by the applicant.

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.

12.04.110. *Excavations—Nuisance—Penalty.*

Any excavation 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.

Response: The above standard is understood and acknowledged by the applicant.

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.*

Response: No obstructions are proposed to be placed to block any public street or alley. Temporary circulation is shown on the submitted plans to avoid temporary street/alley closures. Emergency access is shown at the southern property line near Tract B. The above standards are understood and acknowledged by the applicant.

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.*

Response: No temporary obstructions are proposed to be placed within the right-of-way or alley easement. The above criteria do not apply.

12.04.130. *Obstructions—Sidewalk sales and displays.*

A. *It is unlawful for any person to use the public sidewalks of the city for the purpose of packing, unpacking or storage of goods or merchandise or for the display of goods or merchandise for sale. It is permissible to use the public sidewalks for the process of expeditiously loading and unloading goods and merchandise.*

B. *The city commission may, in its discretion, designate certain areas of the city to permit the display and sale of goods or merchandise on the public sidewalks under such conditions as may be provided on a regular basis. A business in a designated area will be required to obtain a renewable right-of-way permit for this use if sales are intended to last longer than sixty days. A temporary obstruction permit may be issued for sales that occur less than sixty-one days.*

Response: The applicant does not propose to block any constructed public sidewalks once constructed. The sale of goods or merchandise is not proposed with this application which would block pedestrian access.

12.04.140. *Obstructions—Nuisance—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.

Response: The above standard is understood and acknowledged by the applicant.

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.

Response: No public right-of-way vacations (Streets or Alley's) are proposed with this application. Although acknowledged by the Applicant, the above standard does not apply.

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.

Response: All public facilities associated with this application have been designed to meet the engineering specifications for the City. As shown on the submitted preliminary plans, all streets and driveway connections proposed to be constructed are within the City of Oregon City. The applicant proposes to stub streets to areas outside of the project area and a shadow plat has been shown for those areas to show future connections.

12.04.194. *Traffic sight obstructions.*

All streets shall comply with the traffic sight obstructions in OCMC 10.32.

Response: A traffic study is included with this application to address the sight distance, safety, trip count and potential off-site improvements as scoped by the City.

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.

Response: All construction activities are proposed to comply with the standards listed above. The applicant does not propose to deviate from the ODOT or APWA standards listed.

12.04.280. *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.

Response: The above standard is understood and acknowledged by the applicant.

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.*

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).*

Response: As demonstrated on the submitted preliminary plans, street trees are proposed along all street frontages where practical to comply with setback requirements. Clear vision areas are shown to be maintained, and the selected trees were chosen from the approved list provided by the City. See the submitted plans for tree removal, mitigation, and protection recommendations to demonstrate compliance with the above standards.

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 seven-foot clearance above all sidewalks, eight-foot clearance in clear vision areas pursuant to OCMC 10.32, and ten-foot clearance above the street. Planter strips shall be kept clear of weeds, obstructing vegetation, and trash.

Response: The above standard is understood and acknowledged by the applicant.

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.

Response: The above standard is understood and acknowledged by the applicant.

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.*

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.*

Response: As shown on the submitted tree inventory/removal sheets, 1,584 trees are proposed for removal due to the extensive grading required for public right-of-way and residential lot development. An arborist report was included with this application to demonstrate compliance with the above criteria and identify tree species. Replacement trees are proposed within the open space tracts to the greatest extent possible, but the applicant proposes to pay a fee-in-lieu for remaining tree mitigation given the site constraints.

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.

Response: The above standard is understood and acknowledged by the applicant.

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.

Response: The above standard is understood and acknowledged by the applicant.

IV. Title 13 - Public Services

Chapter 13.12 - *STORMWATER MANAGEMENT*

13.12.010. *Purpose.*

The purpose of this chapter is to define policies, minimum requirements, minimum standards and design procedures and permits for the construction and maintenance of stormwater conveyance and quantity and quality control facilities in order to:

A. *Minimize increased stormwater runoff rates from any development so as to minimize the impact upon any downstream natural channel that may exist between the subject area and the Willamette or Clackamas Rivers;*

B. *Prevent water runoff generated by development from exceeding the capacity of downstream stormwater facilities;*

C. *Reduce stormwater runoff rates and volumes, soil erosion and pollution, wherever possible, from developed and developing lands;*

D. *Prevent the uncontrolled or irresponsible discharge of stormwater from new development onto adjoining public or private property;*

E. *Maintain the integrity of stream channels for their biological functions, as well as for drainage and other purposes;*

F. *Have stormwater conveyance facilities of adequate design to manage all volumes of water generated in the contributing drainage area, for both the existing condition and the anticipated future condition;*

G. *Have all stormwater facilities:*

1. *Designed to mimic natural hydrologic conditions, to the maximum extent practicable;*

2. *Designed in a manner to allow economical future maintenance;*

3. *If city owned or maintained, designed for maintenance with city owned equipment;*

4. *Designed using materials that will ensure a minimum practical design life of seventy-five years; and*

5. *Designed to have sufficient structural strength to resist erosion and all external loads (construction, traffic, seismic) which may be imposed;*

H. *Establish maintenance easements with the owners of privately owned/maintained stormwater facilities to ensure an appropriate level of maintenance and to help minimize public safety hazards;*

I. *Have all new stormwater facilities comply with applicable National Pollutant Discharge Elimination System (NPDES) requirements;*

J. *Minimize the deterioration of existing watercourses, culverts, bridges, dams and other structures;*

K. *Minimize increases in stormwater pollution;*

L. *Allow for periodic inspections of both private and public stormwater quantity control and quality control facilities to verify that they are functioning in substantial conformance with the approved design intent; and*

M. *Allow issuance of engineering permits for stormwater work in the right-of-way or public easements either as a separate public works permit or as part of overall issued public infrastructure construction plans. The various fees for these permits are approved and modified from time to time by the city commission. Failure to*

meet the conditions of the issued permit shall constitute a violation of the municipal code.

Response: A stormwater report was included with this application to demonstrate compliance with applicable standards. Also included with this application are the tentative grading/erosion control and composite utilities sheets (See Sheets 7 & 8).

13.12.020. *Adoption of standards.*

The city commission may establish and modify from time to time by resolution public works stormwater and grading design standards to implement the requirements of this chapter.

Response: The above standard is understood and acknowledged by the applicant.

13.12.030. *Superseding Oregon City Drainage Master Plan Appendix A.*

The policies and standards of this chapter are intended to be consistent with the applicable sections of the most current version of the Oregon City Drainage Master Plan, and applicable basin master plans, for land drainage and flood control within the Oregon City urban growth area, as adopted by the city. Appendix A of the most current version of the Oregon City Drainage Master Plan is superseded by the public works stormwater and grading design standards adopted by resolution and as periodically amended.

Response: A stormwater/drainage report was submitted with his application to demonstrate compliance with the most current version of the OC Drainage Master Plan and applicable criteria listed above.

13.12.040. *Definitions.*

Unless specifically defined below or in OCMC 17.04, words and phrases used in this chapter shall be interpreted so as to give them the meaning they have in common usage and to give this chapter its most reasonable application.

"Applicant" means a person, party, firm, corporation or other legal entity that has applied for a development permit or approval.

"Bulk petroleum storage" means storage of any type of bulk liquid petroleum or petroleum waste materials stored outside in multiple above ground storage tanks (AST). Multiple ASTs include two or more tanks that are either within the same secondary containment structure or within twenty feet of each other.

"Catch basin" means a structure, normally with a sump, for receiving drainage from a gutter or median and discharging the water through a conduit.

"City" means the city of Oregon City.

"City engineer" means the city engineering manager, their duly authorized representative(s), or the city's duly authorized representative(s) as designated by the city manager.

"Clearing" means surface removal of vegetation.

"Constructed wetlands" means wetlands developed as a water quality or quantity facility, subject to maintenance and modification as such. These areas shall be clearly defined and/or separated from naturally occurring wetlands or wetlands created for mitigation purposes.

"Contributing drainage area" means the subject property together with the land area contributing runoff to it.

"Conveyance" means a channel or conduit to move water from one point to another point.

"Culvert" means a hydraulically short conduit that conveys surface drainage in artificial or natural watercourses through a roadway embankment or past some other type of flow obstruction.

"Dam" means a water storage structure that may or may not meet Oregon Revised Statute (ORS) requirements for height and storage capacity. All such structures require professional engineer design. If the water storage structure exceeds the ORS criteria for height or storage capacity, then the Oregon State Water Resources Commission shall have approval authority.

"DEQ" means the Oregon Department of Environmental Quality.

"Development" means any man-made change to improved or unimproved real estate, including, but not limited to, the construction of building or other structures, utility infrastructure, grading, streets or other structures or facilities, mining, dredging, paving, filling or excavation. "Development" does not include the following:

1. *Stream enhancement or restoration projects approved by the city;*
2. *Farming practices as defined in ORS 30.930 and farm use as defined in ORS 215.203, except that buildings associated with farm practices and farm uses are subject to the requirements of this chapter.*

"Disturb" means man-made changes to the existing physical status of the land that are made in connection with development.

"Drainage feature" means any natural or man-made structure, facility, conveyance or topographic feature which has the potential to concentrate, convey, detain, retain, infiltrate or affect the flow rate of stormwater runoff.

"DSL" means the Oregon Division of State Lands.

"Easement" means the legal right to use a parcel of land for a particular purpose. It does not include fee ownership, but may restrict the owner's use of the land.

"Embankment" means a raised structure of earth, gravel or similar material above the surrounding grade.

"Engineer" means a registered professional engineer licensed by the state of Oregon.

"Enhancement" means the process of improving upon the natural functions and/or values of an area or feature that has been degraded by human activity. Enhancement activities may or may not return the site to a pre-disturbance condition, but create/recreate processes and features that occur naturally.

"Erosion" means the movement of soil particles resulting from actions of water, wind or mechanical means.

"Excavation" means the mechanical removal of earth material.

"Fill" means any material such as, but not limited to, sand, gravel, soil, rock or gravel that is placed for the purposes of development or redevelopment.

"Floodplain" means the land area identified and designated by the United States Army Corps of Engineers, the Oregon Division of State Lands, the Federal Emergency Management Agency or city of Oregon City that has been or may be covered temporarily by water as a result of a storm event of identified frequency. It is usually the flat area of land adjacent to a stream or river formed by floods.

"Fuel dispensing facilities" means the area (including fuel islands, above ground fuel tanks, fuel pumps, and the surrounding pad) where fuel is transferred from bulk storage tanks to vehicles, equipment, and/or mobile containers.

"Grading" means any excavating, filling, embanking or altering contours of earth material.

"Grubbing" means the removal of vegetative matter from below the surface of the ground, such as sod, stumps, roots, buried logs or other debris, and shall include the incidental removal of topsoil to a depth not exceeding twelve inches.

"Impervious surfaces" means a hard surface area which prevents or retards the entry of water into the soil mantle and/or causes water to run off the surface in greater than natural quantities or at an increased rate. Impervious surfaces include, but are not limited to, rooftops, walkways, patios, driveways, parking lots, concrete or asphalt paving, gravel surfaces with compacted subgrade, packed earthen materials and oiled macadam or other surfaces which similarly impede the infiltration of stormwater. Open, uncovered stormwater management facilities shall not be considered impervious surfaces.

"Inlet" means a connection between the surface of the ground and a drain or sewer for the admission of surface and stormwater runoff.

"Maintenance" means any activity that is necessary to keep an existing stormwater facility in good working order so as to function as designed. Maintenance includes complete reconstruction of a stormwater facility, if needed to return the facility to good working order. Maintenance also includes the correction of any problem on the site property that may directly impact the function of the stormwater facilities.

"Maintenance easement" means a binding agreement between the city and the person or persons holding title to a property served by a stormwater facility where the property owner promises to maintain certain stormwater facilities; grants the city the right to enter the subject property to inspect and make certain repairs, or perform certain maintenance procedures on the stormwater control facilities when such repairs or maintenance have not been performed by the property owner; and promises to reimburse the city for the cost should the city perform such repairs or maintenance.

"NPDES" means the National Pollutant Discharge Elimination System. A national permit system that covers discharges to waters of the United States and is enforced under the Federal Water Pollution Control Act, commonly known as the Clean Water Act.

"NROD" means natural resource overlay district.

"Owner" or "property owner" means the person who is the legal record owner of the land, or where there is a recorded land sale contract, the purchaser thereunder.

"Parcel" means a single unit of land that is created by a partitioning of land (ORS 92.010(7)).

"Plans" mean the construction documents and specifications, including system site plans, storm drain plans and profiles, cross sections, detailed drawings, etc. or reproductions thereof, approved or to be approved by the city, county, or state. They will show the location, character, dimensions and details for the work to be done.

"Private stormwater facility" means a stormwater facility located on private property and maintained by private property owners.

"Professional engineer" means a registered professional engineer licensed by the state of Oregon.

"Project engineer" means the professional engineer responsible for the project, who will affix his/her seal on the project drainage plans and drainage analysis and supervise construction of the stormwater facilities. The project engineer shall be licensed in the state of Oregon and qualified by experience or examination.

"Public stormwater facility" means any stormwater facility in the public right-of-way or easement operated and maintained by the city, county, or state.

"Record drawings" means a set of engineering or site drawings that show how the project was constructed and what materials were used. Record drawings are signed and dated by the project engineer.

"Restoration" means the process of returning a disturbed or altered area or feature to a previously existing natural condition. Restoration activities reestablish the structure, function, and/or diversity to that which occurred prior to impacts caused by human activity.

"Right-of-way" means all land, or interest therein, which by deed, conveyance, agreement, easement, dedication, usage or process of law is reserved for, or dedicated to, the use of the general public.

"Sedimentation" means the process of gravity deposition of water suspended matter; the process of depositing soil particles, clays, sands and other sediment that were picked up by stormwater runoff.

"Solid waste storage area" means a place where solid waste containers are stored. Solid waste containers include trash compactors, solid waste dumpsters and garbage cans.

"Stormwater" means the surface water runoff that results from all natural forms of precipitation.

"Stormwater facility" means a component of a man-made drainage feature, or features designed or constructed to perform a particular function or multiple functions related to stormwater management. Includes, but is not limited to, pipes, swales, ditches, culverts, street gutters, rain gardens, pervious pavements, green roofs, ponds, constructed wetlands, infiltration devices, catch basins, oil/water separators and sediment basins. Stormwater facilities shall not include building gutters, downspouts, and drains serving one single-family residence.

"Stormwater management" means a program to provide surface water quality and quantity controls through structural and non-structural methods and capital improvement projects. Nonstructural controls include, but are not limited to, maintenance of stormwater facilities, public education, water quality monitoring, and preparation of agreements, ordinances, and regulations.

"Stormwater quality control" means the control of the introduction of pollutants into stormwater and the process of separating pollutants from stormwater.

"Stormwater quantity control" means the control of the rate and/or volume of stormwater released from a development site.

"Stream" means a body of running water moving over the earth's surface in a channel or bed, such as a creek, rivulet or river. It flows at least part of the year, including perennial and intermittent streams. Streams are dynamic in nature and their structure is maintained through build-up and loss of sediment.

"Structure(s)" means a building or other major improvement that is built, constructed or installed, and it also means man-made improvements to land that are used, or expected to be used, in the operation of a utility. It includes buildings, utility lines, manholes, catch basins, driveways and sidewalks. It does not include minor improvements, such as fences, utility poles, flagpoles or irrigation system components that are not customarily regulated through zoning codes.

"Watercourse" means a channel in which a flow of water occurs, either continuously or intermittently, and if the latter with some degree of regularity. Such flow shall be in a definite direction.

"Wetlands" means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas. Wetlands are those areas identified and delineated by a qualified wetland specialist.

Response: The above definitions are understood and acknowledged by the applicant.

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.

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.*

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.*

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.*

Response: A stormwater and drainage report and tentative grading plans were submitted with this application to demonstrate compliance with all applicable plans and criteria.

13.12.060. *Abrogation and greater restrictions.*

Where the provisions of this chapter are less restrictive or conflict with comparable provisions of other portions of this code, regional, state or federal law, the provisions that are more restrictive shall govern. Where this chapter imposes restrictions that are more stringent than regional, state or federal law, the provisions of this chapter shall govern. However, nothing in this chapter shall relieve any party from the obligation to comply with any applicable federal, state or local regulations or permit requirements.

Compliance with this chapter and the minimum requirements, minimum standards, and design procedures as set forth in the city adopted public works stormwater and grading design standards does not relieve the designer, owner, or developer of the responsibility to apply conservative and sound professional judgment to protect the health, safety and welfare of the public. It is not the intent of this chapter to make the city a guarantor or protector of public or private property in regard to land development activity.

Response: The above standard is understood and acknowledged by the applicant.

13.12.070. *Severability.*

The provisions of this chapter are severable. If any section, clause, or phrase of this chapter is adjudged invalid by a court of competent jurisdiction, the decision of that court shall not affect the validity of the remaining portions of this chapter.

Response: The above standard is understood and acknowledged by the applicant.

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.*

Response: The above criteria are addressed in the submitted stormwater and drainage report submitted with this application.

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.*

Response: The above standards are addressed in the submitted stormwater and drainage report included with this application.

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.

Response: The applicant does not propose any alternative materials, design or methods of construction for the stormwater facilities associated with this proposal.

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.

Response: The project engineer is listed on the cover sheet of the submitted plans and the engineer tasked with preparing the stormwater management system is listed on the cover of the stormwater and drainage report. The applicant understands and acknowledges that if the project engineer changes, notification is required prior to work continuing.

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.

Response: The above standard is understood and acknowledged by the applicant.

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.*

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.

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.*

Response: The above standard is understood and acknowledged by the applicant. The stormwater facility is proposed to be deeded to the City upon the conclusion of the warranty period.

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.*

Response: An operations and maintenance plan will be provided for any private stormwater facility.

13.12.150. Penalties and enforcement.

A. *The city is authorized to make inspections and take such actions as required to enforce the provisions of this chapter. The city has the authority to enter onto land for the purpose of inspecting site development activities or resulting improvements. City staff will make an effort to contact the property owner before entering onto that property.*

B. *If the city engineer determines a site has any unpermitted or illegal facilities placed, constructed or installed on the site, then the city engineer shall notify the owner in writing directing the owner to submit a written plan (with construction drawings completed by a professional engineer, if otherwise required by this chapter) within ten calendar days. This plan (and drawings, if required) shall depict the restoration or stabilization of the site or correct the work that has adversely impacted adjacent or downstream property owners. The city engineer shall review the plan (and drawings, if required) for compliance with city standards and issue comments for correction, if necessary, or issue an approval to the owner. The city shall establish a fee by resolution for such review, with all costs borne by the owner. If the required corrective work constitutes a grading permit, then the city shall collect the appropriate grading permit fee.*

C. *Any person, firm, corporation or entity violating any of the provisions of this chapter, whether they be the property owner, the applicant, the contractor or any other person acting with or without the authorization of the property owner or applicant, shall be subject to the code enforcement procedures of OCMC 1.16, 1.20 and 1.24.*

Response: The above standards are understood and acknowledged by the applicant.

13.12.160. Hazardous conditions.

A. *Determination and Notification. If the city engineer determines that any excavation, embankment, erosion/sedimentation control or drainage facility is a safety hazard; endangers property; or adversely affects the safety, use or stability of a public way, water quality resource areas (pursuant to OCMC 17.49) or drainage course, the owner(s) of the subject property and/or the person or agent in control of the property shall be required to repair or eliminate the hazard in conformance with the requirements of this chapter and the public works stormwater and grading design standards. At the time that the city engineer makes the determination that a hazardous condition exists, the property owner and/or person or agent in control of the property will be notified in writing that the hazard exists.*

B. *Order to Correct. The city engineer will order the specific work to be undertaken or will order that an engineering design be submitted for review and approval by the city engineer, and will specify the time periods within which the hazardous conditions be repaired or eliminated. In the event that the owner and/or the person or agent in control of the property fails to comply with this order, that person shall be subject to the code enforcement procedures of OCMC 1.16, 1.20, and 1.24.*

Response: The above standards are understood and acknowledged by the applicant. However, the applicant does not anticipate creating any hazardous conditions during the site development process. A geotechnical report has been included with this application and the grading proposal follows the recommendations of the geotechnical engineer.

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.*

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.

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.*

Response: Required permits from other agencies can be provided as necessary and conditioned for this project.

13.12.180. *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.

Response: The above standard is understood and acknowledged by the applicant.

V. Title 15 – Buildings and Construction

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.

Response: This application includes fill and grading activities associated with the development of a residential subdivision. Consequently, the standards in this chapter are applicable. Tentative grading and erosion control plans have been included in the attached plan set.

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.*

Response: As discussed in the applicant's previous response, the proposed development is not exempt from the standards of this chapter because it meets OCMC 15.48.030.B by proposing earthwork with construction of a subdivision.

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 Response: A tentative grading and erosion control plan has been developed and included in the attached plan set. In addition to this plan, a geotechnical engineering report and stormwater management report have been included in this application package. These documents demonstrate compliance with the Public Works Stormwater and Grading Design Standards.

VI. Title 16 – Land Divisions

Chapter 16.04 - *GENERAL PROVISIONS AND ADMINISTRATION OF LAND DIVISIONS*

16.04.010. *Purpose.*

This title is enacted in compliance with ORS 92.010 through 92.160 to establish procedures and standards for partitioning and subdividing land within the city. These regulations, along with requirements of the city's underlying zoning, provide the dimensional requirements for building lots, street locations, street design, rights-of-way, location requirements for houses on residential lots, the provision of adequate open space for recreation and community facilities, and the basic requirements for the installation of public utilities, all with the aim of achieving:

A. *A sufficient supply of needed housing with satisfactory living conditions in new subdivisions that comply with Statewide Planning Goal 10 and implementing administrative rules, guidelines and statutes;*

B. *The protection, conservation and proper use of the land;*

C. *The timely and efficient extension of public facilities and services without excessive expenditure of public funds in accordance with Statewide Planning Goals 11 and 14 and their implementing administrative rules and guidelines;*

D. *The simplification and greater accuracy of land descriptions;*

E. *The protection of property owners from excessive assessment for future utility installations and to provide a means of ensuring that property owners pay only their fair share of the cost of providing public facilities and services;*

F. *The protection of the health, safety and general welfare of the public;*

G. *Increased consumer protection by assuring that only those lots which have met city requirements and have been lawfully created through subdivision or partition approval are allowed to be advertised for sale;*

H. *Increased urban density and a livable design that achieves Metro-mandated requirements, while providing an enjoyable living and working environment; and*

I. *Safe, direct and convenient pedestrian and bicycle access, where reasonably possible within, from and between residential, commercial, industrial and institutional developments and neighborhood activity centers in accordance with Statewide Planning Goal 12 and the implementing administrative rule.*

Response: The applicant understands the purpose of this chapter as it relates to the proposed subdivision.

16.04.015. *Fees.*

A. *Filing Fees. The city commission shall establish by resolution a schedule of fees for all land division and engineering plan reviews, inspections, applications and appeals provided for*

under this title. Fees shall be structured to reflect the city's actual or average cost of providing the required services and shall be paid in full at the time of application, along with all other required information and documents before the application to be deemed complete. Filing fees shall not be refundable or reimbursable except as provided in OCMC 17.50.290 of this code.

B. *Technical Plan Check and Inspection Fees. The city commission shall establish by resolution a plan check and inspection fee. This fee shall be paid to cover the city's costs of reviewing plans and inspecting public improvements.*

C. *Other Fees. The fees required by this chapter are in addition to any fees charged by any other department of the city and any other governmental entity with regulatory jurisdiction.*

Response: The above standards are understood and acknowledged by the applicant. All fees are proposed to be paid by preferred method and in a timely fashion.

16.04.020. *Conditions of land division approval.*

The decision-maker may impose reasonable conditions of approval on any approval granted under this title to ensure that the application meets, or will meet, any application approval standard.

Response: The above standard is understood and acknowledged by the applicant.

16.04.025. *Restrictions on sale of lots until process is complete.*

A. *No person shall negotiate to sell any lot in a subdivision until a preliminary plat has been approved pursuant to this title.*

B. *No person shall complete the sale of any lot in any subdivision until the final subdivision plat for the development has been approved under this title and properly recorded with the county.*

C. *Parcels subject to the partition process under this title may be advertised, and sales negotiated, prior to preliminary partition plat approval; however, no sale of any such lot may be completed until the city has granted final partition approval under this title and the plat is properly recorded with the county.*

Response: The applicant does not propose to sell or transfer ownership of any created parcel included with this application until the final plat has been recorded to create legal lots of record.

16.04.030. *Severability.*

If any part of this title is for any reason held invalid or unconstitutional by a court of competent jurisdiction, that part shall be deemed separate from the balance of the title and the invalidation of any part of this title shall not affect the validity or enforceability of any of the title's remaining portions.

Response: The above standard is understood and acknowledged by the applicant.

16.04.035. *Nuisance—Violations and penalties.*

Any act, omission or use of property in violation of the requirements of this chapter shall constitute a nuisance, a civil infraction and a code violation subject to the code enforcement provisions of Chapters 1.16, 1.20 and 1.24.

Response: The above standard is understood and acknowledged by the applicant.

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.

Response: The applicant understands and acknowledges the applicability and process outlined above.

16.08.045. *Frontage width requirement.*

Each lot shall abut upon a street other than an alley for a width of at least twenty feet unless flag lots are provided pursuant to OCMC 16.08.050.

Response: A tentative plat and site plan has been included with this application to demonstrate compliance with the underlying zoning standards for lot frontage width standards. Eight flag lots are proposed with this application. These lots are discussed in the applicant's response to OCMC 16.08.050 – Flag Lots.

16.08.050. *Flag lots.*

A. *Flag lots shall not be permitted except where the applicant can show that the existing parcel configuration, topographic constraints or the location of a pre-existing dwelling unit precludes a land division that meets the minimum density, dimensional standards of the underlying zone, and except where street connectivity is not practicable as determined by the city engineer.*

B. *A shared joint accessway shall be provided unless the existing topography of the site or the pre-existing dwelling unit is located on the property to prevent a joint accessway. A perpetual reciprocal access easement and maintenance agreement shall be recorded for the joint accessway, in a form acceptable to the city attorney.*

C. *Accessways shall have a pavement width of at least sixteen feet to service one or two units or twenty feet to service three or more units. A fire access corridor of at least twenty feet shall be provided to all parcels with a minimum pavement width of sixteen feet to service two units or twenty feet to service three or more units. At least six inches of shoulder on each side of the fire access corridor shall be provided in order that construction work does not infringe on adjacent properties. A narrower pavement width may be approved by the fire district and city engineer. The city engineer and/or fire district may require that additional fire suppression devices be provided to assure an adequate level of fire and life safety. The city engineer and/or fire district may prohibit vehicular obstruction, including trees, fences, landscaping and structures within the fire access corridor.*

If the proposed accessway exceeds one hundred fifty feet in length the accessway shall conform to fire district standards and shall be paved to a minimum width of twenty feet unless an alternative is approved by the planning division and fire district. If more than two units are served, a turnaround for emergency vehicles shall be provided. The turnaround shall be approved by the city engineer and fire district.

D. *The pole portion of the flag lot shall connect to a street.*

E. *The pole shall be at least ten feet wide for the entire length.*

F. *The pole shall be part of the flag lot and shall remain under the same ownership as the flag portion of the lot.*

Response: The proposed subdivision includes eight flag lots, which allow the subdivision to meet the density standards while effectively working with the site's topography. Four flag lots will be located near the northwest corner of the project area and another four will be near the southwest property boundary. Street connectivity is provided throughout the site, but due to the hazardous slopes overlay constraints, existing topography, and density requirements creating additional right-of-way is not practical in these areas. Seven of the eight flag lots will share an accessway with an adjacent lot. These lots have flag poles ten feet wide for the entire length. One flag lot will not share its accessway but will have flagpole with a width of 20 feet. Pole access widths are shown on the submitted site plan and tentative plat sheets to demonstrate compliance with the above standard. Accessways are less than 150 feet to comply with fire access standards. Lot areas are shown for each flag lot and does not include the pole area in that calculation.

16.08.053. *Tracts.*

Tracts which cannot be developed with a home or office, commercial, residential, institutional, industrial, parking or other uses as determined by the city engineer or community development director are not subject to compliance with the dimensional standards of the zoning designation, frontage requirements, or flag lot standards.

Response: The proposed subdivision includes 4 tracts (C, G, A, & B) for common open space including the water quality facility, 5 tracts (J, P, O, R, & N) for pedestrian paths, and 3 tracts (M, L, & F) for private roadways and alleys. The location and dimensions of these tracts are shown on the attached tentative site plan.

16.08.060. *Building sites.*

A. *The size, width, shape and orientation of building sites shall be rectangular or square to the maximum extent practicable.*

B. *Sites abutting an alley shall gain vehicular access from the alley unless deemed impracticable by the decision maker.*

C. *Adequate access for emergency services (fire and police) shall be provided.*

Response: All sizes, widths, shapes, and orientation of building sites are rectangular in shape to the greatest extent possible. Alleyways are shown for lots with frontage along Holly Lane to avoid direct vehicle access onto the collector where possible. Proper circulation is proposed throughout the site to avoid dead-ends and provide emergency services access. The above criteria are met.

16.08.063. *Minimum density.*

All layouts shall achieve at least the minimum density of the base zone for the net developable area as defined in OCMC 17.04. Alternatively, a site may be partitioned into two lots, though one of the lots shall not contain sufficient lot area to allow further division.

Response: Density is shown on the cover sheet on the submitted plans. The applicant proposes a density of 7.4 in the R-5 zone and 4.0 in the R-10 zoning designation. Minimum density standards are shown to be met and do not exceed the maximum density allowed. The above criterion is met.

16.08.065. *Lot size reduction.*

A subdivision in the R-10, R-8, R-6, R-5, or R-3.5 dwelling district may utilize lot size reduction for up to twenty-five percent of the lots proposed for single-family detached residential or duplex use. Fractions resulting from the twenty-five percent calculation shall be rounded down. The reduced-size lots may be up to ten percent less than the required minimum lot area of the applicable zoning designation provided the average lot size of all proposed single-family detached residential or duplex lots meet the minimum requirement of the underlying zone. Any area within a powerline easement on a lot shall not count towards the lot area for that lot. Lot size reduction is only permitted through a subdivision or, master plan and planned unit developments processes and may not be used for minor partitions or any other residential uses.

The average lot area is determined by first calculating the total net developable area devoted to single-family detached dwelling units or duplexes, subtracting the powerline easement areas, open space, tracts, stormwater facilities, roads, right-of-way, or accessways and dividing that figure by the proposed number of single-family detached dwelling or duplex lots.

A lot that was created pursuant to this section may not be further divided unless the average lot size requirements are still met for the entire subdivision, except that lots developed with a duplex shall be eligible for a middle housing land division pursuant to OCMC 16.24.

When a lot abuts a public alley, an area equal to the length of the alley frontage along the lot times the width of the alley right-of-way measured from the alley centerline may be added to the area of the abutting lot in order to satisfy the lot area requirement for the abutting lot. It may also be used in calculating the average lot area.

Response: This application does not include any lot size reductions. The above standards do not apply.

16.08.070. *Through lots.*

Through lots and parcels shall be avoided except where they are essential to provide separation of residential development from major arterials or to overcome specific disadvantages of topography of existing development patterns. A reserve strip may be required. A planting screen restrictive covenant may be required to separate residential

development from major arterial streets, adjacent nonresidential development, or other incompatible use, where practicable. Where practicable, alleys or shared driveways shall be used for access for lots that have frontage on a collector or minor arterial street, eliminating through lots.

Response: Lots 51-56 and 76-90 will have frontage on Holly Lane and either Tract "F" or "M;" tracts that will contain private streets consisting of a 22-foot-wide roadway, curb, gutter, and a single 5-foot-wide sidewalk. These tracts will provide rear vehicle access for the previously mentioned lots in order to eliminate multiple accesses on a collector street (Holly Lane). In addition to providing rear vehicle access to those lots, these tracts will provide front vehicle access to Lots 47-50 and 60-75.

16.08.075. *Building site—Lot and parcel side lines.*

The lines of lots and parcels, as far as is practicable, shall run at right angles to the street upon which they face, except that on curved streets they shall be radial to the curve.

Response: Lines of lots and parcels intersect street frontage property lines at right angles to the greatest extent possible. On curved streets, the front property lines are radial to the curve. The above criterion is met.

16.08.080. *Setbacks and building location.*

This standard ensures that lots are configured in a way that development can be oriented toward streets to provide a safe, convenient and aesthetically pleasing environment for pedestrians and bicyclists. Residences oriented in this manner assure a sense of openness by avoiding the "bowling alley" effect caused by uninterrupted, continuous privacy fences along higher volume streets. The objective is for lots located on a neighborhood collector, collector or minor arterial street to locate the front yard setback on and design the most architecturally significant elevation of the primary structure to face the neighborhood collector, collector or minor arterial street,

A. *The front setback of all lots located on a neighborhood collector, collector or minor arterial shall be orientated toward the neighborhood collector, collector or minor arterial street.*

B. *The most architecturally significant elevation of the residence shall face the neighborhood collector, collector or minor arterial street.*

C. *On corner lots located on the corner of two local streets, the main façade of the residence may be oriented towards either street.*

D. *The decision maker may approve an alternative design, consistent with the intent of this section, where the applicant can show that existing development patterns preclude the ability to practically meet this standard.*

Response: Setbacks are shown on the submitted site plan sheets (see sheets 6-6.4). The front setback for the home, and the front porch setback are shown along with the rear and side setbacks. No rear porch setback is shown as house designs have not been finalized but it is

assumed that some sort of front porch will be part of the design. The additional street side setback is shown on the submitted site plan sheets. The above criteria are met.

16.08.085. *Division of large lots.*

Where land is to be divided into lots or parcels capable of redivision in accordance with this chapter, the community development director shall require an arrangement of lots, parcels, buildings on lots, utilities and streets which facilitates future redivision. In such a case, development limitations including building locations and setback lines may be required and made a matter of record in order to preserve future right-of-way or building sites.

Response: The proposed subdivision layout does not leave large lots to be redeveloped, however, there are two areas outside of the project area. Both areas are labeled on the submitted site plan sheets (see sheets 6-6.4), and a shadow plat has been drawn for those areas to show how they could be divided consistent with surrounding development.

16.08.095. *Prohibition on additional private restrictions on housing types.*

Private restrictions on the provision of accessory dwelling units, duplexes, or internal conversions executed after July 1, 2019 and all middle housing types after August 9, 2019 shall be prohibited. Conditions, covenants, and restrictions (CC&Rs) or similar legal instrument submitted with residential plats submitted for final plat approval after July 1, 2019 shall not prohibit or impose additional restrictions on accessory dwelling units, duplexes, and/or internal conversions and after August 9, 2019 for all middle housing types to the extent permitted in the OCMC in place at the time of final plat submittal, and shall not impose additional restrictions on those uses through any future amendment.

Response: No accessory dwelling units, duplexes or other middle housing types are proposed to be restricted with this application.

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.

Response: The applicant understands the purpose of this chapter's regulations.

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.*

Response: This application proposes land division for single-family homes and therefore compliance with the above standards is required. New streets are proposed with this application and typical sections are provided to show proposed improvements complying with applicable standards. Street trees are shown on the submitted site plan sheets to demonstrate compliance with the above standards. The above criteria are met.

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 Chapter 12.04 of the Oregon City Municipal Code.

Response: The above standard is understood and acknowledged by the applicant.

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.*

B. *The following modifications shall be processed as a Type I modification by the city engineer using the criteria in OCMC 16.12.13.A:*

1. *Modifications to driveway location, size, and sharing standards in OCMC 16.12.035;*

2. *Modifications to sidewalk and planter strips widths and location in OCMC 16.12.016 that preserve existing street trees or trees on private property to ensure compliance with ADA standards.*

Response: This application includes utilizing the reduced collector street section in the pinch point between tax lot 0314 (15058 Journey Drive) and tax lot 400 (16509 S Edenwild Lane) through a modification of the above standards. All other portions of the Holly Lane right-of-way meet the standard listed for collector streets. The modification request would remove the planter strip and on-street parking in that section of the street. By continuing to provide sidewalks and bike lanes, safe and efficient movement of pedestrians and bicycles is still provided. Additionally, the typical section of the reduced collector street does not change the vehicle movement as both travel lanes and a center turn lane are still provided. This modification is still consistent with the adopted transportation system and utility plans. The modification request is not due to a constitutional reason but the available space cannot accommodate all planned collector features.

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:

A. *Pre-design meeting;*

B. *Final engineering plans, stamped and signed by an Oregon licensed professional engineer;*

C. *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 notes;*

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 punch list;*

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).

Response: The applicant understands the above standards must be submitted and complete prior to proceeding with construction activities. At this stage in the process, the applicant is requesting land division approval necessary to begin completing the tasks listed above. Upon approval of this application, the above criteria can be met.

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.*

Response: Typical street sections are shown on sheet 4 to demonstrate compliance with street improvement criteria. The submitted site plan shows the proposed circulation throughout the project site. Existing streets (Journey Drive, Shartner Drive, and Cattle Drive) are stubbed to the project site from the Trailview Neighborhood. Holly Lane is proposed to be constructed on tax lot 1000 as part of another application. The applicant proposed to tie into that connection and extend Holly Lane through this project site. Proposed streets are stubbed to the areas outside of the project area and shown in a shadow plat. All proposed public streets provide sidewalks and bike lanes, safe and efficient movement of pedestrians and bicycles and circulation for emergency services throughout the project area.

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.

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.

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.*

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.*

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.*

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.*

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.*

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.*

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.*

H. *Vehicular and pedestrian easements shall allow for public access and shall comply with all applicable pedestrian access requirements.*

Response: The applicant has submitted the typical sections of all proposed streets associated with this application. See sheet 4 to demonstrate compliance with the above standards. Pedestrian access and bike lanes are proposed throughout the project as well as adequate travel lanes and vegetated planter strips. Public utility easements are shown along all lot frontages adjacent to the right-of-way. Street names have been included on the submitted plans and an emergency access road is shown along the southern property line. The applicant is preserving the existing overhead utility (power) easement running north/south near the center of the project site. Emergency access is shown in this same area to the south since Holly Lane does not intersect S. Livesay Road. The above criteria are met.

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.*

B. *The city may grant a permit for the adjoining owner to access through the access control.*

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)."*

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."*

Response: The applicant proposes to dedicate the Holly Lane, Cattle, Journey, and Shartner street extensions to the City. Additionally, the applicant proposes dedicating Ainsworth, Atkinson, Borow, Moffatt and the constructed portion of Pioneer Street to the City. Pioneer is shown to be a ¾ street with the remaining portion constructed when tax lot 301 develops in the future. The applicant proposes one private street contained within Tracts "F" and "M," and all alleys will be constructed within easements that will remain private. The applicant submitted a tentative plat which differentiates between the public and private roadways. See sheets 5 for demonstrated compliance with the above criteria.

16.12.018. *Street design—Alignment.*

The centerline of streets shall be:

A. *Aligned with existing streets by continuation of the centerlines.*

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.*

Response: Centerlines are shown on the submitted site plan and tentative plat sheets (see sheets 6-6.4) and are aligned with the centerlines of stubbed streets to the project site. Driveway placement has been proposed to meet applicable standards.

16.12.019. *Traffic sight obstructions.*

All new streets shall comply with the traffic sight obstructions in Chapter 10.32.

Response: A Traffic Impact Study is included with this application to address impacts from the proposed subdivision. The TIA included findings addressing intersection safety, trip generation, and sight distance analysis to ensure no obstructions are present. The TIA addresses all other criteria within Chapter 10.32.

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.

Response: Intersections have been designed to meet at right angles to the greatest extent possible. The above criterion is met.

16.12.021. *Same—Grades and curves.*

Grades and center line radii shall conform to standards approved by the city engineer.

Response: The submitted proposed plat, site plan, and grading plans demonstrate compliance with the grades and centerline radii standards of this chapter.

16.12.022. *Same—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.

Response: This application includes the extension of Holly Lane which is classified as a collector. All other streets are classified as local streets, private or alleys. Two local streets are stubbed off-site to an area not yet annexed into the City near the southeast corner of the site. All other stubbed streets temporarily terminate to parcels within City limits (see shadow plat areas).

16.12.023. *Same—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.

Response: The applicant understands and acknowledges the above standard.

16.12.024. *Same—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.

Response: A ¾ street improvement is proposed for a portion of Pioneer Drive along tax lot 301. The proposed typical section is shown on sheet 4 of the submitted plan set and consists of a sidewalk, planter strip, curb/gutter, and two travel lanes. The applicant proposes a wall along the north side of Pioneer drive in this ¾ section however, no other walls are proposed or required to support the construction of public streets.

16.12.025. *Same—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.*

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.*

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.*

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.*

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).*

Response: Gusdorf Drive, Handris Drive, Borow Lane, the extension of Journey Drive (two sections), and the extension of Holly Lane are all stubbed to off-site tax lots for future development. No cul-de-sacs are proposed with this application. All stubbed street sections are less than 150 feet in length, have a turn-around, and/or circulation option available. The applicant acknowledges that stubbed streets shall have a sign to comply with the above

criterion. No permanent dead-ends are proposed as all stubbed streets could be extended upon future development. To the extent they apply, the above criteria are met.

16.12.026. *Same—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.

Response: The applicant proposes alley access for lots fronting Holly Lane shown in easements along the rear property line. These alleys are all shown within the R-5 zoning designation. The above criterion is met.

16.12.027. *Same—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.

Response: Streets within the Trailview neighborhood are stubbed to the project boundary and a portion of Livesay Road fronts the southern boundary. The applicant does not propose any off-site improvements although the applicant is proposing to extend all streets abutting the subject property.

16.12.028. *Same—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.

Response: The proposed streets have been designed and laid out in a manner that promotes pedestrian and bicycle circulation. Streets proposed within this community have sidewalks and bike lanes. Additionally, the applicant proposes many pedestrian pathways throughout the project site. The above criterion is met.

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.

Response: The applicant proposes to mitigate any pavement sections impacted by the development of this project upon approval of this application. Mitigation is proposed to meet Public Works Standards. Upon approval of this application, the above criterion can be met.

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.

Response: Block lengths are shown to meet the above standard as shown on sheets 6-6.4. Pedestrian paths have been shown where a roadway is impractical and breaks up blocks. As demonstrated on the submitted plans, the above criteria are met.

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.

Response: Tentative street names are shown on the submitted site plan and tentative plat. Street names are shown to meet city standards.

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.

A. *Entry points shall align with pedestrian crossing points along adjacent streets and with adjacent street 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.*

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.*

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.*

E. *Accessways shall comply with Americans with Disabilities Act (ADA).*

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;*

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;*

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.*

G. *Accessways shall be designed to prohibit unauthorized motorized traffic. Curbs and removable, lockable bollards are suggested mechanisms to achieve this.*

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.*

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.*

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.*

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.*

Response: Pedestrian pathways are proposed where public streets are impractical but still warrant circulation. Pedestrian pathways are shown in tracts. There are no adjacent pathways stubbed to the project site. Public streets flank pedestrian pathways to provide security and connectivity to bike lanes in the public right-of-way. Pathways are generally straight and the shortest path between rights-of-way. Bollards are proposed at the ends of pathways to prevent motorized vehicle traffic. Pathways are shown to meet ADA standards to the greatest extent possible, and landscaping is proposed in planter strips along each side. Pathways are shown to be paved in an all-weather hard surface and proposed to be owned/maintained by the HOA. See submitted sheets 4 and 6 to demonstrate compliance with the above criteria.

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.*

Response: The subject site is not located within the regional center boundary of the City.

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.*

Response: This application does not include any new or proposed changes to any arterial streets and no throughway networks are proposed.

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.*

Response: The applicant does not propose any signalized intersections, and a traffic impact study has been included with this application to address the level of service of adjacent roadways impacted by this proposal. The subject property does not have any streets that intersect OR 213. To the extent they apply, the above criteria are met.

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.*

Response: The subject property does not impact intersections with I-205 and Oregon Highway 99 or the interchange between these two major routes. The applicant proposes to comply with the required mobility standards to the extent they apply.

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.*

B. *All detached single-family dwellings, duplexes, triplexes, quadplexes and townhouses shall have driveways which meet the minimum distance from a street corner standard 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 five feet to the neighboring property line, as approved by the city engineer.*

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.*

Response: Driveway drops are shown on the submitted site plan and shown to be a minimum of five feet from the side property lines. This application proposes detached single-family dwellings and does not include duplexes, triplexes, quadplexes, or townhouses. No multi-family or non-residential development is proposed with this application.

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) be allowed, unless otherwise approved by the city engineer.*

1. *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.*

1. *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.*

2. *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.*

Response: This application proposes single-family development with single driveways. No lot is proposed to have more than one driveway drop along public right-of-way. No cluster housing or other middle housing types are proposed with this application. To the extent they apply, the above criteria are met.

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.*

1. *Shared driveways for middle housing structures shall be minimum eighteen feet and maximum thirty-six feet except when section J.4.a applies.*

J. *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. 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.

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.*

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.*

Response: Access is shown on the lesser of the classified streets on lots with more than one street frontage. Driveway access is not anticipated to cause a significant traffic safety issue. Driveway widths are not anticipated to widen off-site as lots develop. Curb cut materials are proposed to meet the criteria above at the driveway approach and no driveway has a slope exceeding 15%. No exceptions are proposed with this application. To the extent they apply, the above criteria are met.

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.

Response: A preliminary grading plan has been submitted with this application to demonstrate compliance with general grading standards. However, lot/building site grading shall be evaluated for compliance prior to issuance of a site development or building permit. Upon approval of this application, the above criterion can be met.

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 ten 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 five 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 five-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 OCMC 16.12.013.*

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.*

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.

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 twenty 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.*

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.*

Response: No unusual facilities are proposed with this application. Public utility easements are shown along the frontage of all lots abutting public right-of-way. There is an existing drainage easement from the Trailview neighborhood that traverses this project site. The applicant proposes to reroute the manmade piped watercourse to follow public right-of-way and outfall in the same existing location. No other water courses are present on the subject property. No resource protection easements are needed, and the above criteria are met.

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.*

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.*

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.*

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.*

E. *As-built construction plans and digital copies of as-built drawings shall be filed with the city engineer upon completion of the improvements.*

F. *The city engineer may regulate the hours of construction and access routes for construction equipment to minimize impacts on adjoining residences or neighborhoods.*

Response: The applicant understands that construction activities cannot occur until plans have been approved by the City Engineer. At this time the applicant is seeking land use approval which would pave the way for assembling final engineering plans. Preliminary engineering plans have been included with this application and include erosion and sediment control, grading, and utilities. Upon approval of the land division proposal, the above standards can be met.

16.12.095. *Same—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.*

Response: All transportation system improvements included with this application have been designed to meet applicable standards. See sheets 5, 6, and 10 to show compliance with the above standards.

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.

Response: The applicant has submitted a stormwater and drainage report to respond to the stormwater and drainage standards. The water quality facility is located along the southern boundary within Tract B with frontage on Livesay Road. The water quality facility has been designed in accordance with the City's drainage master plan requirements and public works standards. The above criterion is met.

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.*

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.*

Response: The applicant has submitted a composite utility plan showing sanitary sewer and water serving all lots within the proposed community. Utilities have been designed to meet all applicable standards. Utilities have been stubbed to the property boundary for future development connections/extensions. The water service is split between two water districts and detailed on sheet 7 of the submitted plans. The above criteria are met.

E. *Street Trees. Refer to OCMC 12.08, Street Trees.*

Response: Street trees are shown on sheet 6.1 through 6.4 to demonstrate compliance with the above criteria within 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.*

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.*

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.*

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.*

Response: A benchmark will be placed within the subdivision boundary to comply with the above standard. Coordination with utility companies and districts is ongoing throughout the approval and building processes and the applicant has initiated these efforts to design the proposed subdivision. There are existing overhead utility lines shown that will remain and have been incorporated into the design of this subdivision. All new services are shown to be underground within proposed utility easements. The water quality facility has been designed

in accordance with applicable standards as detailed in the submitted stormwater and drainage report. The facility has been designed to accommodate the impervious surface runoff associated with the proposed subdivision. As conditioned upon approval of this application, the applicant can design the water quality facility to be larger than necessary for future development. A tentative grading and erosion and sediment control plan has been included with this application. See sheet 8 to demonstrate compliance with erosion and sediment control standards. The above criteria are met.

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.*

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.*

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.*

Response: The applicant proposes to extend Holly Lane throughout the subject site to satisfy a Transportation Systems Plan goal. All streets are proposed to be dedicated to the City and designed in accordance with applicable standards. Tracts F and M are private streets and will be deeded to the HOA for maintenance purposes. The applicant does not propose the creation of a public street by deed. The above criteria do not apply.

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.*

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.*

Response: Construction completion is anticipated prior to applying for final plat approval. The applicant may opt for taking the financial guarantee option for required improvements as needed but that is to be evaluated at the time of construction.

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.*

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.*

Response: This application seeks land division approval. Upon receiving approval of the submitted application, the applicant understands the performance guarantee standards and process.

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.

Response: A waiver of remonstrance is not anticipated upon approval of this application as all improvements required are proposed to be constructed.

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.

Response: The above standard is understood and acknowledged by the applicant.

VII. Title 17 - Zoning

Chapter 17.08 - *LOW DENSITY RESIDENTIAL DISTRICTS*

17.08.10. *Designated.*

The R-10, R-8 and R-6 residential districts are designed for low density residential development.

17.08.020. *Permitted Uses*

Permitted uses in the R-10, R-8 and R-6 districts are:

A. *Single-family detached residential units;*

B. *Accessory uses, buildings and dwellings;*

C. *Duplexes;*

D. *Triplexes;*

E. *Quadplexes;*

F. *Townhouses;*

G. *Cottage clusters;*

H. *Residential homes;*

I. *Parks, playgrounds, playfields and community or neighborhood centers;*

J. *Home occupations;*

K. *Family day care providers;*

L. *Farms, commercial or truck gardening and horticultural nurseries on a lot not less than twenty thousand square feet in area (retail sales of materials grown on-site is permitted);*

M. *Temporary real estate offices in model homes located on and limited to sales of real estate on a single piece of platted property upon which new residential buildings are being constructed;*

N. *Transportation facilities.*

Response: The applicant proposes single-family detached development which is permitted within the R-10 zone.

17.08.040. *Dimensional standards.*

Dimensional standards in the R-10, R-8, and R-6 districts are as follows:

Response: Lots 1-5, 21, and 28 are located within the R-10 zoning district; all lots exceed the minimum dimensional standards listed in OCMC 17.08.040. No cottage clusters or middle housing types are proposed within the R-10 zoned portion of the site. Setbacks are shown on the submitted site plan. The above criteria are shown to be met.

17.08.045. *Exceptions to setbacks*

A. *Projections from Buildings. Ordinary building projections such as cornices, eaves, overhangs, canopies, sunshades, gutters, chimneys, flues, sills or similar architectural features may project into the required yards up to twenty-four inches.*

B. *Through Lot Setbacks. Through lots having a frontage on two streets shall provide the required front yard on each street. The required rear yard is not necessary.*

Response: House designs for each lot have not been finalized but the applicant understands the exceptions to the setback standards. No through lots are proposed within the R-10 zoned portion of the site.

17.08.050. *Density Standards.*

A. *Density standards in the R-10, R-8 and R-6 districts are as follows:*

B. *Exceptions.*

1. *Any dwelling units created as accessory dwelling units do not count towards the minimum or maximum density limits in Table 17.08.050.*

2. *Duplexes, triplexes and quadplexes shall count as a single dwelling unit for the purposes of calculating maximum net density. Total dwelling units within a development may count for the purposes of calculating minimum net density.*

3. *Cottage clusters are exempt from maximum net density standards.*

Response: Within the R-10 zoned portion of the site, the applicant proposes a density of 4 dwelling units per acre. No density exceptions are proposed with this application.

Chapter 17.10 - *MEDIUM DENSITY RESIDENTIAL DISTRICTS*

17.10.010. *Designated.*

The R-5 and R-3.5 residential districts are designed for medium density residential development.

17.10.020. *Permitted uses.*

Permitted uses in the R-5 and R-3.5 districts are:

A. *Single-family detached residential units;*

B. *Accessory uses, buildings and dwellings;*

C. *Duplexes;*

D. *Triplexes;*

E. *Quadplexes;*

F. *Townhouses;*

G. *Cottage clusters;*

H. *Manufactured home parks or subdivisions in the R-3.5 district only;*

I. *Residential homes;*

J. *Parks, playgrounds, playfields and community or neighborhood centers;*

K. *Home occupations;*

L. *Family day care providers;*

M. *Farms, commercial or truck gardening and horticultural nurseries on a lot not less than twenty thousand square feet in area (retail sales of materials grown on-site is permitted);*

N. *Temporary real estate offices in model homes located on and limited to sales of real estate on a single piece of platted property upon which new residential buildings are being constructed;*

O. *Transportation facilities.*

Response: The applicant proposes to construct single-family detached homes which are an outright permitted use in this zone.

17.10.040. *Dimensional standards.*

Response: All lots exceed the minimum dimensional standards listed in OCMC 17.10.040. No cottage clusters or middle housing types are proposed within the R-10 zoned portion of the site. Setbacks are shown on the submitted site plan. The above criteria are shown to be met.

17.10.045. *Exceptions to setbacks.*

A. *Projections from buildings. Ordinary building projections such as cornices, eaves, overhangs, canopies, sunshades, gutters, chimneys, flues, sills or similar architectural features may project into the required yards up to twenty-four inches.*

B. *Through lot setbacks. Through lots having a frontage on two streets shall provide the required front yard on each street. The required rear yard is not necessary.*

Response: The applicant does not propose any exceptions to setback standards.

17.10.050. *Density standards.*

A. *Density standards in the R-5 and R-3.5 districts are as follows:*

B. *Exceptions.*

1. *Any dwelling units created as accessory dwelling units do not count towards the minimum or maximum density limits in Table 17.10.050.*

2. *Duplexes triplexes and quadplexes shall count as a single dwelling unit for the purposes of calculating maximum net density. Total dwelling units within a development may count for the purposes of calculating minimum net density.*

3. *Cottage clusters are exempt from maximum net density standards.*

Response: Within the R-5 zoned portion of the project boundary, the applicant proposes a density of 7.4 dwelling units per acre. Only single-family detached development is proposed with this application and not middle housing types are included with this application.

17.10.060. *Conversion of existing duplexes.*

Any conversion of an existing duplex unit into two single-family attached dwellings shall be reviewed for compliance with the land division requirements in Title 16 and the underlying zone district.

Response: The applicant does not propose any conversions of existing structures to middle housing types. The above section does not apply.

Chapter 17.21 - *RESIDENTIAL STANDARDS—PARK PLACE CONCEPT PLAN AREA*

17.21.020. *Applicability.*

This chapter applies to all new detached single-family residential units, duplexes, triplexes, quadplexes, townhouses, accessory dwelling units, and cottage clusters located within the Park Place Concept Plan areas. Additions to homes existing prior to the adoption of this chapter in a concept plan area or new - residences outside of a concept plan area may choose review under this section or OCMC 17.14, OCMC 17.16, or OCMC 17.20 as applicable.

Residential plans that conform to the following standards may be approved as a Type I Decision. Residential plans that require approval of an exemption shall be processed as a Type II Land Use decision at time of land division or building permit application.

Response: The applicant does not seek any residential plan exemption and therefore demonstrated compliance with the above section is to be reviewed under a Type I process prior to issuance of a building permit.

17.21.030. *Roof design.*

A. *Primary roofs shall be pitched at a minimum ratio of five-twelfths, except for non-gabled dormers, covered porches, or secondary masses.*

B. *Exemption: An exemption from the roof standard of subsection A above may be approved by the community development director if the resulting plan is consistent with the architectural style.*

Response: The applicant does not propose a roof pitch exemption and therefore will meet the above standard. Demonstrated compliance with this section is to be evaluated prior to issuance of a building permit. The applicant is seeking land division approval at this time.

17.21.040. *Modulation and massing.*

New residences shall have a massing and footprint that is compatible with the envisioned pedestrian friendly neighborhoods of the concept plan area.

A. *Residences with footprints over one thousand two hundred square feet (not including porch or deck areas) shall provide for secondary massing (such as cross gabled wings or sunroom/kitchen/dining room extensions) under separate roof-lines. Each secondary mass shall not have a footprint larger than six hundred square feet.*

B. *Exemption: An exemption from the massing standard of subsection A above may be approved by the community development director if the resulting plan continues to provide for a pedestrian friendly design and provides sufficient architectural details to mitigate the impact of a residence with a large mass on the surrounding neighborhood.*

Response: Demonstrated compliance with the above standards is to be evaluated prior to issuance of a building permit. The applicant is seeking land division approval and does not propose any exemptions to modulation and massing standards.

17.21.050. *Porches and entries.*

A. *Each residence shall contain a front porch with a front door that faces the street that is a minimum of twenty-four inches above average grade with skirting and is at least eighty square feet with no dimension under six feet with the wider dimension parallel to the street. Porch railings are required. The front porch shall be covered.*

B. *Exemption: Residence styles that do not contain a front porch or require a reduction in the size of the porch or its location may request an exemption from the community development director from subsection A above, if another type of pronounced entryway is provided. Pronounced entrances may include a rounded front door, canopy or other articulated entrances, columns, and/or other similar features provided they are compatible with the architectural style of the house. A reduced porch may be allowed if there is sufficient architectural or topographical reason to reduce the size of the porch.*

C. *All subdivisions shall have at least seventy-five percent of the housing utilize front porches as approved under subsection A above.*

D. *Each residence shall have a separate delineated pedestrian connection from the front door of the unit to the sidewalk a minimum width of three feet. The pedestrian connection shall be separate from a driveway.*

Response: All homes associated with this proposal are shown to face the corresponding street. Setbacks are shown on the submitted site plan but compliance with the above standards are to be evaluated prior to issuance of a building permit. The applicant does not propose an exemption to any of the above standards.

17.21.060. *Architectural details.*

Residences shall contain architectural details. Each of the types of details listed below are worth one point unless otherwise noted. Residences must achieve the equivalent of five points worth of architectural details.

A. *Stonework detailing on columns or across foundation.*

B. *Brick or stonework covering more than ten percent of the front facade.*

C. *Wood, cladded wood, or fiberglass windows on all four elevations of the building (two points).*

D. *Decorative roofline elements (choose two): Roof brackets, rake board at edge of all roof and porch, eaves, roof eaves that extend at least eighteen inches.*

E. *Decorative siding elements (choose two): Barge board/frieze boards (minimum eight inches) under eaves, waterboard at foundation line and between floors (minimum six inches), corner board at all corners.*

F. *Decorative porch elements (choose one): Scrolls, brackets, or wrapped and finished porch railings and posts.*

G. *Decorative shingle design covering ten percent of the facade.*

H. *Exemption: Other architectural detailing may be approved by the community development director if they are constructed with quality material, have a high level of craftsmanship and are consistent with the architectural style of the residence.*

Response: Demonstrated compliance with the above architectural standards are to be evaluated prior to issuance of a building permit as the applicant is seeking land division approval. The applicant is not seeking an exemption to the above standards with this application.

17.21.070. *Approved siding materials.*

A. *Brick.*

B. *Basalt stone or basalt veneer.*

C. *Narrow horizontal wood or composite siding (five inches wide or less); wider siding will be considered where there is a historic precedent.*

D. *Board and batten siding (wood or composite).*

E. *Exemption: Other materials may be approved by the community development director if they are consistent with the quality of the approved siding materials and have historic precedence in Oregon City.*

Response: The applicant is not seeking an exemption with this application and the above criteria are to be evaluated prior to issuance of a building permit.

17.21.080. *Windows.*

A. *All windows on all elevations must be recessed at least two inches from the facade and incorporate window trim at least four inches in width. All elevations must provide an average of one window every fifteen feet of linear elevation on each floor of each elevation. If shutters are used, they shall be half of the window opening each such that the entire window opening is covered when they are closed.*

B. *Exemption: An exemption may be granted by the community development director from the window standard of subsection A above if the proposed windows provide for some amount recess depth and the side elevation is consistent architecturally with the front elevation of the house in window prominence.*

C. *All subdivisions shall have at least seventy-five percent of the housing meet the standards under subsection A above.*

Response: The applicant is not seeking an exemption with this application and the above criteria are to be evaluated prior to issuance of a building permit.

17.21.090. *Garages and accessory structures.*

A. *Garages must be detached, side entry or rear entry. For side entry garages: The garage area shall not be located in front of the living area. Accessory structures shall be designed consistent with the primary residence. Consistency of design includes the use of similar roofing, siding, and trim. For the purposes of this section, detached garages may be connected by a breezeway but consequently, will be subject to the setbacks of the underlying zone.*

B. *Exemption: An exemption may be granted by the community development director from the garage requirement of subsection A above if topographic or pre-existing lot layout prevents the construction of detached, rear entry or side entry garages on-site or if the applicant proposes a design that mitigates the impact a front entry attached garage has on the pedestrian environment. Any alternative attached garage design shall not project farther than the living area and shall be limited to garage door widths of ten feet or less.*

Response: The above criteria can be met with approval of this application. The above criteria are to be evaluated prior to issuance of a building permit.

Chapter 17.41 - *TREE PROTECTION, PRESERVATION, REMOVAL AND REPLANTING STANDARDS*

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.

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;*

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.*

Response: The applicant proposes to remove 1,584 trees from the site due to the extensive grading necessary to develop the property. Given the number of trees proposed to be removed, a portion is proposed to be replanted within open space tracts, but the majority of tree mitigation is to be via Option 4 above. Open space tracts are proposed to preserve trees and steep slope areas.

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.*

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.*

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*

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.

D. *Replacement Tree Planting Standards.*

1. *All replacement trees shall be either two-inch caliper deciduous or six-foot high conifer.*

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.*

3. *Due to their diminishing range in the region, Oregon white oak (Quercus garryana) trees, if removed, shall be replaced by 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.*

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.*

Response: Although the applicant proposes to replant some removed trees in open space tracts, the applicant seeks to apply Option 4 for tree mitigation.

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.*

B. *The standards for land divisions subject to this section shall apply in addition to the requirements of the city land division ordinance and zoning ordinance, provided that the minimum lot area, minimum average lot width, and minimum average lot depth standards of the base zone may be superseded in order to allow for a reduction of dimensional standards pursuant to OCMC 17.41.080.F below.*

C. *Prior to preliminary plat approval, the regulated tree or grove area shall be shown either as a separate tract or part of a larger tract that meets the requirements of subsection D of this section, which shall not be a part of any parcel used for construction of a dwelling. The size of the tract shall be the minimum necessary as recommended by a consulting arborist to adequately encompass the dripline of the tree, protect the critical root zone and ensure long term survival of the tree or grove.*

D. *Prior to final plat approval, ownership of the regulated tree or grove tract shall be identified to distinguish it from lots intended for sale. The tract may be identified as any one of the following:*

1. *Private open space held by the owner or a homeowner's association;*

2. *For residential land divisions, private open space 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;*

3. *Public open space where the tract has been dedicated to the city or other governmental unit; or*

4. *Any other ownership proposed by the owner and approved by the community development director.*

E. *Density Transfers Incentive for Tree Protection Tracts.*

1. *The purpose of this section is to allow dimensional adjustments within a regulated tree protection tract to be transferred outside said tract to the remainder of the site. Density shall not be transferred beyond the boundaries of the development site.*

2. *Development applications for subdivisions and minor partitions that request a density transfer shall:*

a. *Provide a map showing the net buildable area of the tree protection tract;*

b. *Provide calculations justifying the requested dimensional adjustments;*

c. *Demonstrate that the minimum lot size requirements can be met based on an average of all lots created, including the tree protection tract created pursuant to this section;*

d. *Demonstrate that, with the exception of the tree protection tract, no parcels have been created which would be unbuildable in terms of minimum yard setbacks;*

e. *Meet all other standards of the base zone except as modified in this section.*

3. *The area of land contained in a tree protection tract may be excluded from the calculations for determining compliance with minimum density requirements of the zoning code.*

F. *Permitted Modifications to Dimensional Standards.*

1. *An applicant proposing to protect trees in a dedicated tract may request, and the community development director, pursuant to a Type II procedure, may grant a reduction to, the lot size, width, depth, and setbacks of the underlying zone district in approving a subdivision or partition if necessary to retain a regulated tree or grove in a tract, as long as the calculation of average lot size, including tree protection tracts, meet the minimum lot size for the zone. The applicant may choose to make the adjustments over as many lots as required. For example, the lot reduction could be spread across all the remaining lots in the proposed*

subdivision or partition or could be applied to only those needed to incorporate the area of the tree tract.

Response: Although the applicant proposes to replant some removed trees in open space tracts, the applicant seeks to apply Option 4 for tree mitigation.

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.

A. *Permitted Adjustments.*

1. *The community development director, pursuant to a Type II procedure, may grant an adjustment to the side, front and rear yard setback standards by up to fifty percent if necessary to retain a regulated tree or grove through a restrictive covenant pursuant to this section. In no case may the side yard setback be reduced to less than three feet. The adjustment shall be the minimum necessary to accomplish preservation of trees on the lot and shall not conflict with other conditions imposed on the property.*

2. *The city engineer may grant an adjustment to street standards, pursuant to adopted public works standards, in order to preserve a tree. This may include flexibility to redesign sidewalk and planter strip sizes and locations and allow placement of sidewalks and planter strips in an easement within private lots.*

3. *The community development director, pursuant to a Type II procedure, may allow other adjustments in order to preserve any healthy tree that cannot be moved due to its size, but will contribute to the landscape character of the area and will not present a foreseeable hazard if retained.*

Response: Although the applicant proposes to replant some removed trees in open space tracts, the applicant seeks to apply Option 4 for tree mitigation.

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 one hundred fifty percent of the cost of materials, transportation and planting.

Response: Although the applicant proposes to replant some removed trees in open space tracts, the applicant seeks to apply Option 4 for tree mitigation.

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.*

Response: A geotechnical report is included with this application and a tentative grading plan has been submitted (see sheet 8) in accordance with the recommendations of the project's Geotechnical Engineer. The applicant proposes open space tracts in the location of hazardous slopes as identified by the City. Streets such as Holly Lane are shown to be developed through steep slopes although as demonstrated in the geotechnical report, the construction of the public street will enhance stabilization of the slope. The above criteria are met.

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.

Response: The applicant does not propose to begin construction/site development activities until such time that an approved permit is in hand.

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.*

Response: The above criteria are understood and acknowledged by the applicant.

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.

Response: The above exemptions are understood and acknowledged by the applicant.

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.*

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.*

Response: A geotechnical report is included with this application and a tentative grading plan has been submitted (see sheet 8) in accordance with the recommendations of the project's Geotechnical Engineer. The above criteria are addressed in the submitted geotechnical report and the applicant acknowledges the review procedures.

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.*

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.

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.*

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.*

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.

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;*

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.*

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.*

Response: A geotechnical report is included with this application and a tentative grading plan has been submitted (see sheet 8) in accordance with the recommendations of the project's Geotechnical Engineer. Streets such as Holly Lane are shown to be developed through steep slopes although as demonstrated in the geotechnical report, the construction of the public street will enhance stabilization of the slope. See submitted geotechnical report to demonstrate compliance with the above standards.

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.*

Response: The applicant proposed 8 flag lots (7 with shared driveways, 1 without), but no arterials are within the project boundaries. Circulation is shown to satisfy emergency service access. No other shared driveways are proposed with this application.

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.

Response: A composite utility plan has been included with this application (See sheet 7). All new utilities are shown to be placed underground. Existing overhead utilities are shown to be preserved within proposed tracts.

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.

Response: A Stormwater and drainage report was included with this application to address the above criteria. A water quality facility is designed and located just outside of the development area within an easement. The facility has been designed to meet all applicable standards and has capacity for all impervious surface area runoff associated with this proposal. The report is signed and stamped by a licensed engineer and can be found in Exhibit D. The stormwater and drainage report complies with the recommendations from the findings within the submitted geotechnical report. Upon approval of this application, the project engineer (civil) and geotechnical engineer will work together to certify that the water quality facility was constructed per the approved plans which takes into account recommendations from the Geotech report.

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.*

Response: Earthwork will be required to construct the proposed subdivision. Consequently, this chapter applies to the proposed subdivision as it may cause visible or measurable erosion.

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.

Response: The applicant acknowledges that an erosion and sediment control permit must be obtained prior to construction efforts that may cause visible or measurable erosion.

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.).*

Response: Tentative grading and erosion control plans have been included in the attached tentative plan set.

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.*

Response: The applicant acknowledges the requirements associated with implementing an erosion control plan.

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.

Response: Compliance with this standard will occur after the manager has approved plans and prior to construction or grading.

Chapter 17.49 - *NATURAL RESOURCE 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.

17.49.015. *Natural resource 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.

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.

Response: Portions of the subject property are located within the natural resources overlay district. Therefore, the standards of this section are applicable to the proposed development.

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.*

Response: The proposed development includes the construction of public utilities within the natural resources overlay district. As such, NROD boundary is shown on the attached tentative plan sheet. The applicant will not contest the NROD boundary illustrated on existing city maps.

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.

Response: At this time, no wetlands meeting the definition of a "locally significant wetland" have been identified on the subject property. Consequently, the NROD boundaries as presented will not be expanded to include any additional area.

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.

Response: Completion of the land use process will ensure compliance with this subsection.

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.

Response: The emergency provisions of this subsection are not applicable at the time of this application.

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.*

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.*

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.*

Response: The applicant acknowledges and understands these requirements.

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.*

Response: All proposed impacts in the NROD boundaries will be associated with an approved development activity. Therefore, no prohibited uses are proposed.

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 bankfull 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.*

Response: The proposed development is classified as a use allowed under prescribed conditions detailed in the following subsection. Therefore, a NROD permit will be required.

71.49.090. *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.*

Response: The proposed land division is not exempted by OCMC 17.49.080 and is subject to the applicable standards OCMC 17.49.160. The project is classified as a use allowed under prescribed conditions.

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.*

Response: While the land division and utility line components of this project are exempt from this section, the stormwater management facility impacts are required to comply with these standards.

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.*

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.*

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.*

Response: As indicated by the attached preliminary plan set, the NROD boundaries extend well past the buffer widths described in this section. Consequently, no additional area must be included within the NROD boundaries.

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.*

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: (1) Multiplying the total square footage of the lot by .25; or (2) 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 less than or equal to zero, 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 one thousand five hundred square foot disturbance within the NROD area may be allowed.*

Response: The proposed development does not include residential development on highly constrained lots of record. Therefore, this section is not applicable.

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.

Response: The proposed development does not include the alteration and/or additions to existing structures on the subject property. Therefore, this section is not applicable to this project.

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.*

Response: The proposed development includes construction of a sanitary sewer line bridged over a ravine located within the NROD boundaries but outside of the public right-of-way. Therefore, this project will be processed as a Type III permit pursuant to OCMC 17.49.200. The applicant will gather all state and federal permits associated with any impacts to

protected natural features prior to construction. Replacement of trees and mitigation for impacts will occur in accordance with the applicable OCMC standards of each action. Therefore, this section is met.

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.*

Response: The proposed development does not include construction of vehicular or pedestrian paths and roads within the NROD boundaries. Therefore, this section is not applicable to this project.

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.*

Response: The proposed development includes the construction of stormwater management facilities within the NROD boundaries and will impact more than 1,000 square feet of the NROD. Consequently, the proposed development will be reviewed and processed as a Type III application. The stormwater management system has been designed in accordance with OCMC 13.12 as detailed by the attached stormwater management report. Final landscaping for the facility will be determined during Public Works' review of the construction documents. As addressed later in this application narrative, mitigation will be provided in accordance with the applicable section.

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.*

Response: The proposed development does not include the creation of lots for existing dwellings. All proposed lots will be vacant and subject to future construction. 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 exact method of accomplishing this preservation will be determined at a future date and time.

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.

Response: The proposed development does not include the construction of trails within the NROD boundaries. Therefore, this section is not applicable.

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.*

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.*

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.*

D. *Invasive and nuisance vegetation shall be removed within the 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.*

   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.*

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.*

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.*

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.*

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.*

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.*

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.*

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.*

Response: The applicant will provide mitigation in accordance with the standards of this subsection. A planting and monitoring plan will be provided alongside construction documents. The required easements will be shown on the final plat, and the financial guarantee will be provided after planting has occurred. Compliance with these standards will be demonstrated at a future date and time.

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:*

B. *The proposed mitigation shall occur at a minimum two-to-one ratio of mitigation area to proposed disturbance area;*

C. *The proposed mitigation shall result in a significant improvement to good existing condition as determined by a qualified environmental professional;*

D. *There shall be no detrimental impact on resources and functional values in the area designated to be left undisturbed;*

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;*

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.*

Response: The applicant does not request alternative 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;*

Response: The proposed project is capable of complying with the applicable NROD development standards; however, because a portion of the sanitary sewer system will be located outside of public right-of-way but inside NROD, this subsection and criteria are being applied to this element of the project. The location of utility systems is determined by on-site topography and proximity to existing infrastructure. The nearest existing downstream sanitary sewer main and manhole is located in Oak Valley Drive right-of-way (west of the subject property). While other properties with lower elevations are located south of the proposed development, none contain public sanitary sewer infrastructure. As a result, a sanitary sewer connection must be made to the Oak Valley Drive system, and connecting to this system requires crossing a ravine protected by the NROD. This ravine and accompanying drastic changes in elevation are why no public right-of-way or residential lots are proposed closer to this nearby infrastructure. The attached preliminary plan set illustrates the proposed alignment for a sanitary sewer connection. This main would be

suspended by a bridge to limit the amount of earthwork inside and impacts to the NROD. Due to the limited potential connection points, there are no other feasible alternatives for the proposed sanitary sewer system. Therefore, this criterion is satisfied.

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;*

Response: As mentioned in the previous standard and demonstrated by this narrative, the proposed development is capable of meeting the environmental standards of this chapter. It is due to the utility classification that these criteria must be addressed. The proposed sanitary sewer line will have very few impacts on the function of the NROD it will cross. As a suspended line, it will not impede the natural drainage way in the ravine or limit the movement of animals through the area. Additionally, because the line will be suspended, it will only require the native vegetative near the footing to be removed rather than the entire distance of the line. Therefore, this criterion is satisfied.

C. *The proposed use or activity proposes the minimum intrusion into the NROD area that is necessary to meet development objectives;*

Response: The proposed use proposed the minimum intrusion necessary by limiting permanent impacts to the footing associated with the proposed sanitary sewer bridge. This is the greatest possible extent to which the applicant can limit the impact of this utility connection while still accomplishing the development objectives. Therefore, this criterion is satisfied.

D. *Fish and wildlife passage will not be impeded;*

Response: There are no identified fish or wildlife passages on the subject property. Therefore, this criterion is not applicable.

E. *With the exception of the standard(s) subject to the adjustment request, all other applicable NROD standards can be met; and*

Response: As demonstrated by this application narrative, the proposed project complies with all standards of the NROD aside from the construction of new utility lines above the resources protected by the NROD. Therefore, this criterion is satisfied.

F. *The applicant has proposed adequate mitigation to offset the impact of the adjustment.*

Response: A detailed mitigation plan will be provided alongside construction documents. This criterion will be met at a future date and time.

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.

Response: The proposed development was elevated to a Type III procedure.

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.*

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.*

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.*

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.*

Response: The attached preliminary plan set includes basic information including the on-site features and topography, existing improvements, NROD boundary, and conceptual grading and erosion control. Final construction management plans and mitigation plans will be provided during the Public Works' plan review process. While additional information will be provided in the future, to the extent reasonably practicable at this time, these standards have been met.

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.*

Response: A mitigation report detailing the information required by this section will be provided prior to approval of construction documents. Compliance with these standards will be demonstrated at a future date and time.

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;*

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.*

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.*

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.*

E. *The applicant may choose to make the adjustments over as many lots as required.*

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.*

I. *All other applicable development standards, including setbacks, building heights, and maximum lot coverage shall continue to apply when a density transfer occurs.*

Response: The applicant is not requesting a density transfer. Therefore, this section is not applicable.

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.

17.19.255. *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 man-made 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. No. 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 subsections 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.*

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.*

Response: The applicant is not requesting a Type I or Type II verification. Therefore, these sections are not applicable.

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;*

B. *A significant improvement of at least one functional value listed in OCMC 17.49.10, as determined by a qualified environmental professional; and*

C. *There will be minimal loss of resources and functional values during the remediation action until it is fully established.*

Response: The applicant acknowledges and understands this section.

Chapter 17.54 - *SUPPLEMENTAL ZONING REGULATIONS AND EXCEPTIONS*

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.*

Response: Aside from the retaining wall needed to support the 3/4th street improvement for Pioneer Drive, the proposed subdivision does not include the construction of fences, hedges, or walls within public right-of-way. Retaining walls will be constructed alongside earthwork as indicated by the tentative grading and erosion control plans incorporated into the attached plan set. Please refer to those sheets for an illustration of how those walls comply with the standards outlined in this section.

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.*

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.*

Response: Aside from the retaining wall needed to support the 3/4th street improvement for Pioneer Drive, the proposed subdivision does not include the construction of fences, hedges, or walls within public right-of-way.

Chapter 17.65 - *MASTER PLANS AND PLANNED UNIT DEVELOPMENTS*

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.*

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.

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.*

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.*

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.*

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.*

Response: The applicant proposes a standard subdivision application and not a master planned community.

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.*

Response: The applicant proposes a standard subdivision and not a master planned community. This application does not include a detailed development plan.

VIII. Conclusion

This application narrative and accompanying plan set demonstrate that all applicable provisions of the Oregon City Municipal Code are satisfied.

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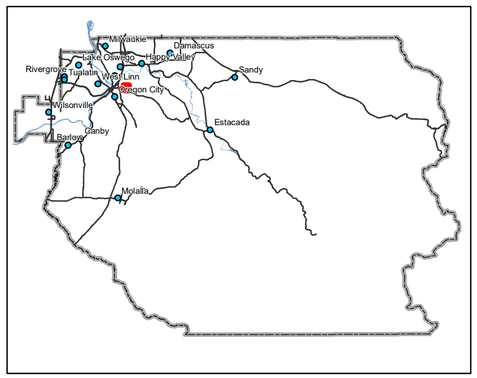
S.E.1/4 SEC.28 T.2S. R.2E. W.M.
CLACKAMAS COUNTY
1" = 200'

D. L. C.
GEORGE ABERNETHY NO. 58
EZRA FISHER NO. 44

Cancelled Taxlots
1390
180
501
991
1490
1480
1470

R8
R10
R6MH
FU10
RRFF5
FF10
62-102
62-92
62-31
62-14
62-83
62-03
SEE MAP 2 2E 28A
SEE MAP 2 2E 28CA
SEE MAP 2 2E 27C
SEE MAP 2 2E 28D
400 9.00Ac.
303 1.77Ac.
200 5.18Ac. 16530
3701 6.49Ac.
500 10.00Ac.
300 3.10Ac. 16644
301 1.44Ac.
100 14.07Ac.
190 11.00Ac.
LOT 3 23.45
302 0.15Ac.
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3700 6.88Ac. 16472
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1100 0.50 Ac. 14580
1200 0.50 Ac. 14604
1390 1.55 Ac. 14630
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700 0.86 Ac. 14514
1000 4.20 Ac.
800 1.40 Ac. 14516
1380 0.52Ac.
901 8.50 AC. 14555
801 1.75 Ac.
900 0.56 Ac.
990 1.94Ac. 14572
1500 7.19 Ac. 16602
PARCEL 1 (8.50Ac.)
PARCEL 2 (2.50 AC.)
P.P. 1997 - 145
SN 3858
SN 21422
SN 6460
D.L.C. LINE
1/4 COR.
16500
16700
1400
LIVESAY ROAD NO. 432
REDLAND RD.
PUBLIC RD.
PGE ESMT.

- Parcel Boundary
- Private Road ROW
- Historical Boundary
- Railroad Centerline
- TaxCodeLines
- Map Index
- WaterLines
- Land Use Zoning
- Plats
- Water
- Corner
- Section Corner
- 1/16th Line
- Govt Lot Line
- DLC Line
- Meander Line
- PLSS Section Line
- Historic Corridor 40'
- Historic Corridor 20'



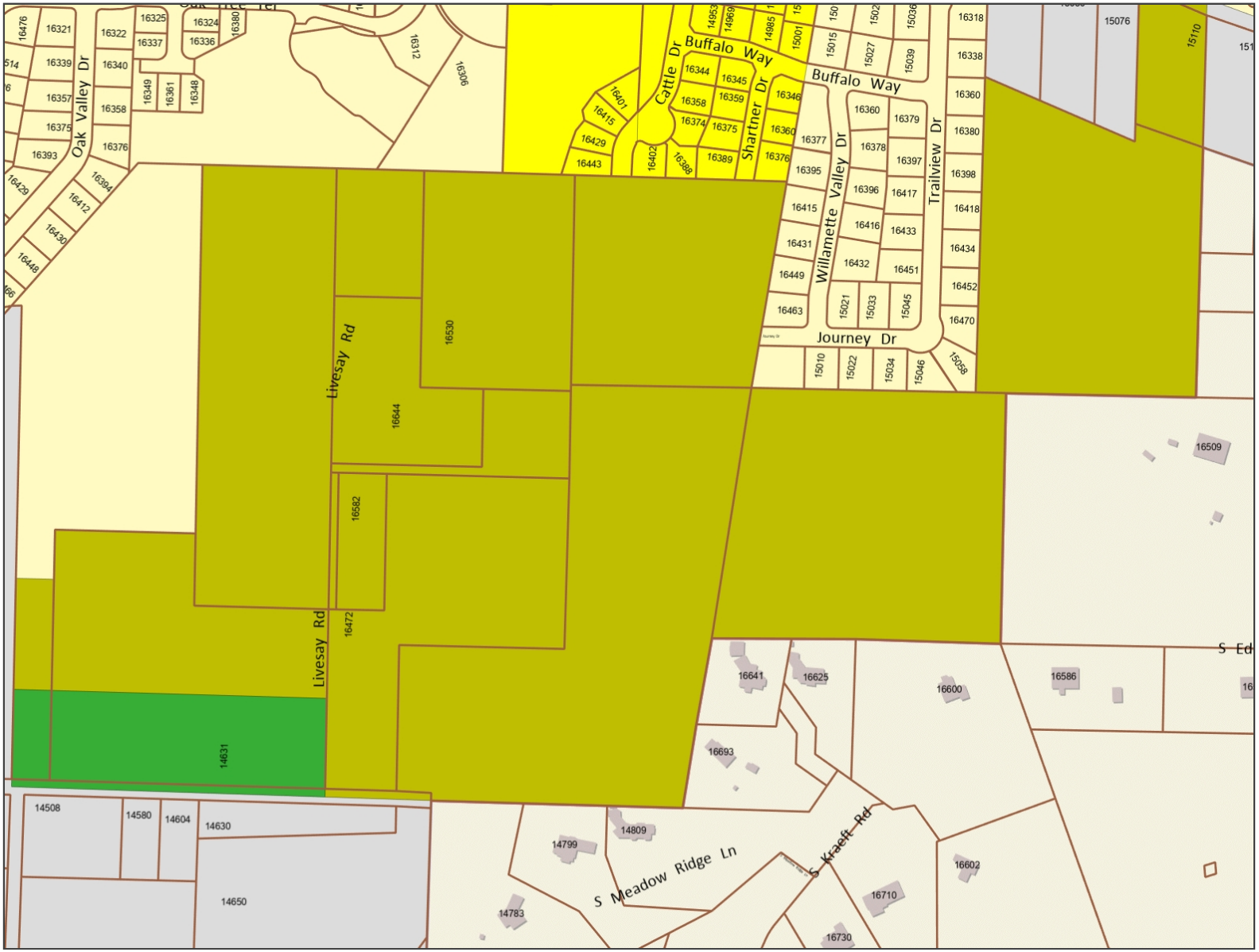
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9/22/2021

2 2 E 28D


Frank Ave
Better You Coaching
Shubingrad

Oregon City GIS Map

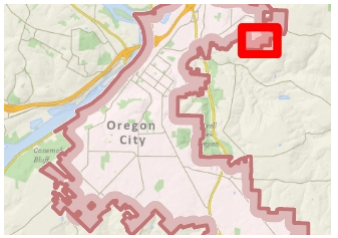


Legend

- Street Names
- Taxlots
- Unimproved ROW
- Zoning
  - R-10 - Single Family Dwelling
  - R-8 - Single Family Dwelling
  - R-6 - Single Family Dwelling
  - R-5 - Single Family Dwelling
  - R-3.5 - Medium Density Residential
  - R-2 - Multi-Family Dwelling
  - C - General Commercial
  - MUC-2 - Mixed Use Corridor 2
  - MUC-1 - Mixed Use Corridor 1
  - NC - Neighborhood Commercial
  - HC - Historic Commercial
  - WFDD - Willamette Falls Downtown Di
  - MUD - Mixed Use Downtown
  - MUE - Mixed Use Employment
  - GI - General Industrial

Notes

Overview Map



0 400 800 Feet

1: 4,800

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Map created 6/25/2024

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PO Box 3040
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2 2 E 28D

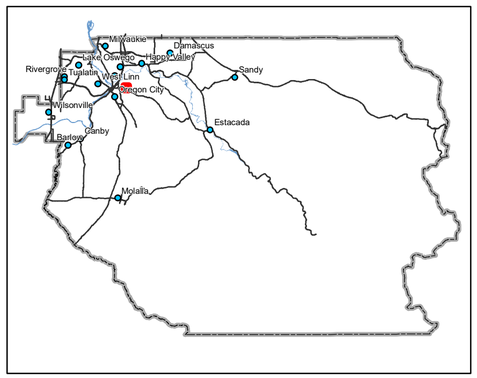
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SEE MAP 2 2E 28D

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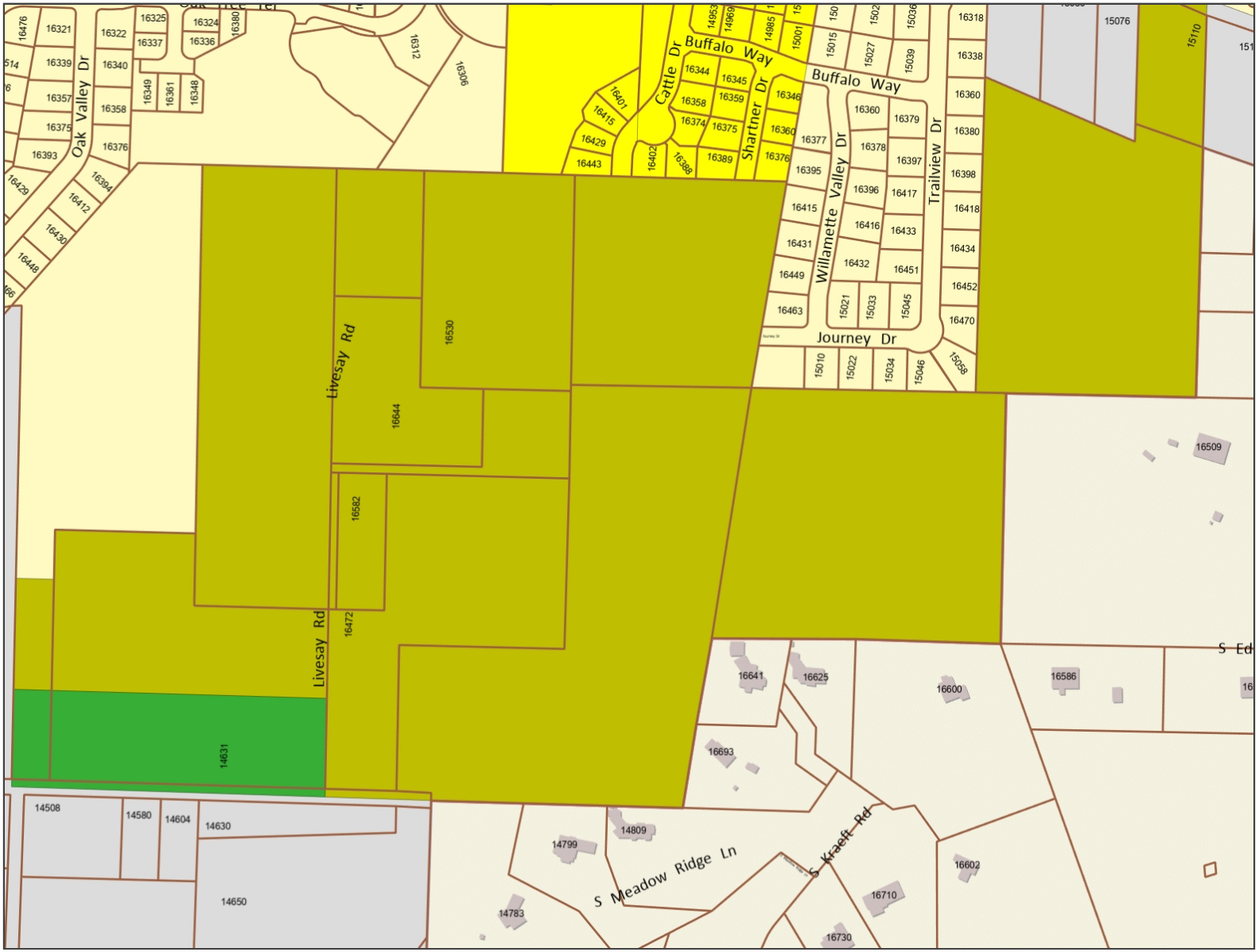
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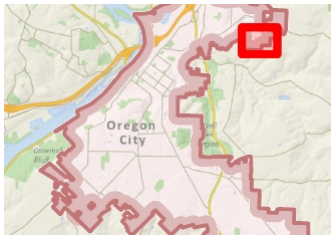


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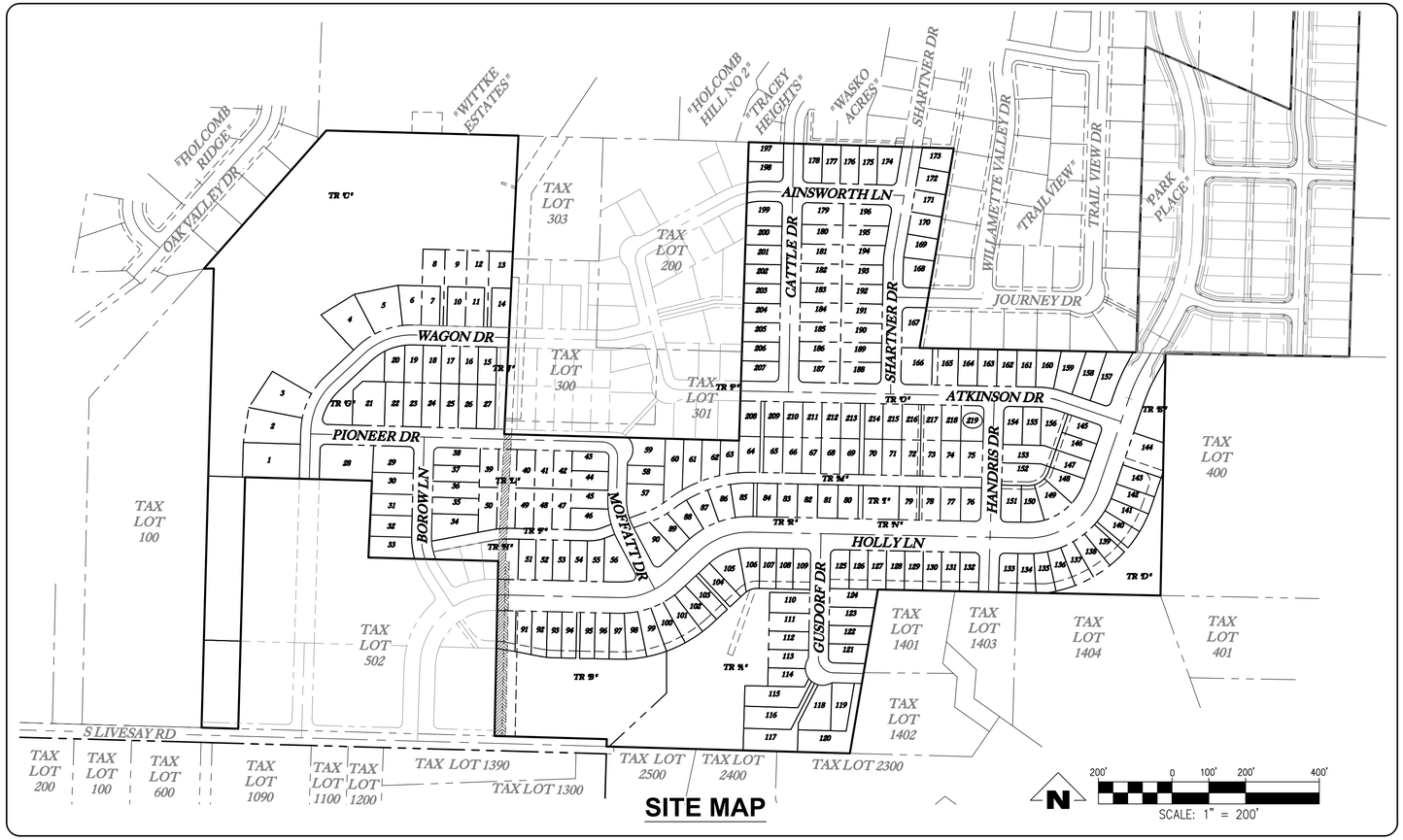
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PARK PLACE II

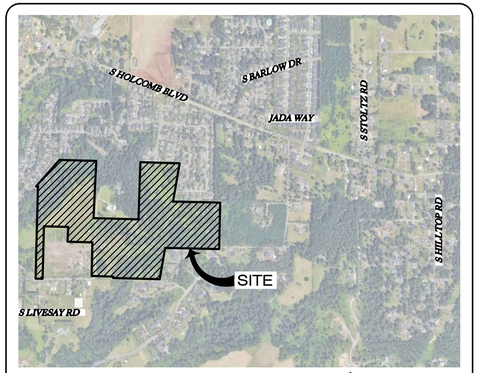
219 - LOT SUBDIVISION
S.E. 1/4 SEC. 28 T.2S R.2E. W.M.
TAX MAP 22E28D TAX LOTS 100, 190, 302, 400, 500, 3700, AND 3701
OREGON CITY, OREGON

LEGEND

- BOUNDARY LINE
- EASEMENT
- EXISTING 1' CONTOUR LINE
- EXISTING 5' CONTOUR LINE
- EXISTING CROWN (CENTER LINE OF ROAD)
- EXISTING TREE
- EXISTING STORM DRAIN MANHOLE
- EXISTING SANITARY SEWER MANHOLE
- EXISTING CATCH BASIN
- EXISTING CLEANOUT
- EXISTING WATER METER
- EXISTING WATER VALVE
- EXISTING FIRE HYDRANT
- EXISTING MAIL BOX
- EXISTING UTILITY POLE
- EXISTING GUY WIRE
- EXISTING LIGHT
- EXISTING COMMUNICATION PEDESTAL
- EXISTING ELECTRICAL METER
- EXISTING JUNCTION BOX
- EXISTING BOLLARD
- EXISTING DOWNSPOUT
- EXISTING WETLAND FLAG
- EXISTING STORM LINE
- EXISTING SANITARY SEWER LINE
- EXISTING WATER LINE
- EXISTING OVERHEAD POWER LINE
- EXISTING GAS LINE
- EXISTING DITCH LINE
- EXISTING WETLAND LINE
- EXISTING HEDGE LINE
- EXISTING WOODEN FENCE
- EXISTING RAIL FENCE
- EXISTING CHAIN LINK FENCE
- PROPOSED STORM LINE
- PROPOSED SANITARY LINE
- PROPOSED WATERLINE
- PROPOSED STORM LATERAL
- PROPOSED SANITARY LATERAL
- PROPOSED SINGLE WATER METER
- PROPOSED STORM MANHOLE
- PROPOSED CATCH BASIN/AREA DRAIN
- PROPOSED SANITARY MANHOLE
- PROPOSED BLOWOFF
- PROPOSED WATER VALVE
- PROPOSED 1' CONTOUR LINE
- PROPOSED 5' CONTOUR LINE
- PROPOSED SEDIMENT FENCE



SITE MAP



VICINITY MAP
N.T.S

DRAWING INDEX

SHEET #	SHEET TITLE
1.0	COVER SHEET AND INDEX OF DRAWINGS
2.0	EXISTING CONDITIONS AND DEMOLITION PLAN
2.1	EXISTING CONDITIONS AND DEMOLITION PLAN SW
2.2	EXISTING CONDITIONS AND DEMOLITION PLAN SE
2.3	EXISTING CONDITIONS AND DEMOLITION PLAN NE
2.4	EXISTING CONDITIONS AND DEMOLITION PLAN NW
3.0	COMPOSITE TREE REMOVAL-MITIGATION
3.1	TREE REMOVAL-MITIGATION SW
3.2	TREE REMOVAL-MITIGATION SE
3.3	TREE REMOVAL-MITIGATION NE
3.4	TREE REMOVAL-MITIGATION NW
3.5	TREE REMOVAL TABLE 01
3.6	TREE REMOVAL TABLE 02
3.7	TREE REMOVAL TABLE 03
3.8	TREE REMOVAL TABLE 04
4.0	TYPICAL STREET SECTIONS
5.0	PRELIMINARY COMPOSITE PLAT
5.1	PRELIMINARY PLAT SW
5.2	PRELIMINARY PLAT SE
5.3	PRELIMINARY PLAT NE
5.4	PRELIMINARY PLAT NW
6.0	PRELIMINARY COMPOSITE SITE PLAN
6.1	PRELIMINARY SITE PLAN SW
6.2	PRELIMINARY SITE PLAN SE
6.3	PRELIMINARY SITE PLAN NE
6.4	PRELIMINARY SITE PLAN NW
7.0	PRELIMINARY COMPOSITE UTILITY PLAN
7.1	PRELIMINARY UTILITY PLAN SW
7.2	PRELIMINARY UTILITY PLAN SE
7.3	PRELIMINARY UTILITY PLAN NE
7.4	PRELIMINARY UTILITY PLAN NW
8.0	TENTATIVE GRADING AND EROSION CONTROL PLAN
8.1	TENTATIVE GRADING AND EROSION CONTROL PLAN SW
8.2	TENTATIVE GRADING AND EROSION CONTROL PLAN SE
8.3	TENTATIVE GRADING AND EROSION CONTROL PLAN NE
8.4	TENTATIVE GRADING AND EROSION CONTROL PLAN NW
9.0	WATER QUALITY FACILITY PLAN
9.1	WATER QUALITY FACILITY DETAILS
10.0	TEMPORARY ACCESS PLAN

PROJECT CONTACTS

OWNER:
ICON CONSTRUCTION & DEVELOPMENT
1969 WILLAMETTE FALLS DR, SUITE 260
WEST LINN, OREGON 97068
CONTACT: HARLAN BOROW
(503) 657-0406 (P)

SURVEYOR:
AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
TUALATIN, OREGON 97062
CONTACT: BENJAMIN R HUFF
(503) 563-6151 (P)

GEOTECHNICAL ENGINEER:
GEOPACIFIC
14835 SW 72ND AVENUE
PORTLAND, OREGON 97224
CONTACT: BETH K RAPP, C.E.G.
(503) 598-8445 (P)

CIVIL ENGINEER:
EMERIO DESIGN, LLC
6445 SW FALLBROOK PLACE, SUITE 100
BEAVERTON, OR 97008
CONTACT: DANIEL BOULTINGHOUSE , P.E.
(503) 746-8812 (P)

SITE DATA

AREA:	59.54 AC
ZONING:	R-5 AND R-10
PROPOSED DENSITY:	
R-5:	7.45 DU/AC
R-10:	4.00 DU/AC
NO. OF LOTS:	219

ENGINEER'S NOTE TO CONTRACTOR

THE CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR THE JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING THE SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD THE OWNER AND THE ENGINEER HARMLESS FROM ANY AND ALL LIABILITY WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPT FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR THE ENGINEER.

CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS AND SHALL REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.

VERTICAL DATUM

THE VERTICAL DATUM OF THE PROVIDED SURVEY ARE BASED ON THE NATIONAL GEODETIC SURVEY BENCHMARK DESIGNATION V 723 (PID RD1497) LOCATED ATHE THE SE CORNER OF HWY 99E AND HWY I-205. ELEVATION = 6248 FEET (NAVD 88)

THIS DESIGN COMPLIES WITH ORS 92.044 (7) IN THAT NO UTILITY INFRASTRUCTURE IS DESIGNED TO BE WITHIN ONE (1) FOOT OF A SURVEY MONUMENT LOCATION SHOWN ON A SUBDIVISION OR PARTITION PLAT. NO DESIGN EXCEPTIONS NOT FINAL FIELD LOCATION CHANGES SHALL BE PERMITTED IF THAT CHANGE WOULD CAUSE ANY UTILITY INFRASTRUCTURE TO BE PLACED WITHIN THE PROHIBITED AREA.

NOTICE TO EXCAVATORS:
ATTENTION: OREGON LAW REQUIRES YOU TO FOLLOW RULES ADOPTED BY THE OREGON UTILITY NOTIFICATION CENTER. THOSE RULES ARE SET FORTH IN OAR 952-001-0010 THROUGH OAR 952-001-0090. YOU MAY OBTAIN COPIES OF THE RULES BY CALLING THE CENTER.
(NOTE: THE TELEPHONE NUMBER FOR THE OREGON UTILITY NOTIFICATION CENTER IS (503)-232-1987).

POTENTIAL UNDERGROUND FACILITY OWNERS

Dig Safely.

Call the Oregon One-Call Center
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THESE PLANS ARE FULL SIZED ON 22"X34" PAPER, IF 11"X17" SCALE ACCORDINGLY

PARK PLACE II
A SUBDIVISION OF
TAX LOT 2 2E 28D 100, 190, 302, 400, 500, 502, 3700
CITY OF OREGON CITY, OREGON

COVER SHEET AND INDEX OF DRAWINGS

REVISIONS

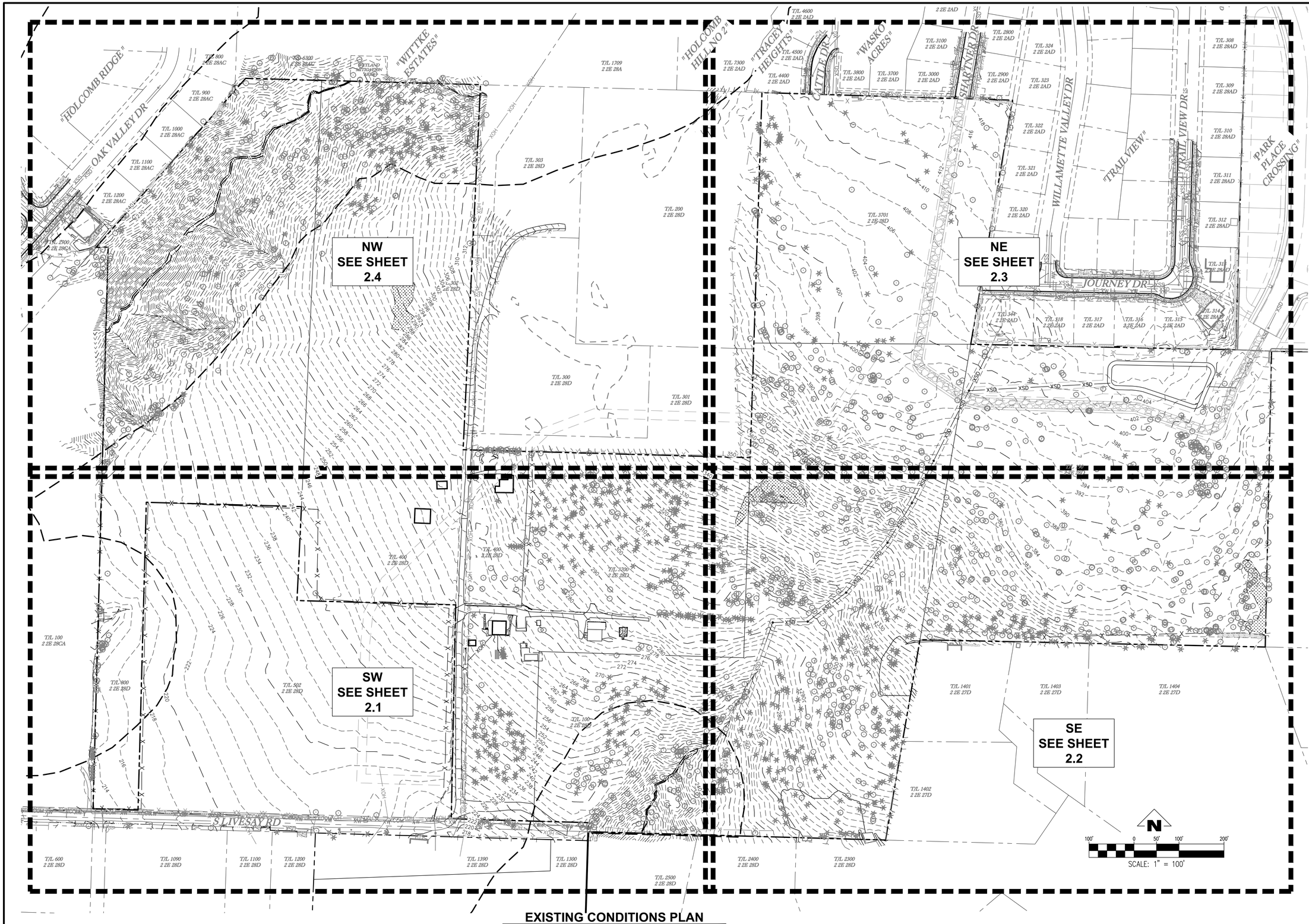
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OREGON
JULY 15, 2007
DANIEL BOULTINGHOUSE
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WHEN PLOTTED FOR REVIEW PURPOSES ONLY
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SHEET 1.0 OF 39

FILE:P:\0082-012 Park Place II\dwg\plan\0082-012_01pcvr, Layout: 1.0 COVER SHEET AND INDEX OF DRAWINGS, Plot Date: 9/17/2024 10:06 AM, by: David Burnett



EXISTING CONDITIONS PLAN

SCALE: 1" = 100'

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CITY OF OREGON CITY, OREGON

EXISTING CONDITIONS AND DEMOLITION PLAN

REVISIONS

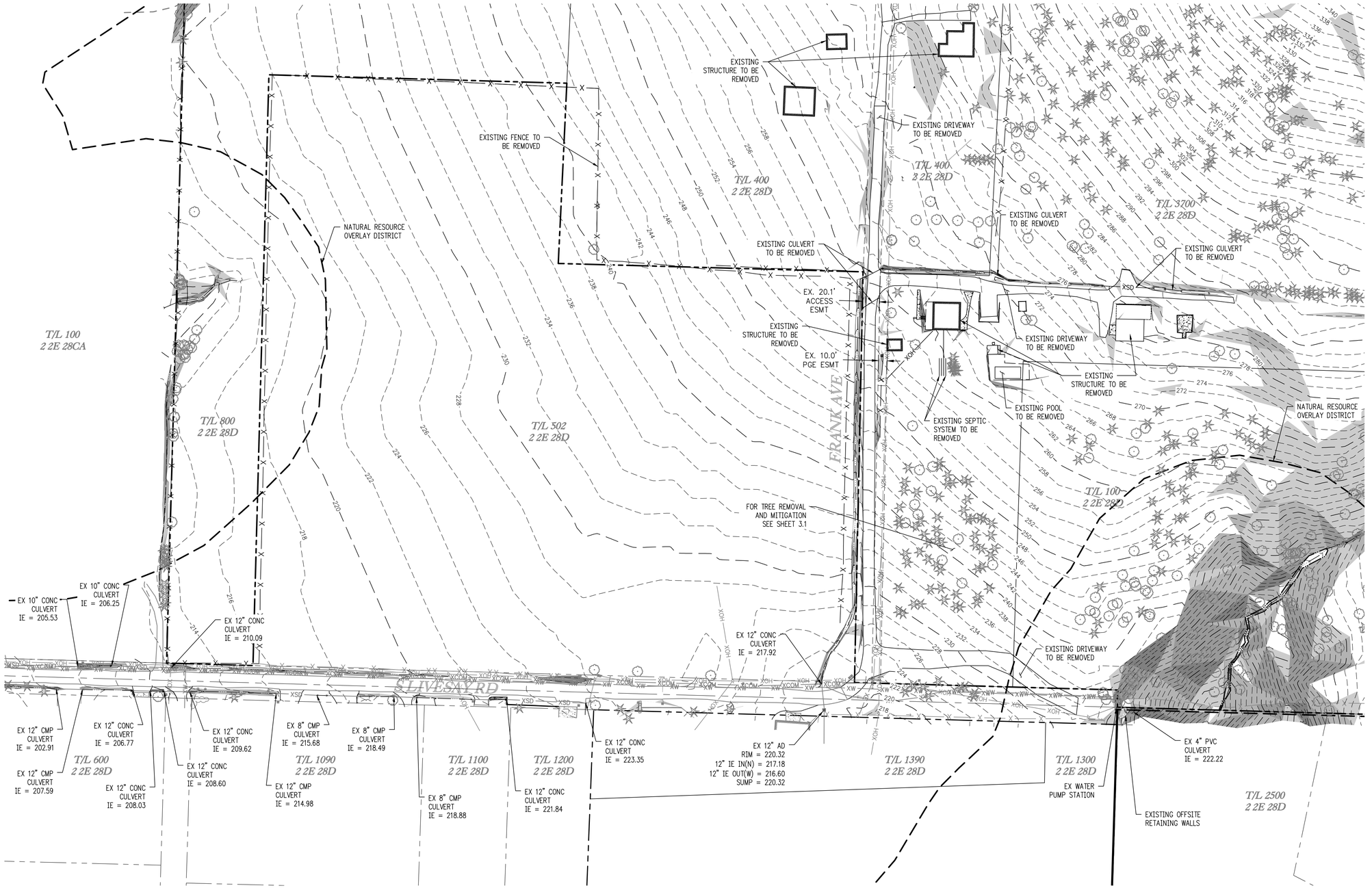
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JULY 14, 2006
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SHEET
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39

FILE:P:\0082-012 Park Place II\Dwg\Plan\0082-012_02.dgnxref, Layout: 2.0 EXISTING CONDITIONS AND DEMOLITION PLAN, Plot Date: 7/2/2025 8:34 AM, by: Daniel Burnett



EXISTING CONDITIONS PLAN - SW

SCALE: 1" = 60'

EXISTING GRADE SLOPES TABLE				
NUMBER	MINIMUM SLOPE	MAXIMUM SLOPE	AREA (SF)	COLOR
1	0.00%	10.00%	1640799.98	
2	10.00%	20.00%	1135301.03	
3	20.00%	30.00%	310184.56	
4	30.00%	40.00%	148822.69	
5	40.00%	50.00%	89296.40	
6	50.00%	Vertical	90606.06	

PARK PLACE II
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EXISTING CONDITIONS AND DEMOLITION PLAN SW

REVISIONS

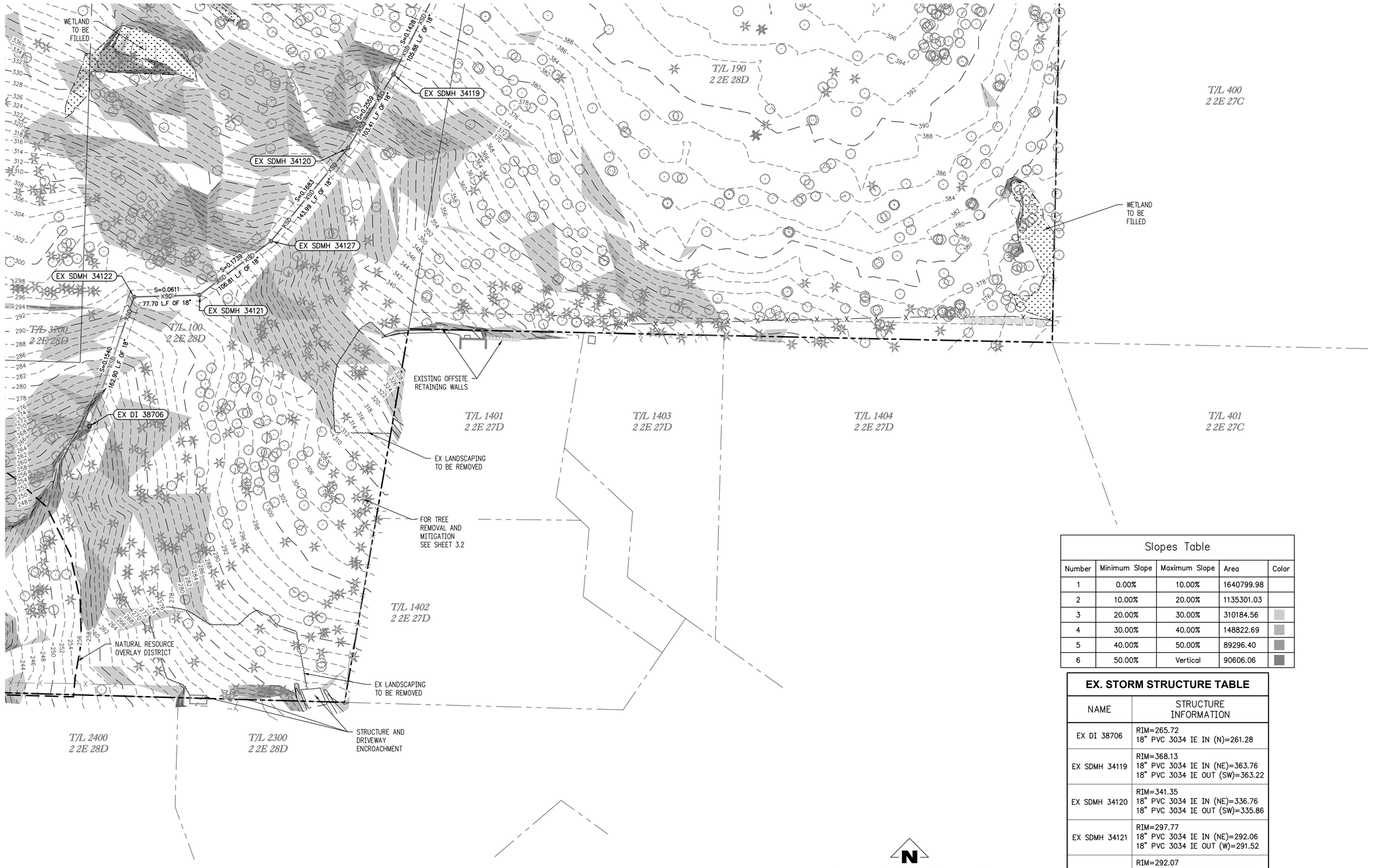
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SHEET 2.1 OF 39

FILE:P:\0082-012 Park Place II\dwg\plan\0082-012_02.1pexst, Layout: 2.1 EXISTING CONDITIONS AND DEMOLITION PLAN SW, Plot Date: 7/2/2025 8:40 AM, by: David Burnett



EXISTING CONDITIONS PLAN - SE

SCALE: 1" = 60'

N

60' 0 30' 60' 120'

SCALE: 1" = 60'

Slopes Table				
Number	Minimum Slope	Maximum Slope	Area	Color
1	0.00%	10.00%	1640799.98	
2	10.00%	20.00%	1135301.03	
3	20.00%	30.00%	310184.56	
4	30.00%	40.00%	148822.69	
5	40.00%	50.00%	89296.40	
6	50.00%	Vertical	90606.06	

EX. STORM STRUCTURE TABLE

NAME	STRUCTURE INFORMATION
EX DI 38706	RIM=265.72 18" PVC 3034 IE IN (N)=261.28
EX SDMH 34119	RIM=368.13 18" PVC 3034 IE IN (NE)=363.76 18" PVC 3034 IE OUT (SW)=363.22
EX SDMH 34120	RIM=341.35 18" PVC 3034 IE IN (NE)=336.76 18" PVC 3034 IE OUT (SW)=335.86
EX SDMH 34121	RIM=297.77 18" PVC 3034 IE IN (NE)=292.06 18" PVC 3034 IE OUT (W)=291.52
EX SDMH 34122	RIM=292.07 18" PVC 3034 IE IN (E)=286.77 18" PVC 3034 IE OUT (S)=286.37
EX SDMH 34127	RIM=316.00 18" PVC 3034 IE IN (NE)=311.63 18" PVC 3034 IE OUT (SW)=310.63

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EXISTING CONDITIONS AND DEMOLITION PLAN SE

REVISIONS

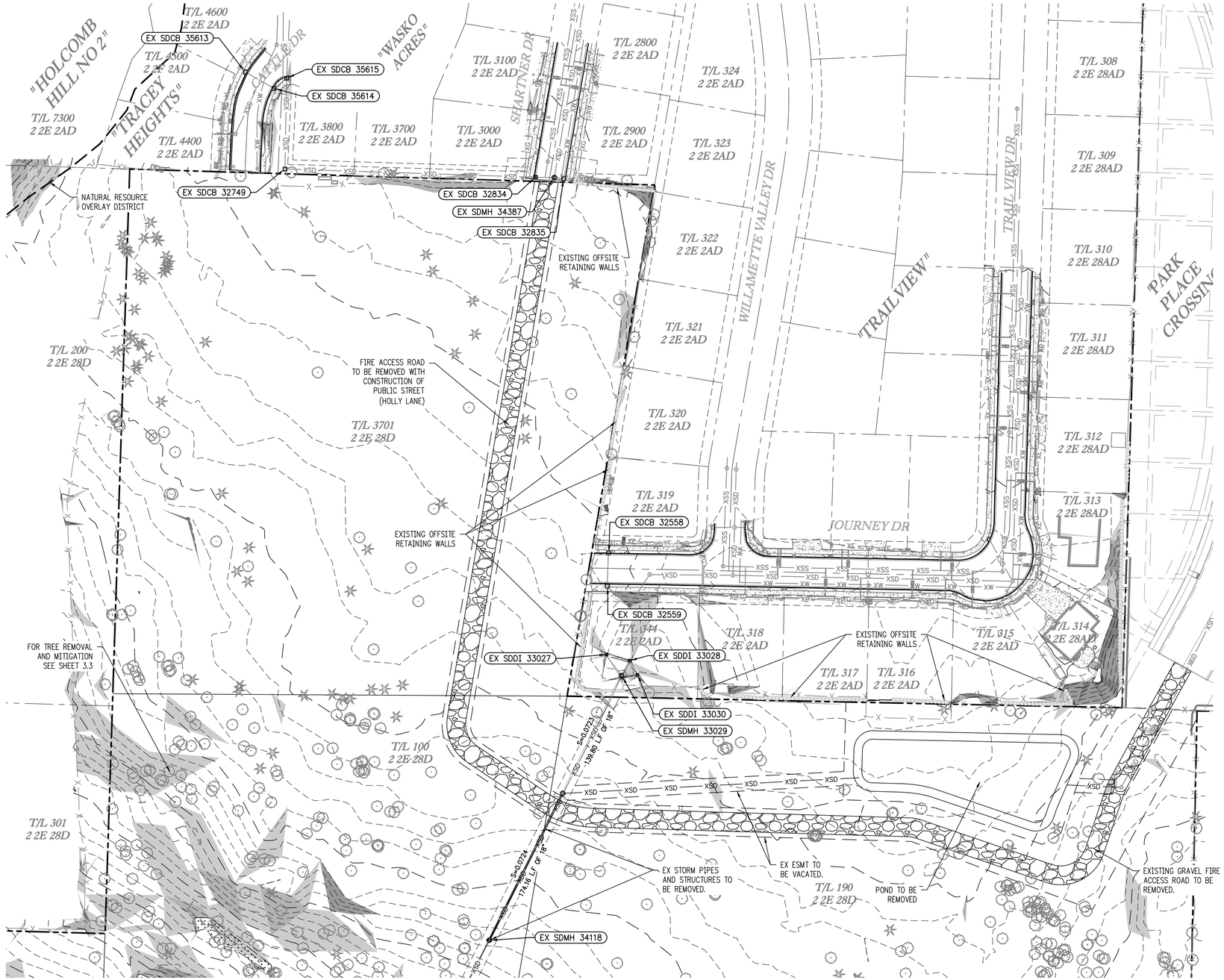
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JULY 19, 2007
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SHEET 2.2 OF 39

FILE:P:\0082-012 Park Place II\Dwg\plan\0082-012_02.2prest, Layout: 2.2 EXISTING CONDITIONS AND DEMOLITION PLAN SE, Plot Date: 7/2/2025 8:45 AM, by: David Burnett



EXISTING CONDITIONS PLAN - NE

SCALE: 1" = 60'

N

60' 0 30' 60' 120'

SCALE: 1" = 60'

EXISTING GRADE SLOPES TABLE				
NUMBER	MINIMUM SLOPE	MAXIMUM SLOPE	AREA (SF)	COLOR
1	0.00%	10.00%	1640799.98	
2	10.00%	20.00%	1135301.03	
3	20.00%	30.00%	310184.56	
4	30.00%	40.00%	148822.69	
5	40.00%	50.00%	89296.40	
6	50.00%	Vertical	90606.06	

EX. STORM STRUCTURE TABLE	
NAME	STRUCTURE INFORMATION
EX SDMH 33029	RIM=403.93 18" PVC 3034 IE OUT (SW)=401.90
EX SDMH 34118	RIM=384.98 18" PVC 3034 IE IN (NE)=379.18 18" PVC 3034 IE OUT (SW)=378.88

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EXISTING CONDITIONS AND DEMOLITION PLAN NE

REVISIONS

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SHEET 2.3 OF 39

FILE:P:\0082-012 Park Place II\Dwg\plan\0082-012_02.3prest, Layout: 2.3 EXISTING CONDITIONS AND DEMOLITION PLAN NE, Plot Date: 7/2/2025 8:48 AM, by: David Burnett



EXISTING CONDITIONS PLAN - NW

SCALE: 1" = 60'

EXISTING GRADE SLOPES TABLE				
NUMBER	MINIMUM SLOPE	MAXIMUM SLOPE	AREA (SF)	COLOR
1	0.00%	10.00%	1640799.98	
2	10.00%	20.00%	1135301.03	
3	20.00%	30.00%	310184.56	
4	30.00%	40.00%	148822.69	
5	40.00%	50.00%	89296.40	
6	50.00%	Vertical	90606.06	

N

60' 0 30' 60' 120'

SCALE: 1" = 60'

PARK PLACE II
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CITY OF OREGON CITY, OREGON

EXISTING CONDITIONS AND DEMOLITION PLAN NW

REVISIONS

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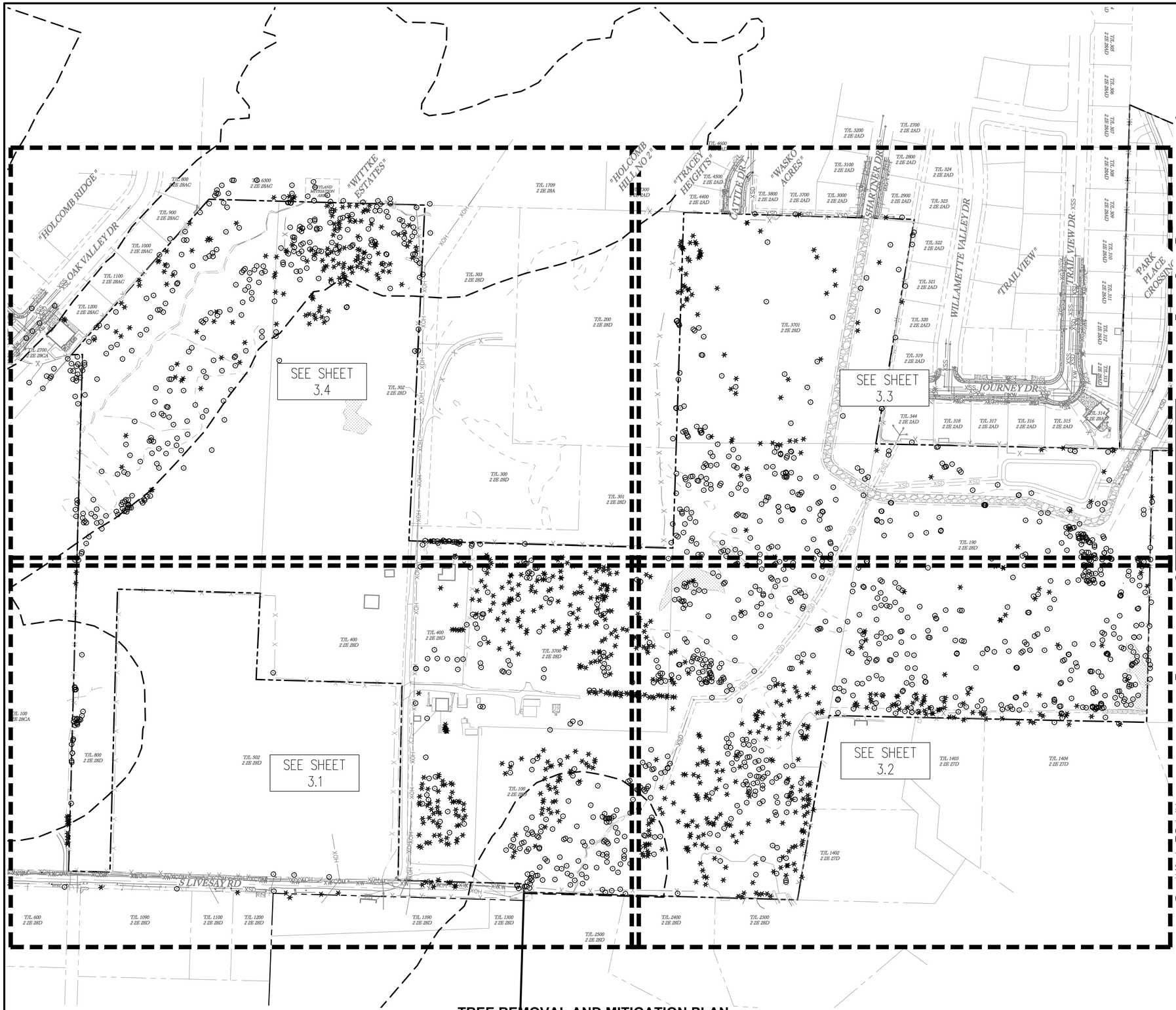
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OREGON
JULY 13, 2007
DAVID M. BURNETT

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SHEET
2.4
OF
39

FILE P: \0082-012 Park Place II\dwg\plan\0082-012_02.4prexsl, Layout: 2.4 EXISTING CONDITIONS AND DEMOLITION PLAN NW, Plot Date: 7/2/2025 8:53 AM, by: David Burnett



TREE REMOVAL AND MITIGATION PLAN

SCALE: 1" = 100'

N

60' 0 30' 60' 120'

SCALE: 1" = 60'

TREE PROTECTION, PRESERVATION, REMOVAL AND REPLANTING STANDARDS

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.

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:

C. 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

D. 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.

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 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

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.

D. REPLACEMENT TREE PLANTING STANDARDS.

1. ALL REPLACEMENT TREES SHALL BE EITHER TWO-INCH CALIPER DECIDUOUS OR SIX-FOOT HIGH CONIFER.
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.
3. DUE TO THEIR DIMINISHING RANGE IN THE REGION, OREGON WHITE OAK (QUERCUS GARRYANA) TREES, IF REMOVED, SHALL BE REPLACED BY 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.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.

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 ONE HUNDRED FIFTY PERCENT OF THE COST OF MATERIALS, TRANSPORTATION AND PLANTING.

(ORD. NO. 18-1009, §1(EXH. A), 7-3-2019; ORD. NO. 19-1008, §1(EXH. A), 12-18-2019)

TREE REMOVAL SUMMARY

TOTAL ONSITE TREES REMOVED	1584
TOTAL NUMBER OF REQUIRED MITIGATION TREES (BASED ON TABLE 17.41.060-1)	2707

NOTE: FOR DETAILED REMOVAL PLAN, SEE SHEETS 3.1 – 3.8 FOR TREE REMOVAL TABLES.

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CITY OF OREGON CITY, OREGON

COMPOSITE TREE REMOVAL-MITIGATION

REVISIONS

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JULY 15, 2007
DAVID BURNETT
PRELIMINARY
NOT FOR CONSTRUCTION
EMERIO DESIGN CONSULTING HOUSE
EXPIRES: 12/31/2025

SHEET 3.0 OF 39



TREE REMOVAL AND MITIGATION PLAN

SCALE: 1" = 60'

N

60' 0 30' 60' 120'

SCALE: 1" = 60'

TREE NUMBER	TYPE	DBH (IN.)	REMOVE	MITIGATION TREES REQUIRED
12321	D	9, 12, 14	Y	4
12569	D	8	Y	1
14283	D	9,10,11	Y	3
14630	C	13	Y	2
14631	C	12	Y	1
14632	C	14	Y	2
14633	C	11	Y	1
14635	C	13	Y	2
14637	C	13	Y	2
14638	C	10	Y	1
14639	C	8	Y	1
14640	C	8	Y	1
14641	D	6	Y	1
14642	C	13	Y	2
14643	C	10	Y	1
14644	C	10	Y	1
14645	C	10, 10	Y	2
14646	C	7, 8	Y	2
14647	D	6	Y	1
14648	C	13	Y	2
14649	C	9, 11	Y	2
14650	C	13	Y	2
14651	C	15	Y	2
14655	C	13	Y	2
14656	D	6, 6	Y	2
14657	C	12	Y	1
14658	C	12	Y	1
14659	C	12	Y	1
14660	C	14	Y	2
14661	C	8	Y	1
14662	C	14	Y	2
14663	C	10, 11	Y	2
14664	C	14	Y	2
14677	D	6	Y	1
14678	C	12	Y	1
14679	C	7	Y	1
14680	D	6	Y	1
14681	D	6	Y	1
14682	D	7	Y	1
14683	D	6	Y	1
14684	D	6	Y	1
14685	D	9	Y	1
14686	C	12	Y	1
14714	D	13	Y	2
14715	C	17	Y	2
14716	D	17	Y	2
14718	D	17	Y	2
14743	C	9, 10	Y	2
14744	D	7	Y	1
14745	C	12	Y	1
14746	C	11	Y	1
14747	C	12	Y	1
14748	C	12	Y	1
14749	C	11, 11	Y	2
14750	C	8, 8	Y	2
14751	C	12	Y	1
14752	C	11	Y	1
14753	C	14	Y	2
14754	D	6	Y	1
14755	D	6	Y	1
14756	D	6	Y	1
14757	C	13	Y	2
14758	C	14	Y	2
14759	C	12	Y	1
14761	D	8	Y	1
14762	C	14	Y	2
14763	C	14	Y	2
14764	C	15	Y	2
14765	C	15	Y	2
14766	D	6	Y	1
14767	C	14	Y	2
14768	C	13	Y	2
14769	D	9	Y	1
14770	C	13	Y	2
14771	C	6, 13	Y	3

PARK PLACE II
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TREE REMOVAL-MITIGATION SW

REVISIONS

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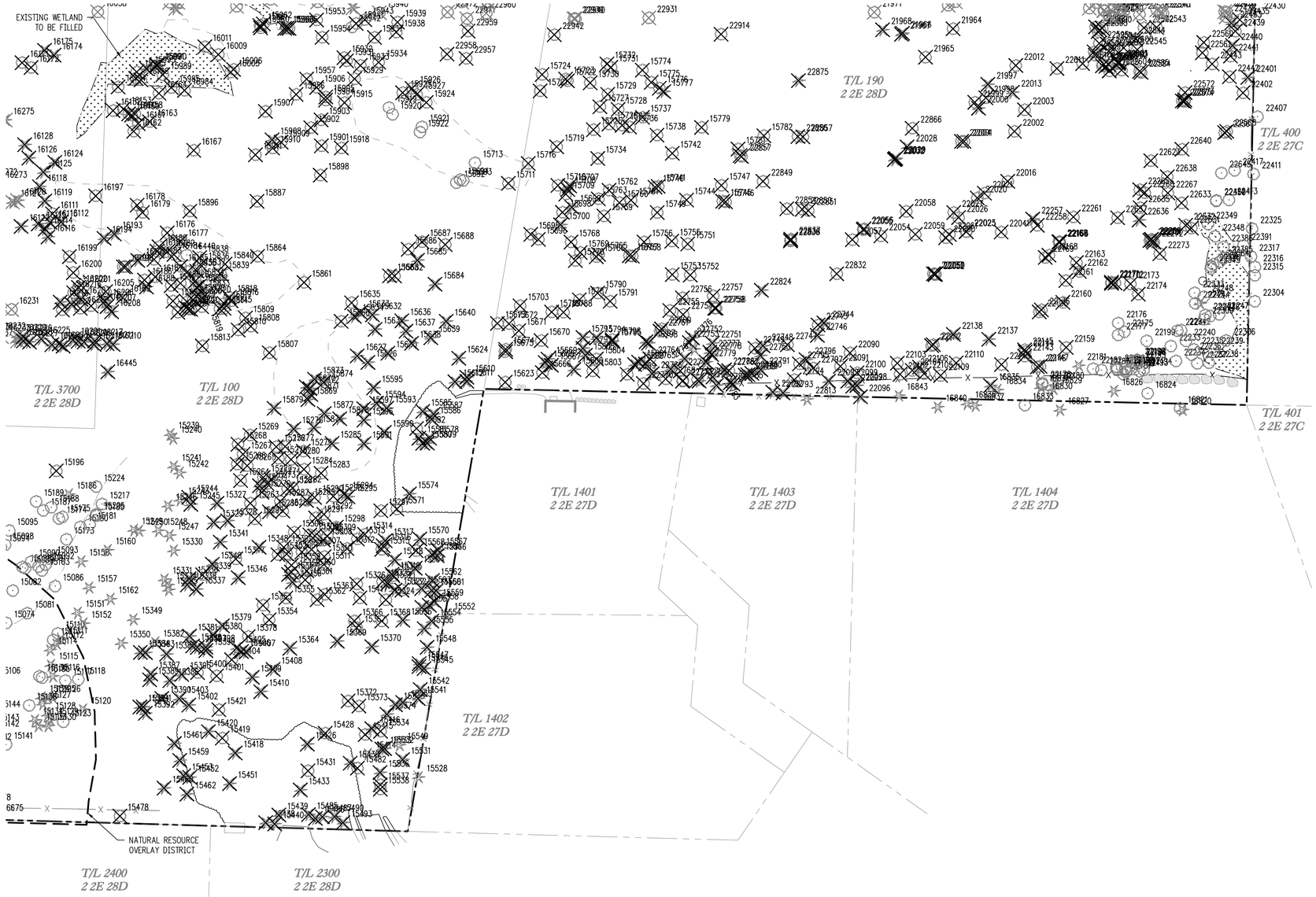
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OREGON
JULY 15, 2007
CHRISTOPHER D. GOSE
RENEWAL: 12/31/2025

PRELIMINARY NOT FOR CONSTRUCTION

EXPIRES: 12/31/2025

SHEET 3.1 OF 39

FILE:P:\0082-012 Park Place II\dwg\plan\0082-012_03.1ptree SW, Layout: 3.1 TREE REMOVAL--MITIGATION SW, Plot Date: 7/2/2025 9:00 AM, by: David Burnett



TREE REMOVAL AND MITIGATION PLAN

SCALE: 1" = 60'

N

60' 0 30' 60' 120'

SCALE: 1" = 60'

TREE NUMBER	TYPE	DBH (IN.)	REMOVE	MITIGATION TREES REQUIRED
14772	C	8	Y	1
14773	C	14	Y	2
14774	C	16	Y	2
14775	C	14	Y	2
14776	C	14	Y	2
14777	C	8	Y	1
14778	C	12	Y	1
14779	C	7,8	Y	2
14780	C	9,9	Y	2
14781	C	16	Y	2
14782	C	10	Y	1
14783	C	12	Y	1
14784	D	7	Y	1
14785	C	11	Y	1
14786	D	7	Y	1
14787	C	9	Y	1
14788	D	8	Y	1
14789	D	8	Y	1
14790	C	10	Y	1
14791	D	10	Y	1
14792	C	10	Y	1
14799	D	7,9,11	Y	3
14806	C	13	Y	2
14807	C	11	Y	1
14808	C	9	Y	1
14809	C	6	Y	1
14810	C	11	Y	1
14811	C	8	Y	1
14812	C	10	Y	1
14813	C	11	Y	1
14814	C	6	Y	1
14815	C	8,9	Y	2
14816	D	6	Y	1
14817	D	11	Y	1
14818	C	8	Y	1
14819	D	8	Y	1
14820	D	12	Y	1
14821	C	8	Y	1
14822	C	12	Y	1
14823	C	6	Y	1
14824	C	7,8	Y	2
14825	C	6	Y	1
14826	C	6	Y	1
14827	C	6	Y	1
14828	C	11	Y	1
14829	C	8	Y	1
14830	D	9	Y	1
14831	C	11	Y	1
14832	D	6,6	Y	2
14835	C	6,6	Y	2
14836	C	9	Y	1
14837	C	12	Y	1
14838	C	12	Y	1
14840	D	8	Y	1
14842	C	12	Y	1
14843	C	12	Y	1
14844	C	12	Y	1
14845	C	10	Y	1
14846	C	8	Y	1
14847	C	12	Y	1
14848	C	12	Y	1
14849	C	12	Y	1
14856	C	7	Y	1
14874	D	6,7	Y	2
14875	C	10	Y	1
14876	C	9	Y	1
14877	D	7	Y	1
14878	D	6	Y	1
14880	C	11	Y	1
14881	D	6,6	Y	2
14882	D	6	Y	1
14887	D	6	Y	1
14888	D	8	Y	1
14889	D	19	Y	3
14890	D	7	Y	1

PARK PLACE II
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CITY OF OREGON CITY, OREGON

TREE REMOVAL-MITIGATION SE

REVISIONS

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JULY 19, 2007
DANIEL R. BURNETT
PRELIMINARY NOT FOR CONSTRUCTION
EXPIRES: 12/31/2025

SHEET 3.2 OF 39

FILE P:\0082-012 Park Place II\dwg\plan\0082-012_03.2tree SE, Layout: 3.2 TREE REMOVAL-MITIGATION SE, Plot Date: 7/2/2025 12:33 PM, by: Daniel Burnett



TREE REMOVAL AND MITIGATION PLAN

SCALE: 1" = 60'

N

60' 0 30' 60' 120'

SCALE: 1" = 60'

TREE NUMBER	TYPE	DBH (IN.)	REMOVE	MITIGATION TREES REQUIRED
14905	D	20	Y	3
14906	D	7	Y	1
14908	D	33	Y	5
15012	D	7	Y	1
15013	D	6	Y	1
15014	C	8	Y	1
15015	D	8	Y	1
15016	D	8	Y	1
15017	D	7	Y	1
15018	D	7	Y	1
15019	D	8	Y	1
15020	D	7,7	Y	2
15021	D	6	Y	1
15022	D	7	Y	1
15023	D	20	Y	3
15038	D	6	Y	1
15040	D	9,9	Y	2
15196	D	12	Y	1
15244	C	8	Y	1
15245	C	10, 11	Y	2
15263	D	10	Y	1
15264	D	8	Y	1
15265	D	6	Y	1
15266	D	6,8	Y	2
15267	D	6	Y	1
15268	D	9	Y	1
15269	D	7,7	Y	2
15270	D	7	Y	1
15271	C	8	Y	1
15272	D	6	Y	1
15273	D	6	Y	1
15274	D	8	Y	1
15275	D	8	Y	1
15276	D	9	Y	1
15277	D	6	Y	1
15278	C	11, 12	Y	2
15279	D	6	Y	1
15280	D	6,6	Y	2
15281	D	6	Y	1
15282	D	7	Y	1
15283	D	9	Y	1
15284	D	7	Y	1
15285	C	12	Y	1
15286	C	12	Y	1
15287	D	9	Y	1
15288	D	6	Y	1
15289	D	8	Y	1
15290	D	6	Y	1
15291	D	6	Y	1
15292	D	6	Y	1
15293	D	8	Y	1
15294	C	12	Y	1
15295	C	13	Y	2
15297	D	6	Y	1
15298	D	9	Y	1
15299	D	6	Y	1
15300	D	7	Y	1
15301	D	8	Y	1
15302	D	9	Y	1
15303	D	6	Y	1
15304	D	7	Y	1
15305	D	7	Y	1
15306	D	6	Y	1
15307	D	8	Y	1
15308	D	7	Y	1
15309	D	6	Y	1
15310	D	6	Y	1
15311	D	6,7	Y	2
15312	D	6	Y	1
15313	D	7	Y	1
15314	D	7	Y	1
15315	D	7	Y	1
15316	D	7	Y	1
15317	C	9	Y	1
15318	C	14	Y	2

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TREE REMOVAL-MITIGATION NE

REVISIONS

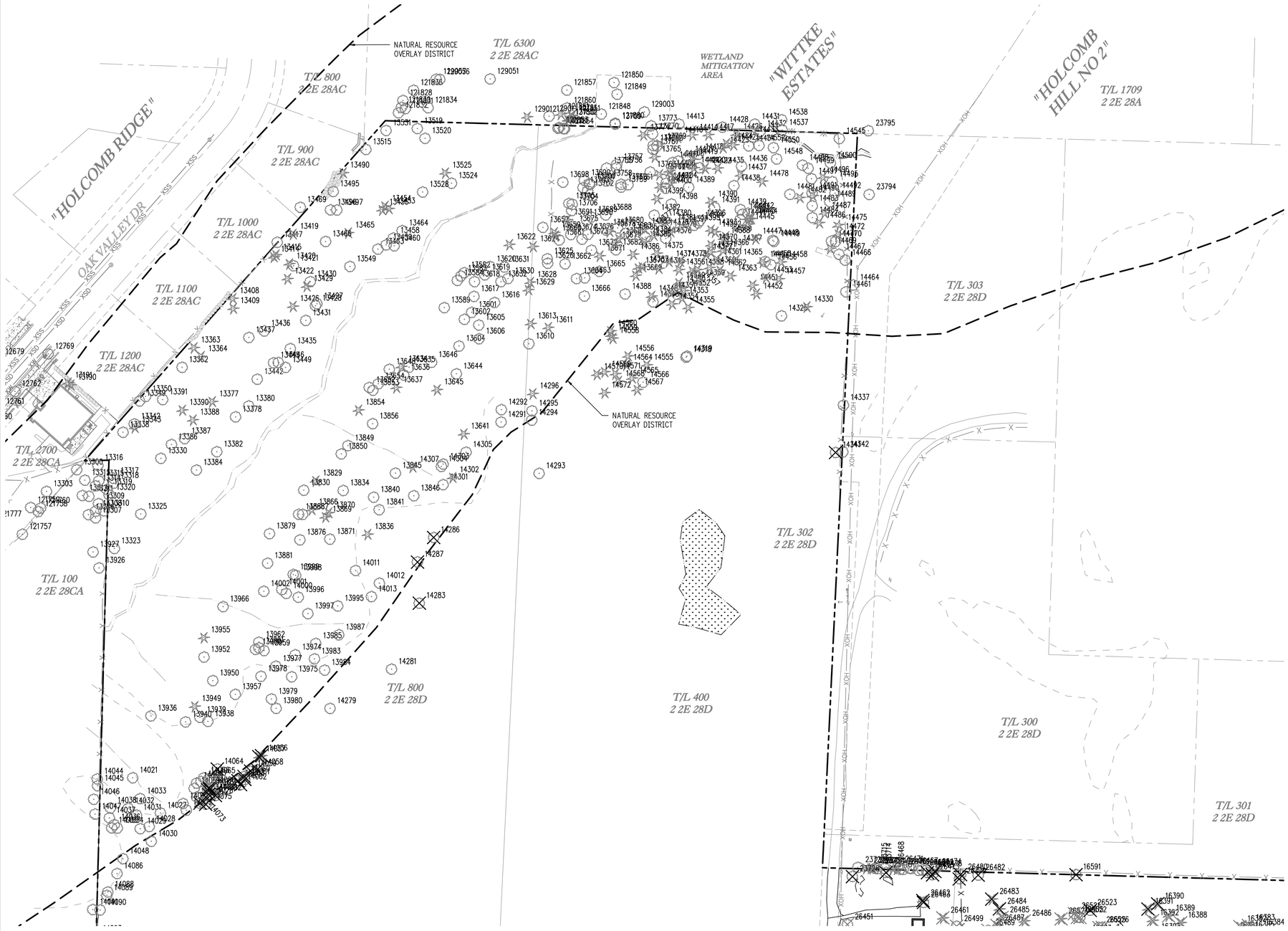
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JULY 15, 2007
DAVID L. BURNETT
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EXPIRES: 12/31/2025

SHEET 3.3 OF 39

FILE:P:\0082-012 Park Place II\Dwg\plan\0082-012_03.3tree NE, Layout: 3.3 TREE REMOVAL-MITIGATION NE, Plot Date: 7/2/2025 12:37 PM, by: David Burnett



TREE REMOVAL AND MITIGATION PLAN

SCALE: 1" = 60'

N

60' 0 30' 60' 120'

SCALE: 1" = 60'

TREE NUMBER	TYPE	DBH (IN.)	REMOVE	MITIGATION TREES REQUIRED
15319	C	7	Y	1
15320	D	6	Y	1
15321	C	6	Y	1
15322	C	10	Y	1
15323	D	6	Y	1
15324	D	6	Y	1
15325	D	6	Y	1
15326	D	7,7	Y	2
15327	C	6,12	Y	2
15328	C	19	Y	3
15329	C	15	Y	2
15336	C	11	Y	1
15337	C	14	Y	2
15338	C	12	Y	1
15339	D	8	Y	1
15340	C	12	Y	1
15341	C	11	Y	1
15346	C	10,12	Y	2
15347	D	7,8	Y	2
15348	C	6	Y	1
15353	D	6,9	Y	2
15354	D	8,8	Y	2
15355	D	7	Y	1
15356	C	7,8	Y	2
15357	C	11	Y	1
15358	D	6	Y	1
15359	D	7	Y	1
15360	D	6	Y	1
15361	D	8	Y	1
15362	D	9,10	Y	2
15363	D	6	Y	1
15364	C	11	Y	1
15366	D	12	Y	1
15367	D	6	Y	1
15368	D	6,6	Y	2
15369	C	12	Y	1
15370	C	15	Y	2
15372	D	6	Y	1
15373	D	6	Y	1
15374	C	8	Y	1
15375	C	8,8	Y	2
15378	D	9	Y	1
15379	C	10	Y	1
15380	C	8,9	Y	2
15381	C	6,9	Y	2
15383	C	6	Y	1
15384	C	10	Y	1
15385	C	11,12	Y	2
15386	C	9	Y	1
15387	C	11	Y	1
15389	C	9	Y	1
15390	C	9	Y	1
15391	C	11	Y	1
15392	C	9	Y	1
15394	C	10	Y	1
15395	C	10,11	Y	2
15396	C	7,9	Y	2
15397	C	11	Y	1
15398	C	12	Y	1
15399	C	11	Y	1
15400	D	8,11	Y	2
15401	D	6,6	Y	2
15402	C	15	Y	2
15403	C	12	Y	1
15404	D	8	Y	1
15405	C	12	Y	1
15406	C	13	Y	2
15407	C	13	Y	2
15408	C	14	Y	2
15409	C	12,12	Y	2
15410	C	10	Y	1
15414	C	10	Y	1
15415	D	6	Y	1
15416	C	13	Y	2
15417	D	7	Y	1

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TREE REMOVAL-MITIGATION NW

REVISIONS

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RENEWAL: 12/31/2025

PRELIMINARY NOT FOR CONSTRUCTION

EXPIRES: 12/31/2025

SHEET 3.4 OF 39

FILE P: \0082-012 Park Place II\Dwg\plan\0082-012_03.4tree NW, Layout: 3.4 TREE REMOVAL-MITIGATION NW, Plot Date: 7/2/2025 1:30 PM, by: David Burnett

TREE NUMBER	TYPE	DBH (IN.)	REMOVE	MITIGATION TREES REQUIRED
15418	C	9	Y	1
15419	D	9	Y	1
15420	C	13	Y	2
15421	D	6,8	Y	2
15426	C	11	Y	1
15428	D	6	Y	1
15430	C	9,10	Y	2
15431	D	10	Y	1
15133	C	13	Y	2
15438	C	6,6,7,7,8,8	Y	6
15439	C	6,6,7,8	Y	4
15440	C	11	Y	1
15451	C	11	Y	1
15452	C	6	Y	1
15453	C	14	Y	2
15459	C	8	Y	1
15460	C	13	Y	2
15461	C	11,11	Y	2
15462	C	12	Y	1
15478	D	13	Y	2
15482	D	7	Y	1
15485	C	10	Y	1
15486	C	11	Y	1
15487	C	8	Y	1
15490	C	10	Y	1
15493	C	6,12	Y	2
15531	C	10	Y	1
15532	C	9	Y	1
15533	C	6,6	Y	2
15534	D	7	Y	1
15535	C	11	Y	1
15536	C	10	Y	1
15537	D	6	Y	1
15538	D	9	Y	1
15541	C	10	Y	1
15542	C	13	Y	2
15545	C	14	Y	2
15546	C	7	Y	1
15547	C	13	Y	2
15548	C	11	Y	1
15554	C	12	Y	1
15555	C	13	Y	2
15556	C	13	Y	2
15557	C	6	Y	1
15558	C	12	Y	1
15559	C	8	Y	1
15560	C	9	Y	1
15561	C	6	Y	1
15562	C	8	Y	1
15563	C	10	Y	1
15564	C	10	Y	1
15565	C	8	Y	1
15566	C	9	Y	1
15567	C	9	Y	1
15568	D	6	Y	1
15570	C	14	Y	2
15571	D	6	Y	1
15574	C	10	Y	1
15578	C	8	Y	1
15579	C	7	Y	1
15580	C	7	Y	1
15581	C	8	Y	1
15582	D	16	Y	2
15585	C	12	Y	1
15586	C	6	Y	1
15587	C	8	Y	1
15590	C	11	Y	1
15591	C	10,11	Y	2
15593	C	12	Y	1
15595	C	10	Y	1
15596	C	7,8	Y	2
15596	C	10	Y	1
15597	C	9,10	Y	2
15610	C	9	Y	1
15611	C	7	Y	1

TREE NUMBER	TYPE	DBH (IN.)	REMOVE	MITIGATION TREES REQUIRED
15612	C	7	Y	1
15623	D	14	Y	2
15624	C	6	Y	1
15626	C	6	Y	1
15627	C	8	Y	1
15630	C	11	Y	1
15631	C	12	Y	1
15632	C	12	Y	1
15633	C	9	Y	1
15634	C	11	Y	1
15635	C	30	Y	4
15636	C	11	Y	1
15637	C	9	Y	1
15638	C	8,9	Y	2
15639	C	6,6	Y	2
15640	C	11	Y	1
15666	C	22	Y	3
15667	C	20	Y	3
15668	C	19	Y	3
15669	C	18	Y	2
15670	D	11,14	Y	3
15671	D	8	Y	1
15672	D	11	Y	1
15673	D	6	Y	1
15674	D	11	Y	1
15675	D	18	Y	2
15682	D	13	Y	2
15683	D	13	Y	2
15684	C	17	Y	2
15685	C	17	Y	2
15686	D	35	Y	5
15687	D	29	Y	4
15688	D	10	Y	1
15695	D	25	Y	4
15696	D	12	Y	1
15698	D	14,15,24	Y	7
15699	C	13	Y	2
15700	C	13	Y	2
15703	D	13	Y	2
15707	C	8	Y	1
15708	C	12	Y	1
15709	D	26	Y	4
15710	D	10	Y	1
15711	D	7,20	Y	4
15716	D	6	Y	1
15719	D	26	Y	4
15721	D	6	Y	1
15722	D	12	Y	1
15723	D	14	Y	2
15724	D	18	Y	2
15725	D	19	Y	3
15726	D	6,6,18	Y	4
15727	D	20	Y	3
15728	D	18	Y	2
15729	D	19	Y	3
15730	D	6	Y	1
15731	D	7	Y	1
15732	D	6	Y	1
15734	D	6,7	Y	2
15735	D	13	Y	2
15736	D	15	Y	2
15737	D	16	Y	2
15738	D	29	Y	4
15740	D	6	Y	1
15741	D	6,6	Y	2
15742	D	20	Y	3
15744	D	21	Y	3
15745	D	9	Y	1
15746	D	15	Y	2
15747	D	15,16	Y	4
15749	D	20	Y	3
15751	D	7	Y	1
15752	D	20	Y	3
15753	D	25	Y	4
15755	D	25	Y	4

TREE NUMBER	TYPE	DBH (IN.)	REMOVE	MITIGATION TREES REQUIRED
15756	D	6,6,6	Y	3
15757	D	18	Y	2
15758	D	12	Y	1
15759	D	11,13	Y	3
15760	D	12,15	Y	3
15761	D	6,6	Y	5
15762	D	6	Y	1
15763	D	12	Y	1
15765	D	20	Y	3
15766	D	16	Y	2
15768	D	13	Y	2
15769	D	12	Y	1
15770	D	18	Y	2
15774	D	7,7,7,7,14	Y	6
15775	D	23	Y	3
15776	D	13,13	Y	4
15777	C	17	Y	2
15779	D	25	Y	4
15781	D	25	Y	4
15782	D	6,7,8	Y	3
15787	D	9	Y	1
15788	D	6	Y	1
15789	D	9	Y	1
15790	D	24	Y	3
15791	D	21	Y	3
15792	C	24	Y	3
15793	C	17	Y	2
15794	C	14	Y	2
15795	C	24	Y	3
15796	D	10	Y	1
15797	C	17	Y	2
15798	C	15	Y	2
15799	D	27	Y	4
15800	C	20	Y	3
15801	C	10	Y	1
15803	D	29	Y	4
15804	D	13	Y	2
15805	C	13	Y	2
15806	C	33	Y	5
15807	D	11	Y	1
15808	D	6	Y	1
15809	D	7	Y	1
15810	D	6	Y	1
15813	D	6	Y	1
15814	D	13	Y	2
15815	D	13	Y	2
15816	D	14	Y	2
15817	D	14	Y	2
15818	D	12	Y	1
15819	D	6,10	Y	2
15820	D	6	Y	1
15821	D	6	Y	1
15822	D	6	Y	1
15823	D	8	Y	1
15824	D	11	Y	1
15825	D	11	Y	1
15826	D	6	Y	1
15827	D	9	Y	1
15828	D	10	Y	1
15829	D	10	Y	1
15830	D	11	Y	1
15831	D	8	Y	1
15832	D	7	Y	1
15833	D	9	Y	1
15834	D	11	Y	1
15835	D	8	Y	1
15836	D	8	Y	1
15837	D	6	Y	1
15838	D	10	Y	1
15839	D	28	Y	4
15840	D	20,22	Y	6
15861	D	18,28	Y	6
15864	D	36	Y	5
15866	D	8	Y	1
15869	D	10	Y	1

TREE NUMBER	TYPE	DBH (IN.)	REMOVE	MITIGATION TREES REQUIRED
15870	C	12	Y	1
15871	C	11	Y	1
15872	C	9	Y	1
15873	C	6,7	Y	2
15874	C	8,8	Y	2
15876	C	8,12	Y	2
15877	C	11,12	Y	2
15878	C	6	Y	1
15879	C	8,11	Y	2
15887	D	27	Y	4
15896	D	6,9	Y	2
15898	D	27	Y	4
15901	D	11	Y	1
15902	D	20	Y	3
15903	D	13	Y	2
15904	D	17	Y	2
15905	D	12	Y	1
15906	D	8	Y	1
15907	D	15,17	Y	4
15908	C	8	Y	1
15909	D	12	Y	1
15910	D	17	Y	2
15911	D	28	Y	4
15915	D	24	Y	3
15918	D	10	Y	1
15924	D	11	Y	1
15925	D	6,6,7	Y	3
15926	D	8,15,16	Y	5
15927	D	7	Y	1
15929	D	11	Y	1
15931	D	23	Y	3
15932	D	10,14	Y	3
15933	D	14	Y	2
15934	D	14	Y	2
15937	D	15	Y	2
15938	D	15	Y	2
15939	D	13	Y	2
15940	D	23	Y	3
15941	D	14	Y	2
15942	D	10	Y	1
15943	D	10	Y	1
15944	C	6	Y	1
15945	D	12,18	Y	4
15947	D	14	Y	2
15949	D	15,19	Y	5
15951	D	14,15	Y	4
15952	D	14	Y	2
15953	D	17	Y	2
15954	D	12,15	Y	5
15956	D	8,10,11,12	Y	4
15957	D	26	Y	4
15960	D	12	Y	1
15961	D	8	Y	1
15962	D	6	Y	1
15963	C	12	Y	1
15964	D	14,17	Y	4
15965	D	13	Y	2
15971	D	22,24	Y	6
15975	D	9,13,14,15	Y	7
15976	C	13,13,13,14	Y	8
15984	D	10,12	Y	2
15985	D	6	Y	1
15989	D	6,6	Y	2
15990	C	6	Y	1
15991	C	7	Y	1
15993	C	11	Y	1
15995	D	24	Y	3
16005	D	6	Y	1
16006	D	7	Y	1
16009	D	23	Y	3
16011	D	16	Y	2
16038	D	18	Y	2
16045	D	14	Y	2
16052	D	10,19,24	Y	9
16053	C	8	Y	1

TREE NUMBER	TYPE	DBH (IN.)	REMOVE	MITIGATION TREES REQUIRED
16054	D	10,13	Y	3
16055	D	13,18,19	Y	7
16056	D	11	Y	1
16057	D	16	Y	2
16058	D	24	Y	3
16059	D	8	Y	1
16067	D	13,15	Y	4
16068	D	10	Y	1
16069	D	8,10	Y	2
16071	D	12,20	Y	4
16074	D	10,13,13	Y	5
16075	D	7,8,10,10	Y	4
16076	D	13,14	Y	4
16077	D	15	Y	2
16079	D	32	Y	5
16083	D	9	Y	1
16086	D	8	Y	1
16087	D	6	Y	1
16091	D	10,15	Y	3
16106	D	12,15	Y	3
16107	D	18	Y	2
16108	D	20	Y	3
16109	D	20	Y	3
16110	D	13	Y	2
16111	D	6,6,6	Y	3
16112	C	12	Y	1
16113	C	12	Y	1
16114	C	11	Y	1
16115	C	13	Y	2
16116	C	14	Y	2
16118	C	13	Y	2
16119	C	7	Y	1
16120	C	11	Y	1
16121	C	8	Y	1
16122	C	12	Y	1
16124	C	11	Y	1
16125	C	13	Y	2
16126	C	13	Y	2
16128	C	9	Y	1
16152	D	8	Y	1
16153	D	9	Y	1
16154	D	26	Y	4
16155	D	10	Y	1
16156	D	12	Y	1
16158	D	12,12	Y	2
16159	D	11	Y	1
16160	D	11	Y	1
16161	D	9,12	Y	2
16162	D	11	Y	1
16163	D	10	Y	1
16164	D	6	Y	1
16167	D	9	Y	1
16171	D	7	Y	1
16172	D	6,6	Y	2
16174	C	7	Y	1
16175	C	6	Y	1
16176	D	9	Y	1
16177	D	7	Y	1
16178	D	7,8	Y	2
16179	D	6,6,7	Y	3
16180	D	7,8	Y	2
16181	D	6	Y	1
16182	D	6	Y	1
16183	D	10	Y	1
16184	D	9	Y	1
16185	D	6,8	Y	2
16186	D	6	Y	1
16187	D	7	Y	1
16188	C	6	Y	1
16189	D	8	Y	1
16190	D	6	Y	1
16191	D	8	Y	1
16192	C	17	Y	2
16193	C	13	Y	2
16194	C	13	Y	2

PARK PLACE II
A SUBDIVISION OF
TAX LOT 2 2E 28D 100, 190, 302, 400, 500, 502, 3700
CITY OF OREGON CITY, OREGON

TREE REMOVAL TABLE 01

REVISIONS

NO.	DATE	DESCRIPTION

EMERIO
ENGINEERING • SURVEYING • DESIGN
6445 SW FALLBROOK PLACE, SUITE 100
BEAVERTON, OREGON 97008
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REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 13, 2007
DOULTING CLEE
PRELIMINARY NOT FOR CONSTRUCTION
EXPIRES: 12/31/2025

SHEET 3.5 OF 39

TREE NUMBER	TYPE	DBH (IN.)	REMOVE	MITIGATION TREES REQUIRED
16197	D	6,6,6	Y	3
16199	D	9	Y	1
16200	D	6	Y	1
16201	D	9	Y	1
16202	D	6	Y	1
16203	C	11	Y	1
16204	D	11	Y	1
16205	D	11	Y	1
16206	C	6	Y	1
16207	C	9	Y	1
16208	C	13	Y	2
16210	C	13	Y	2
16211	C	14	Y	2
16212	D	6	Y	1
16213	D	6,6	Y	2
16214	C	7	Y	1
16215	C	11	Y	1
16216	D	7	Y	1
16217	C	11	Y	1
16218	C	15	Y	2
16219	C	14	Y	2
16220	C	14	Y	2
16221	C	13	Y	2
16222	C	13	Y	2
16223	C	12	Y	1
16224	C	12	Y	1
16225	C	12	Y	1
16226	C	11	Y	1
16227	C	11	Y	1
16228	C	14	Y	2
16229	C	13	Y	2
16230	C	11	Y	1
16231	D	6,7	Y	2
16232	C	13	Y	2
16233	C	13	Y	2
16234	C	13	Y	2
16235	C	11	Y	1
16236	C	11	Y	1
16237	C	13	Y	2
16238	C	12	Y	1
16239	C	12	Y	1
16240	C	13	Y	2
16241	C	15	Y	2
16242	C	14	Y	2
16243	C	14	Y	2
16244	D	9	Y	1
16245	D	7	Y	1
16246	D	6,7	Y	2
16247	D	6	Y	1
16248	D	10	Y	1
16249	D	9	Y	1
16250	C	11	Y	1
16251	C	13	Y	2
16252	D	6,6	Y	2
16253	C	13	Y	2
16254	C	15	Y	2
16255	D	11	Y	1
16256	C	9	Y	1
16257	C	6,12	Y	2
16258	C	13	Y	2
16259	C	11	Y	1
16260	C	14	Y	2
16261	C	14	Y	2
16262	C	13	Y	2
16263	C	6	Y	1
16270	D	11	Y	1
16271	C	17	Y	2
16272	C	14	Y	2
16273	C	15	Y	2
16275	C	6,12	Y	2
16276	C	15,15	Y	4
16277	D	8	Y	1
16278	C	11	Y	1
16279	D	6,6,6	Y	3
16280	D	6,6	Y	2

TREE NUMBER	TYPE	DBH (IN.)	REMOVE	MITIGATION TREES REQUIRED
16281	D	9	Y	1
16282	C	6	Y	1
16283	C	14	Y	2
16284	C	6,8	Y	2
16285	C	9,11	Y	2
16286	C	8	Y	1
16289	C	7,8	Y	2
16293	C	14	Y	2
16294	C	10	Y	1
16295	C	9,9	Y	2
16296	C	9	Y	1
16297	C	10	Y	1
16298	C	10	Y	1
16301	C	8	Y	1
16303	C	12	Y	1
16304	C	11	Y	1
16305	C	10	Y	1
16306	C	11	Y	1
16307	C	6	Y	1
16308	C	15	Y	2
16309	C	12	Y	1
16310	C	11	Y	1
16311	C	9	Y	1
16313	D	10	Y	1
16314	D	12	Y	1
16318	D	6	Y	1
16319	D	6	Y	1
16326	C	11	Y	1
16327	C	9,10	Y	2
16328	C	7,8	Y	2
16329	D	7	Y	1
16330	C	12	Y	1
16331	C	18	Y	2
16332	C	6,7	Y	2
16333	C	10,10,11	Y	2
16334	C	16	Y	2
16335	D	12	Y	1
16336	D	10	Y	1
16337	D	7	Y	1
16338	D	6	Y	1
16339	D	6	Y	1
16340	D	6	Y	1
16342	D	6	Y	1
16343	C	8	Y	1
16344	D	7	Y	1
16345	C	9	Y	1
16346	C	10	Y	1
16347	C	10,11,11	Y	3
16348	C	11,12	Y	2
16349	C	9	Y	1
16350	C	15	Y	2
16351	C	10	Y	1
16352	C	11	Y	1
16354	D	6	Y	1
16355	C	13	Y	2
16356	C	12	Y	1
16357	C	13	Y	2
16358	C	13	Y	2
16359	C	10	Y	1
16360	C	8	Y	1
16361	C	14	Y	2
16362	C	15	Y	2
16363	C	13	Y	2
16364	D	9	Y	1
16365	D	6,6	Y	2
16366	C	12	Y	1
16367	C	8	Y	1
16368	C	10	Y	1
16369	C	9	Y	1
16370	C	11	Y	1
16371	C	8	Y	1
16372	C	8	Y	1
16373	C	10	Y	1
16374	C	10	Y	1
16375	C	11	Y	1

TREE NUMBER	TYPE	DBH (IN.)	REMOVE	MITIGATION TREES REQUIRED
16376	C	9	Y	1
16377	C	12	Y	1
16378	C	14	Y	2
16379	C	7	Y	1
16381	C	12	Y	1
16382	C	8	Y	1
16383	C	10	Y	1
16384	C	10	Y	1
16385	C	11	Y	1
16386	C	8	Y	1
16387	C	10	Y	1
16388	C	9	Y	1
16389	C	22	Y	3
16390	C	12	Y	1
16391	C	6	Y	1
16392	C	13	Y	2
16393	C	12,12,13	Y	4
16395	C	14	Y	2
16396	C	11,11,11,13	Y	5
16397	C	15	Y	2
16398	D	8	Y	1
16399	D	7	Y	1
16400	D	6,7	Y	2
16401	C	6	Y	1
16402	D	6	Y	1
16403	D	6	Y	1
16404	D	6	Y	1
16405	D	6	Y	1
16406	C	7	Y	1
16407	C	11,12	Y	2
16409	C	8	Y	1
16410	C	6,6,6	Y	3
16411	C	10	Y	1
16412	C	17	Y	2
16413	C	14	Y	2
16414	D	7	Y	1
16415	D	7	Y	1
16416	D	7	Y	1
16417	C	6	Y	1
16418	D	6	Y	1
16419	D	11	Y	1
16420	D	8	Y	1
16421	D	6	Y	1
16422	D	6	Y	1
16423	C	10,12	Y	2
16424	C	6,11	Y	2
16425	C	6,6	Y	2
16426	C	10	Y	1
16427	C	6,6	Y	2
16428	C	8,11	Y	2
16429	C	15	Y	2
16430	C	9	Y	1
16433	C	8	Y	1
16434	C	7	Y	1
16435	C	6	Y	1
16440	C	6	Y	1
16445	C	6	Y	1
16481	D	10	Y	1
16494	D	6,6	Y	2
16495	D	7,12,15	Y	4
16496	D	9	Y	1
16591	D	6	Y	1
16609	D	17,19	Y	5
16611	C	7,11,11	Y	3
16621	C	7,16	Y	3
16626	D	6	Y	1
16627	C	17	Y	2
16628	C	17	Y	2
16639	C	20	Y	3
16640	D	6	Y	1
16646	C	41	Y	5
16647	C	7	Y	1
16653	C	25	Y	4
16654	C	30	Y	4
16655	C	40	Y	5

TREE NUMBER	TYPE	DBH (IN.)	REMOVE	MITIGATION TREES REQUIRED
16824	D	6	Y	1
16826	C	18	Y	2
16835	C	32	Y	5
16843	C	6	Y	1
20750	D	7	Y	1
20754	D	6,6,7,8	Y	4
20764	D	7	Y	1
20840	C	54	Y	5
20935	D	7,8	Y	2
20936	C	35	Y	5
20938	D	6	Y	1
21015	D	6	Y	1
21016	D	6,6,6,7	Y	4
21029	C	31	Y	5
21030	C	42	Y	5
21036	D	7	Y	1
21051	C	19	Y	3
21052	C	19	Y	3
21084	D	6	Y	1
21121	D	7	Y	1
21125	C	21	Y	3
21126	C	12	Y	1
21127	C	10	Y	1
21222	C	11	Y	1
21223	C	16	Y	2
21224	C	14	Y	2
21225	C	16	Y	2
21226	C	13	Y	2
21227	C	11	Y	1
21228	C	7	Y	1
21229	C	9	Y	1
21230	C	13	Y	2
21231	C	13	Y	2
21235	C	15	Y	2
21325	D	6	Y	1
21346	C	39	Y	5
21347	C	16	Y	2
21349	C	14	Y	2
21350	C	12	Y	1
21353	C	14	Y	2
21354	C	15	Y	2
21355	C	14	Y	2
21358	C	21	Y	3
21359	C	9	Y	1
21360	C	11	Y	1
21361	C	12	Y	1
21362	C	7	Y	1
21749	C	6	Y	1
21750	D	16	Y	2
21751	D	10	Y	1
21756	D	11	Y	1
21761	C	20	Y	3
21776	D	9	Y	1
21777	D	8	Y	1
21778	D	7	Y	1
21779	C	24	Y	3
21803	C	14	Y	2
21804	D	10	Y	1
21820	C	20	Y	3
21821	D	9	Y	1
21822	D	12	Y	1
21828	D	9	Y	1
21830	D	9	Y	1
21831	D	10	Y	1
21832	D	7	Y	1
21833	D	7	Y	1
21834	D	8	Y	1
21835	D	10	Y	1
21836	D	8	Y	1
21837	D	11	Y	1
21838	D	7	Y	1
21839	D	6	Y	1
21840	D	6	Y	1
21841	D	9	Y	1
21842	D	9	Y	1

TREE REMOVAL TABLE 02

PARK PLACE II
A SUBDIVISION OF
TAX LOT 2 2E 28D 100, 190, 302, 400, 500, 502, 3700
CITY OF OREGON CITY, OREGON

REVISIONS

NO.	DATE	DESCRIPTION

EMERIO
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REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 19, 2007
DAVID M. BURNETT
PRELIMINARY NOT FOR CONSTRUCTION
EXPIRES: 12/31/2025

SHEET 3.6 OF 39

FILE P: \0082-012 Park Place II\dwg\plan\0082-012_03.6ptree_tables02, Layout: 3.6 TREE REMOVAL TABLE 02, Plot Date: 7/2/2025 1:37 PM, by: David Burnett

TREE NUMBER	TYPE	DBH (IN.)	REMOVE	MITIGATION TREES REQUIRED
21843	D	11	Y	1
21844	D	10	Y	1
21845	D	6	Y	1
21846	D	8	Y	1
21847	D	7	Y	1
21848	D	10	Y	1
21849	D	9	Y	1
21850	D	10	Y	1
21851	D	9	Y	1
21852	D	11	Y	1
21853	D	9	Y	1
21854	D	8	Y	1
21855	C	15	Y	2
21856	D	11	Y	1
21857	D	7	Y	1
21858	D	6	Y	1
21859	D	8	Y	1
21860	D	8	Y	1
21861	D	8	Y	1
21862	D	12, 20, 21	Y	7
21872	D	9	Y	1
21881	D	14	Y	2
21882	D	6	Y	1
21900	C	15	Y	2
21924	D	24	Y	3
21958	D	6	Y	1
21959	D	6	Y	1
21961	D	6, 16	Y	3
21962	C	16	Y	2
21963	D	6	Y	1
21964	D	6	Y	1
21965	D	22	Y	3
21966	C	14	Y	2
21967	C	16	Y	2
21968	C	6	Y	1
21971	D	11	Y	1
21997	C	14	Y	2
21998	D	22	Y	3
21999	D	17	Y	2
22000	C	10	Y	1
22001	D	14, 18	Y	4
22002	D	11	Y	1
22003	D	7	Y	1
22004	D	16	Y	2
22012	D	19	Y	3
22013	C	10	Y	1
22016	D	6	Y	1
22020	D	9	Y	1
22021	D	8	Y	1
22023	D	7	Y	1
22025	D	6	Y	1
22026	D	7	Y	1
22027	D	6	Y	1
22028	C	28	Y	4
22029	C	12	Y	1
22030	C	7	Y	1
22032	C	11	Y	1
22041	D	6	Y	1
22050	D	20	Y	3
22051	D	6	Y	1
22052	D	7	Y	1
22053	D	6	Y	1
22054	D	13	Y	2
22055	D	8	Y	1
22056	D	14	Y	2
22057	D	17	Y	2
22058	D	19	Y	3
22059	D	35	Y	5
22060	D	7	Y	1
22061	D	6	Y	1
22090	D	12	Y	1
22091	D	13	Y	2
22092	C	20	Y	3
22096	C	26	Y	4
22097	C	28	Y	4

TREE NUMBER	TYPE	DBH (IN.)	REMOVE	MITIGATION TREES REQUIRED
22098	C	17	Y	2
22099	C	15	Y	2
22100	D	13	Y	2
22102	D	15	Y	2
22103	D	6	Y	1
22104	D	14	Y	2
22105	D	8	Y	1
22106	D	7	Y	1
22109	D	14	Y	2
22110	D	13	Y	2
22111	D	16	Y	2
22112	D	16	Y	2
22135	D	16	Y	2
22136	D	6	Y	1
22137	C	11	Y	1
22138	C	24	Y	3
22140	D	12	Y	1
22143	D	13	Y	2
22144	D	12	Y	1
22145	D	7	Y	1
22146	D	11	Y	1
22147	D	13	Y	2
22159	D	17	Y	2
22160	D	19	Y	3
22161	D	7	Y	1
22162	D	7	Y	1
22163	D	9	Y	1
22164	D	8	Y	1
22165	D	7	Y	1
22166	D	7	Y	1
22167	D	7	Y	1
22168	D	17	Y	2
22169	D	6, 6, 7, 24	Y	6
22170	D	49	Y	5
22171	D	16	Y	2
22172	D	14	Y	2
22173	D	18	Y	2
22174	D	20	Y	3
22257	C	15	Y	2
22258	D	6	Y	1
22261	D	6	Y	1
22265	D	15	Y	2
22266	D	6, 14	Y	3
22267	D	16	Y	2
22268	D	12	Y	1
22269	D	11	Y	1
22270	D	19	Y	3
22271	D	13	Y	2
22272	D	10	Y	1
22273	D	14, 18	Y	4
22401	C	14	Y	2
22402	D	6	Y	1
22426	D	12	Y	1
22433	C	7	Y	1
22435	D	12	Y	1
22436	D	16	Y	2
22437	D	15	Y	2
22438	D	6	Y	1
22439	D	10	Y	1
22440	C	14	Y	2
22441	D	7	Y	1
22442	D	12	Y	1
22443	D	14, 17	Y	4
22508	D	12	Y	1
22509	D	9	Y	1
22510	D	7	Y	1
22512	D	26	Y	4
22513	D	26	Y	4
22514	D	26	Y	4
22518	D	6	Y	1
22525	D	12	Y	1
22526	D	11	Y	1
22527	D	8	Y	1
22528	D	8	Y	1
22529	D	8	Y	1

TREE NUMBER	TYPE	DBH (IN.)	REMOVE	MITIGATION TREES REQUIRED
22530	D	10	Y	1
22531	D	10	Y	1
22532	D	9	Y	1
22533	D	1	Y	N/A
22534	D	10	Y	1
22535	D	8	Y	1
22536	D	12	Y	1
22537	D	10	Y	1
22538	D	8	Y	1
22539	D	9	Y	1
22540	D	6	Y	1
22541	D	11	Y	1
22542	D	11	Y	1
22543	D	8	Y	1
22544	D	12	Y	1
22545	D	7	Y	1
22560	D	19	Y	3
22561	D	11	Y	1
22567	D	12	Y	1
22568	D	6	Y	1
22572	D	6	Y	1
22573	D	7	Y	1
22574	D	16	Y	2
22575	D	6	Y	1
22584	D	17	Y	2
22585	D	12	Y	1
22588	D	7	Y	1
22589	D	8	Y	1
22590	D	11	Y	1
22591	D	7	Y	1
22592	D	7	Y	1
22593	D	11	Y	1
22594	D	7	Y	1
22595	D	10	Y	1
22596	D	9	Y	1
22597	D	11	Y	1
22598	D	13	Y	2
22599	D	11	Y	1
22600	D	11	Y	1
22601	D	10	Y	1
22602	D	11	Y	1
22603	D	10	Y	1
22604	D	6	Y	1
22605	D	6	Y	1
22606	D	6	Y	1
22607	D	9	Y	1
22608	D	10	Y	1
22609	D	12	Y	1
22610	D	17	Y	2
22611	D	11	Y	1
22623	D	8, 11, 12, 16, 18	Y	7
22627	D	9	Y	1
22631	D	8	Y	1
22632	D	14	Y	2
22633	D	6	Y	1
22635	D	12	Y	1
22636	C	18	Y	2
22637	D	14	Y	2
22638	D	12	Y	1
22640	D	19	Y	3
22669	C	13	Y	2
22675	D	6	Y	1
22684	D	12	Y	1
22685	D	15	Y	2
22686	D	12	Y	1
22687	D	15	Y	2
22688	D	17	Y	2
22709	D	6	Y	1
22727	D	17	Y	2
22728	D	15, 28	Y	6
22731	D	6	Y	1
22744	C	12	Y	1
22745	D	11	Y	1
22746	C	17	Y	2
22747	D	14	Y	2

TREE NUMBER	TYPE	DBH (IN.)	REMOVE	MITIGATION TREES REQUIRED
22748	C	11	Y	1
22749	D	6	Y	1
22750	C	16	Y	2
22751	C	16	Y	2
22752	C	18	Y	2
22753	D	10	Y	1
22754	D	14	Y	2
22755	D	16	Y	2
22756	D	6	Y	1
22757	D	19	Y	3
22758	D	7	Y	1
22759	D	6	Y	1
22760	D	34	Y	5
22761	D	10	Y	1
22764	D	7	Y	1
22765	C	23	Y	3
22766	C	11	Y	1
22767	C	21	Y	3
22768	D	9	Y	1
22770	D	22	Y	3
22772	D	7	Y	1
22773	D	6	Y	1
22774	D	6	Y	1
22775	C	27	Y	4
22776	C	7	Y	1
22777	C	11	Y	1
22778	C	13	Y	2
22779	C	30	Y	4
22780	C	35	Y	5
22781	D	6	Y	1
22782	C	10	Y	1
22783	C	26	Y	4
22784	C	14	Y	2
22785	C	11	Y	1
22786	C	11	Y	1
22787	D	7	Y	1
22788	C	8	Y	1
22789	C	23	Y	3
22790	C	8	Y	1
22791	C	21	Y	3
22792	C	31	Y	5
22793	C	21	Y	3
22794	D	8	Y	1
22795	D	7	Y	1
22796	C	14	Y	2
22797	D	6	Y	1
22824	C	12	Y	1
22832	D	21	Y	3
22836	D	6	Y	1
22837	D	16	Y	2
22838	D	6	Y	1
22849	D	24	Y	3
22850	D	15	Y	2
22851	D	7, 15	Y	3
22854	D	12	Y	1
22856	D	25	Y	4
22857	D	14	Y	2
22866	D	6	Y	1
22875	C	20	Y	3
22898	D	7	Y	1
22902	D	6	Y	1
22907	D	28	Y	4
22914	D	12	Y	1
22923	D	26	Y	4
22924	D	11	Y	1
22925	D	7, 9	Y	5
22931	D	6, 7, 7, 15	Y	5
22939	D	17	Y	2
22940	D	6	Y	1
22942	D	19	Y	3
22957	D	12	Y	1
22958	D	12	Y	1
22959	D	11	Y	1
22960	D	10	Y	1
22961	D	14	Y	2

PARK PLACE II
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CITY OF OREGON CITY, OREGON

TREE REMOVAL TABLE 03

REVISIONS

NO.	DATE	DESCRIPTION

EMERIO
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6445 SW FALLBROOK PLACE, SUITE 100
BEAVERTON, OREGON 97008
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REGISTERED PROFESSIONAL ENGINEER
PRELIMINARY
NOT FOR CONSTRUCTION
OREGON
JULY 15, 2007
CHRISTOPHER M. CROSBY
RENEWS: 12/31/2025

SHEET 3.7 OF 39

TREE NUMBER	TYPE	DBH (IN.)	REMOVE	MITIGATION TREES REQUIRED
22964	D	22	Y	3
22965	D	8	Y	1
22966	D	10	Y	1
22967	D	7	Y	1
22968	D	12	Y	1
22969	D	9	Y	1
22970	D	9	Y	1
22971	D	13	Y	2
22972	D	10	Y	1
22976	D	14	Y	2
22977	D	12, 13, 13	Y	6
22978	D	6, 6, 7	Y	3
22979	D	14	Y	2
22980	D	15	Y	2
22981	D	11	Y	1
22982	D	9	Y	1
22983	D	10	Y	1
22984	D	9, 14	Y	3
22985	D	16	Y	2
22986	D	13	Y	2
22987	D	14	Y	2
22996	D	11	Y	1
22997	D	10	Y	1
22998	D	11	Y	1
22999	D	12	Y	1
23000	D	32	Y	5
23001	D	6	Y	1
23005	D	6	Y	1
23006	D	8	Y	1
23011	D	6, 9	Y	2
23017	D	8	Y	1
23028	D	7	Y	1
23029	D	6	Y	1
23038	C	57	Y	5
23042	D	7	Y	1
23050	D	7	Y	1
23051	D	7	Y	1
23064	D	6, 7	Y	2
23069	D	6	Y	1
23074	D	36	Y	5
23077	D	17	Y	2
23078	D	9, 9	Y	2
23079	D	16	Y	2
23080	D	15	Y	2
23081	D	14	Y	2
23082	D	11	Y	1
23083	D	8	Y	1
23084	D	7	Y	1
23101	C	28	Y	4
23102	C	21	Y	3
23103	C	17	Y	2
23104	C	16	Y	2
23105	D	18	Y	2
23106	D	10	Y	1
23107	D	8	Y	1
23108	D	10	Y	1
23109	D	10	Y	1
23110	C	20	Y	3
23111	C	10	Y	1
23112	D	16	Y	2
23113	D	18	Y	2
23114	D	10	Y	1
23115	C	8	Y	1
23116	C	15	Y	2
23117	D	7	Y	1
23118	D	21	Y	3
23119	C	3	Y	N/A
23121	D	23	Y	3
23122	D	13	Y	2
23125	D	7, 11, 12	Y	3
23126	D	7	Y	1
23127	D	11	Y	1
23128	D	9	Y	1
23129	D	16	Y	2
23130	D	8, 10	Y	2

TREE NUMBER	TYPE	DBH (IN.)	REMOVE	MITIGATION TREES REQUIRED
23131	D	6	Y	1
23132	D	11	Y	1
23133	D	23	Y	3
23134	D	23	Y	3
23140	D	14	Y	2
23141	D	9	Y	1
23142	D	6	Y	1
23143	D	8	Y	1
23144	D	7	Y	1
23145	D	6	Y	1
23147	D	17	Y	2
23148	D	23	Y	3
23149	D	9	Y	1
23150	D	7	Y	1
23151	D	11	Y	1
23178	D	16	Y	2
23179	D	46	Y	5
23181	D	10	Y	1
23182	D	7	Y	1
23183	D	8	Y	1
23184	D	8	Y	1
23185	D	16	Y	2
23186	D	16	Y	2
23187	D	6	Y	1
23193	D	6	Y	1
23194	D	7	Y	1
23195	C	19	Y	3
23196	D	20	Y	3
23197	D	20	Y	3
23198	D	14	Y	2
23199	C	10	Y	1
23200	C	12	Y	1
23202	D	12, 14	Y	3
23203	C	15	Y	2
23204	D	19	Y	3
23205	D	18	Y	2
23206	D	12	Y	1
23209	D	11	Y	1
23210	D	19, 21	Y	6
23211	C	10	Y	1
23212	D	9	Y	1
23213	D	13	Y	2
23214	D	12	Y	1
23215	D	16	Y	2
23216	D	12	Y	1
23222	D	10	Y	1
23223	D	19	Y	3
23224	D	35	Y	5
23225	D	6	Y	1
23226	D	6	Y	1
23227	D	10	Y	1
23228	D	12	Y	1
23229	D	11	Y	1
23230	D	6, 9	Y	2
23231	D	9	Y	1
23232	D	6	Y	1
23233	D	11	Y	1
23234	D	8	Y	1
23235	D	11, 15	Y	3
23236	D	14, 19	Y	5
23237	D	7	Y	1
23238	D	10	Y	1
23239	D	14, 15	Y	4
23240	D	15	Y	2
23286	D	16	Y	2
23287	D	15	Y	2
23288	D	12	Y	1
23289	D	8	Y	1
23309	D	18	Y	2
23310	D	6	Y	1
23311	D	8	Y	1
23312	D	12	Y	1
23313	D	11	Y	1
23314	D	13	Y	2
23315	D	18	Y	2

TREE NUMBER	TYPE	DBH (IN.)	REMOVE	MITIGATION TREES REQUIRED
23316	D	10	Y	1
23317	D	12	Y	1
23318	D	11	Y	1
23319	D	14, 14	Y	4
23327	D	11, 12	Y	2
23328	D	9	Y	1
23334	D	12, 19	Y	4
23335	D	27	Y	4
23381	C	11	Y	1
23397	C	6	Y	1
23398	D	9	Y	1
23399	D	11	Y	1
23400	D	15	Y	2
23401	D	19	Y	3
23418	D	19	Y	3
23419	D	13	Y	2
23718	D	7	Y	1
23728	D	8, 9, 13	Y	4
26164	D	8, 10	Y	2
26431	C	26	Y	4
26451	D	8	Y	1
26457	C	34	Y	5
26461	C	32	Y	5
26462	C	7, 9, 16	Y	4
26463	D	25	Y	4
26464	D	10	Y	1
26466	D	10, 15	Y	3
26473	D	8	Y	1
26475	D	9	Y	1
26476	C	16	Y	2
26479	D	7	Y	1
26480	D	8, 12	Y	2
26482	C	6	Y	1
26483	C	10, 11	Y	2
26484	C	15	Y	2
26485	C	17	Y	2
26486	C	8	Y	1
26487	C	12	Y	1
26489	D	9	Y	1
26490	C	21	Y	3
26491	C	14	Y	2
26492	C	24	Y	3
26493	C	17	Y	2
26494	D	8	Y	1
26499	D	6, 7	Y	2
26502	C	12	Y	1
26504	D	6	Y	1
26505	D	8	Y	1
26506	C	14	Y	2
26508	C	15	Y	2
26509	C	10	Y	1
26510	C	6	Y	1
26511	C	9, 9, 10	Y	3
26513	C	9	Y	1
26514	C	15	Y	2
26515	C	7	Y	1
26516	C	7	Y	1
26517	C	8	Y	1
26518	C	12	Y	1
26519	C	12	Y	1
26520	D	12	Y	1
26521	D	6	Y	1
26522	D	8	Y	1
26523	D	8	Y	1
26524	C	12, 14	Y	3
26525	D	6	Y	1
26526	D	8	Y	1
26527	C	9	Y	1
26528	C	8	Y	1
26529	C	10	Y	1
26530	C	7	Y	1
26531	D	7	Y	1
26532	C	16	Y	2
26533	C	14	Y	2
26534	C	10	Y	1

TREE NUMBER	TYPE	DBH (IN.)	REMOVE	MITIGATION TREES REQUIRED
26536	D	6	Y	1
26537	C	7, 9, 11	Y	3
26538	C	15	Y	2
32007	D	27	Y	4
32022	D	8	Y	1
32023	C	9	Y	1
32041	C	36	Y	5
32042	C	7	Y	1
32043	C	28	Y	4
32044	C	12	Y	1
32045	C	9	Y	1
32046	C	20	Y	3
32047	C	21	Y	3
32048	C	25	Y	4
32128	D	11	Y	1
32129	D	11	Y	1
32257	D	7, 7	Y	2
32258	D	16	Y	2
32259	D	10	Y	1
32271	D	8, 9	Y	2
32272	D	9, 10	Y	2
32277	D	6	Y	1
500006	N/A	N/A	Y	N/A
500007	N/A	N/A	Y	N/A
14286	D	32	Y	5
14287	D	9	Y	1
14341	D	7	Y	1
26407	D	42	Y	5
14056	D	16	Y	2
14057	D	16	Y	2
14058	D	6	Y	1
14059	D	7	Y	1
14060	D	8	Y	1
14061	D	6	Y	1
14062	D	6	Y	1
14063	D	7	Y	1
14064	D	16	Y	2
14073	D	8	Y	1
14074	D	10	Y	1
14075	D	11	Y	1
14076	D	9	Y	1
14077	D	8, 11	Y	2
14078	D	9	Y	1
14079	D	6, 6, 6, 8	Y	4
14080	D	8	Y	1
14081	D	7, 7, 9, 9, 11	Y	5
14082	D	6	Y	1
22645	D	6	Y	1
22350	D	14	Y	2
22414	D	14	Y	2
32260	D	9	Y	1
32261	D	8, 10	Y	2
32262	D	6, 7, 10	Y	3
32270	D	6, 8, 8, 9	Y	4

PARK PLACE II
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CITY OF OREGON CITY, OREGON

TREE REMOVAL TABLE 04

REVISIONS

NO.	DATE	DESCRIPTION

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JULY 19, 2007
KENNETH D. SOULTING
PRELIMINARY NOT FOR CONSTRUCTION
EXPIRES: 12/31/2025

SHEET 3.8 OF 39

FILE:P:\0082--012 Park Place II\dwg\plan\0082--012_03.8tree_tables04, Layout: 3.8 TREE REMOVAL TABLE 04, Plot Date: 7/2/2025 1:42 PM, by: David Burnett

TREE NUMBER	TYPE	DBH (IN.)	REMOVE	MITIGATION TREES REQUIRED
23399	D	11	Y	1
23400	D	15	Y	2
23401	D	19	Y	3
23418	D	19	Y	3
23419	D	13	Y	2
23718	D	7	Y	1
23728	D	8, 9, 13	Y	4
26164	D	8, 10	Y	2
26431	C	26	Y	4
26451	D	8	Y	1
26457	C	34	Y	5
26461	C	32	Y	5
26462	C	7, 9, 16	Y	4
26463	D	25	Y	4
26464	D	10	Y	1
26466	D	10, 15	Y	3
26473	D	8	Y	1
26475	D	9	Y	1
26476	C	16	Y	2
26479	D	7	Y	1
26480	D	8, 12	Y	2
26482	C	6	Y	1
26483	C	10, 11	Y	2
26484	C	15	Y	2
26485	C	17	Y	2
26486	C	8	Y	1
26487	C	12	Y	1
26489	D	9	Y	1
26490	C	21	Y	3
26491	C	14	Y	2
26492	C	24	Y	3
26493	C	17	Y	2
26494	D	8	Y	1
26499	D	6, 7	Y	2
26502	C	12	Y	1
26504	D	6	Y	1
26505	D	8	Y	1
26506	C	14	Y	2
26508	C	15	Y	2
26509	C	10	Y	1
26510	C	6	Y	1
26511	C	9, 9, 10	Y	3
26513	C	9	Y	1
26514	C	15	Y	2
26515	C	7	Y	1
26516	C	7	Y	1
26517	C	8	Y	1
26518	C	12	Y	1
26519	C	12	Y	1
26520	D	12	Y	1
26521	D	6	Y	1
26522	D	8	Y	1
26523	D	8	Y	1
26524	C	12, 14	Y	3
26525	D	6	Y	1
26526	D	8	Y	1
26527	C	9	Y	1
26528	C	8	Y	1
26529	C	10	Y	1
26530	C	7	Y	1
26531	D	7	Y	1
26532	C	16	Y	2
26533	C	14	Y	2
26534	C	10	Y	1
26536	D	6	Y	1
26537	C	7, 9, 11	Y	3
26538	C	15	Y	2
32007	D	27	Y	4
32022	D	8	Y	1
32023	C	9	Y	1
32041	C	36	Y	5
32042	C	7	Y	1
32043	C	28	Y	4
32044	C	12	Y	1
32045	C	9	Y	1

TREE NUMBER	TYPE	DBH (IN.)	REMOVE	MITIGATION TREES REQUIRED
32046	C	20	Y	3
32047	C	21	Y	3
32048	C	25	Y	4
32128	D	11	Y	1
32129	D	11	Y	1
32257	D	7, 7	Y	2
32258	D	16	Y	2
32259	D	10	Y	1
32271	D	8, 9	Y	2
32272	D	9, 10	Y	2
32277	D	6	Y	1
500006	N/A	N/A	Y	N/A
500007	N/A	N/A	Y	N/A
14283	D	9,10,11	Y	3
14286	D	32	Y	5
14287	D	9	Y	1
14341	D	7	Y	1
26407	D	42	Y	5
14056	D	16	Y	2
14057	D	16	Y	2
14058	D	6	Y	1
14059	D	7	Y	1
14060	D	8	Y	1
14061	D	6	Y	1
14062	D	6	Y	1
14063	D	7	Y	1
14064	D	16	Y	2
14073	D	8	Y	1
14074	D	10	Y	1
14075	D	11	Y	1
14076	D	9	Y	1
14077	D	8,11	Y	2
14078	D	9	Y	1
14079	D	6,6,6,8	Y	4
14080	D	8	Y	1
14081	D	7,7,9,9,11	Y	5
14082	D	6	Y	1

PARK PLACE II
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CITY OF OREGON CITY, OREGON

TREE REMOVAL TABLE 05

REVISIONS

NO.	DATE	DESCRIPTION

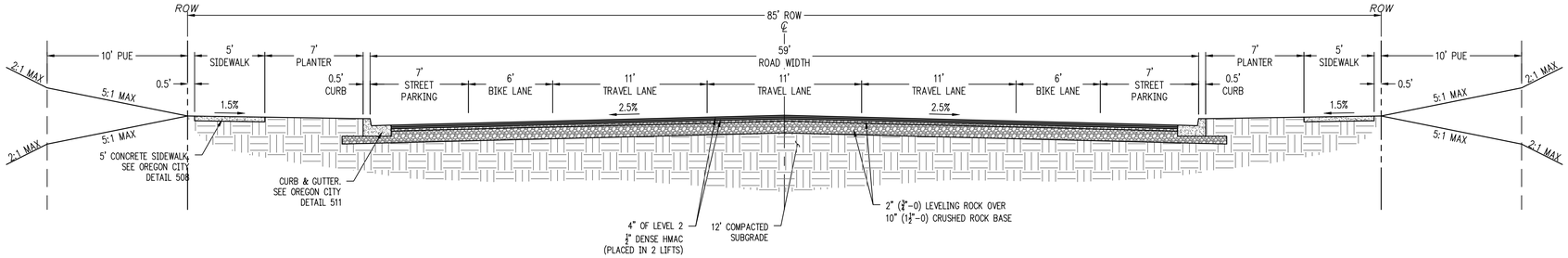
EMERIO
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REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 27, 2007
DAVID L. BURNETT
RENEWAL: 12/31/2025
PRELIMINARY NOT FOR CONSTRUCTION

EXPIRES: 12/31/2025

SHEET
3.9
OF
39

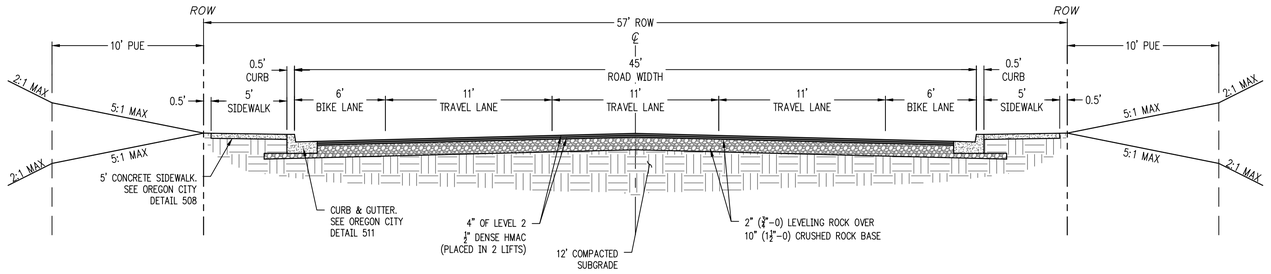
FILE P: \0082-012 Park Place II \dwg \plan \0082-012_03.9ptree_tables05, Layout: 3.9 TREE REMOVAL TABLE 05, Plot Date: 7/2/2025 1:44 PM, by: David Burnett



COLLECTOR - TYPICAL SECTION

SCALE: 1"=5'

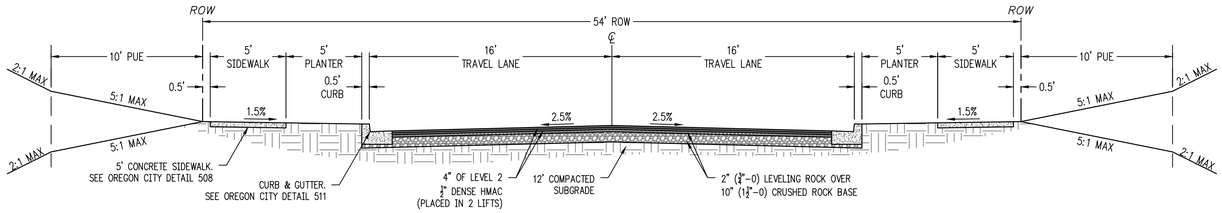
* PORTIONS OF HOLLY LANE (DESIGN SPEED = 25 MPH)



REDUCED COLLECTOR - TYPICAL SECTION

SCALE: 1"=5'

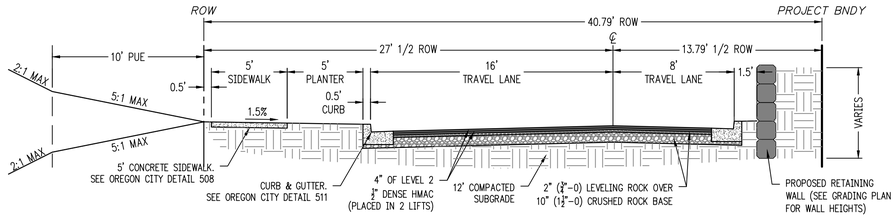
* PORTIONS OF HOLLY LANE (DESIGN SPEED = 25 MPH)



LOCAL STREET - TYPICAL SECTION

SCALE: 1"=5'

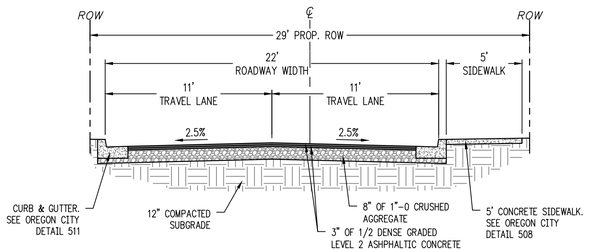
* AINSWORTH, ATKINSON, BOROW, CATTLE, GUSDORF, HANDRIS, JOURNEY, MOFFATT, PORTIONS OF PIONEER, SHARTNER, AND WAGON (DESIGN SPEED = 25 MPH)



3/4 LOCAL STREET - TYPICAL SECTION

SCALE: 1"=5'

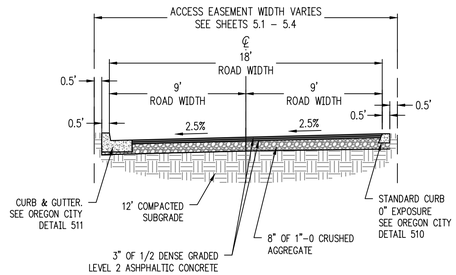
* PORTIONS OF PIONEER (DESIGN SPEED = 25 MPH)



PRIVATE STREET - TYPICAL SECTION

SCALE: 1"=5'

* TRACT F AND TRACT M (DESIGN SPEED = 25 MPH)



ALLEY - TYPICAL SECTION

SCALE: 1"=5'

* SHOWN IN ACCESS EASEMENTS

PARK PLACE II
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TAX LOT 2 2E 28D 100, 190, 302, 400, 500, 502, 3700
CITY OF OREGON CITY, OREGON

TYPICAL STREET SECTIONS

REVISIONS

NO.	DATE	DESCRIPTION

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OREGON
JULY 14, 2007
DANIEL R. BURNETT
RENEWAL: 12/31/2025
PRELIMINARY
NOT FOR CONSTRUCTION
EXPIRES: 12/31/2025

SHEET
4.0
OF
39

PRELIMINARY COMPOSITE PLAT

SCALE: 1" = 100'

NW SEE SHEET 5.4

NE SEE SHEET 5.3

SW SEE SHEET 5.1

SE SEE SHEET 5.2

SHADOW PLAT OF FUTURE PHASE

TR "A" WATER QUALITY FACILITY

TR "B"

TR "C"

TR "D"

TR "E"

TR "F" PRVT RD

TR "G"

TR "H"

TR "I"

TR "L"

TR "M" PRVT RD

TR "N"

TR "O"

TR "P"

TR "R"

"HOLCOMB RIDGE"

OAK VALLEY DR

"WITTKE ESTATES"

WETLAND MITIGATION AREA

"HOLCOMB HILL NO 2"

"TRACEY HEIGHTS"

"WASKO ACRES"

CATTLE DR

SHARTNER DR

WILLAMETTE VALLEY DR

"TRAIL VIEW"

TRAIL VIEW DR

"PARK PLACE CROSSING"

AINSWORTH LN

JOURNEY DR

WAGON DR

PIONEER DR

BOROW LN

MOFFATT DR

HOLLY LN

ATKINSON DR

HANDRIS DR

GUSDORF DR

S LIVESAY RD

T/L 4600 2 2E 2AD
T/L 4500 2 2E 2AD
T/L 4400 2 2E 2AD
T/L 7300 2 2E 2AD
T/L 3800 2 2E 2AD
T/L 3700 2 2E 2AD
T/L 3000 2 2E 2AD
T/L 3100 2 2E 2AD
T/L 2800 2 2E 2AD
T/L 2900 2 2E 2AD
T/L 324 2 2E 2AD
T/L 323 2 2E 2AD
T/L 322 2 2E 2AD
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T/L 320 2 2E 2AD
T/L 319 2 2E 2AD
T/L 308 2 2E 28AD
T/L 309 2 2E 28AD
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T/L 317 2 2E 2AD
T/L 318 2 2E 2AD
T/L 344 2 2E 2AD
T/L 6300 2 2E 28AC
T/L 800 2 2E 28AC
T/L 900 2 2E 28AC
T/L 1000 2 2E 28AC
T/L 1100 2 2E 28AC
T/L 1200 2 2E 28AC
T/L 2700 2 2E 28CA
T/L 1709 2 2E 28A
T/L 303 2 2E 28D
T/L 200 2 2E 28D
T/L 300 2 2E 28D
T/L 301 2 2E 28D
T/L 100 2 2E 28CA
T/L 800 2 2E 28D
T/L 502 2 2E 28D
T/L 100 2 2E 28D
T/L 1401 2 2E 27D
T/L 1403 2 2E 27D
T/L 1404 2 2E 27D
T/L 1402 2 2E 27D
T/L 600 2 2E 28D
T/L 1090 2 2E 28D
T/L 1100 2 2E 28D
T/L 1200 2 2E 28D
T/L 1390 2 2E 28D
T/L 1300 2 2E 28D
T/L 2500 2 2E 28D
T/L 2400 2 2E 28D
T/L 2300 2 2E 28D

TENATATIVE PLAT NOTES:

1. PLAT SHALL BE PROCESSED UNDER A DIFFERENT PERMIT

PARK PLACE II
A SUBDIVISION OF
TAX LOT 2 2E 28D 100, 190, 302, 400, 500, 502, 3700
CITY OF OREGON CITY, OREGON

PRELIMINARY COMPOSITE PLAT

REVISIONS

NO.	DATE	DESCRIPTION

EMERIO
ENGINEERING • SURVEYING • DESIGN
6445 SW FALLBROOK PLACE, SUITE 100
BEAVERTON, OREGON 97008
PH: (503) 946-9512
FAX: (503) 946-9562
www.emeriodesign.com

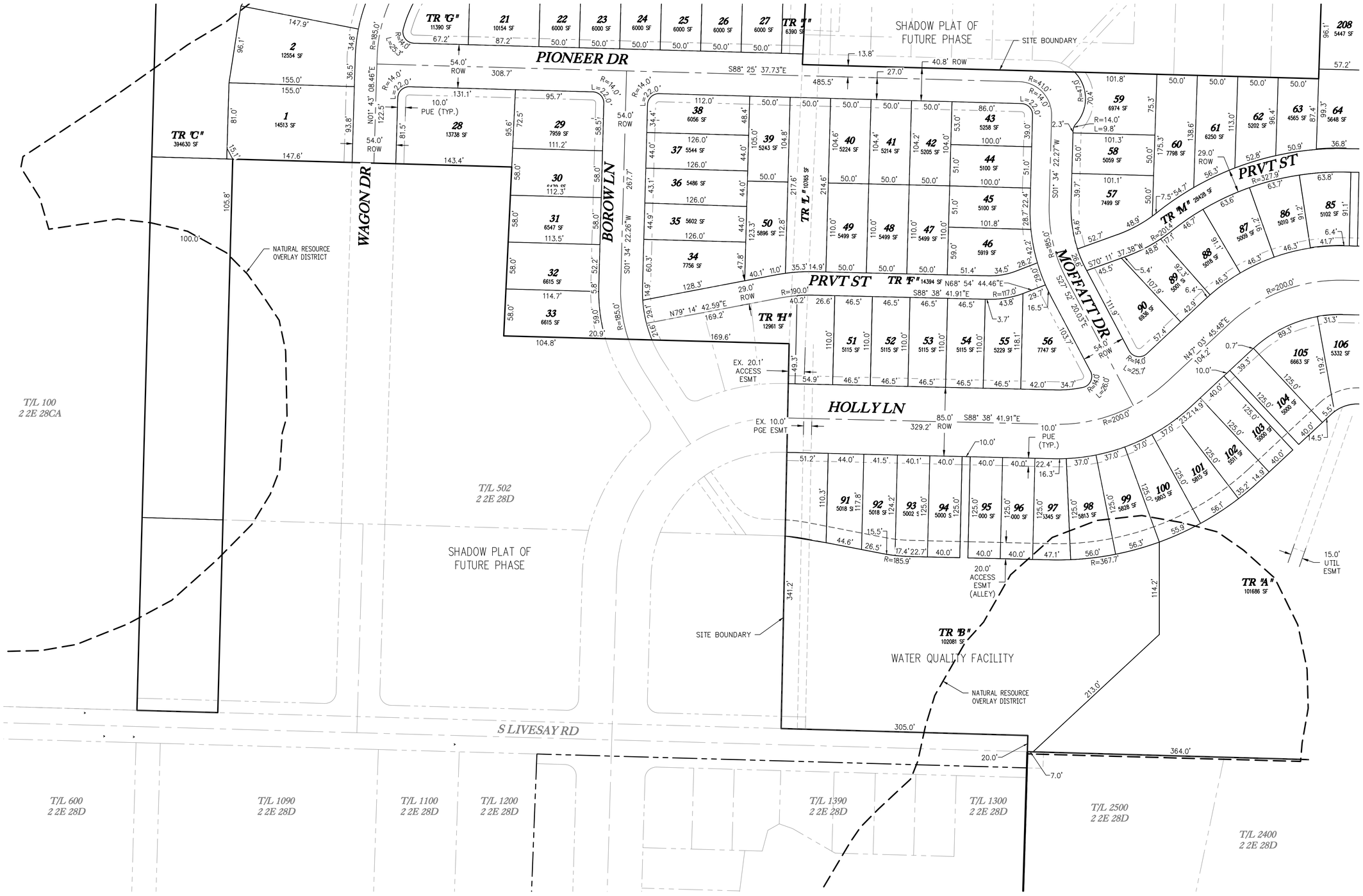
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 29, 2007
DAVID BURNETT
RENEWAL: 12/31/2025

PRELIMINARY NOT FOR CONSTRUCTION

EXPIRES: 12/31/2025

SHEET 5.0 OF 39

FILE:P:\0082-012 Park Place II\dwg\plan\0082-012_05.dgnplot, Layout: 5.0 PRELIMINARY COMPOSITE PLAT, Plot Date: 7/2/2025 4:20 PM, by: David Burnett



PRELIMINARY PLAT - SW

SCALE: 1" = 60'

SCALE: 1" = 60'

PARK PLACE II
A SUBDIVISION OF
TAX LOT 2 2E 28D 100, 190, 302, 400, 500, 502, 3700
CITY OF OREGON CITY, OREGON

PRELIMINARY PLAT SW

REVISIONS

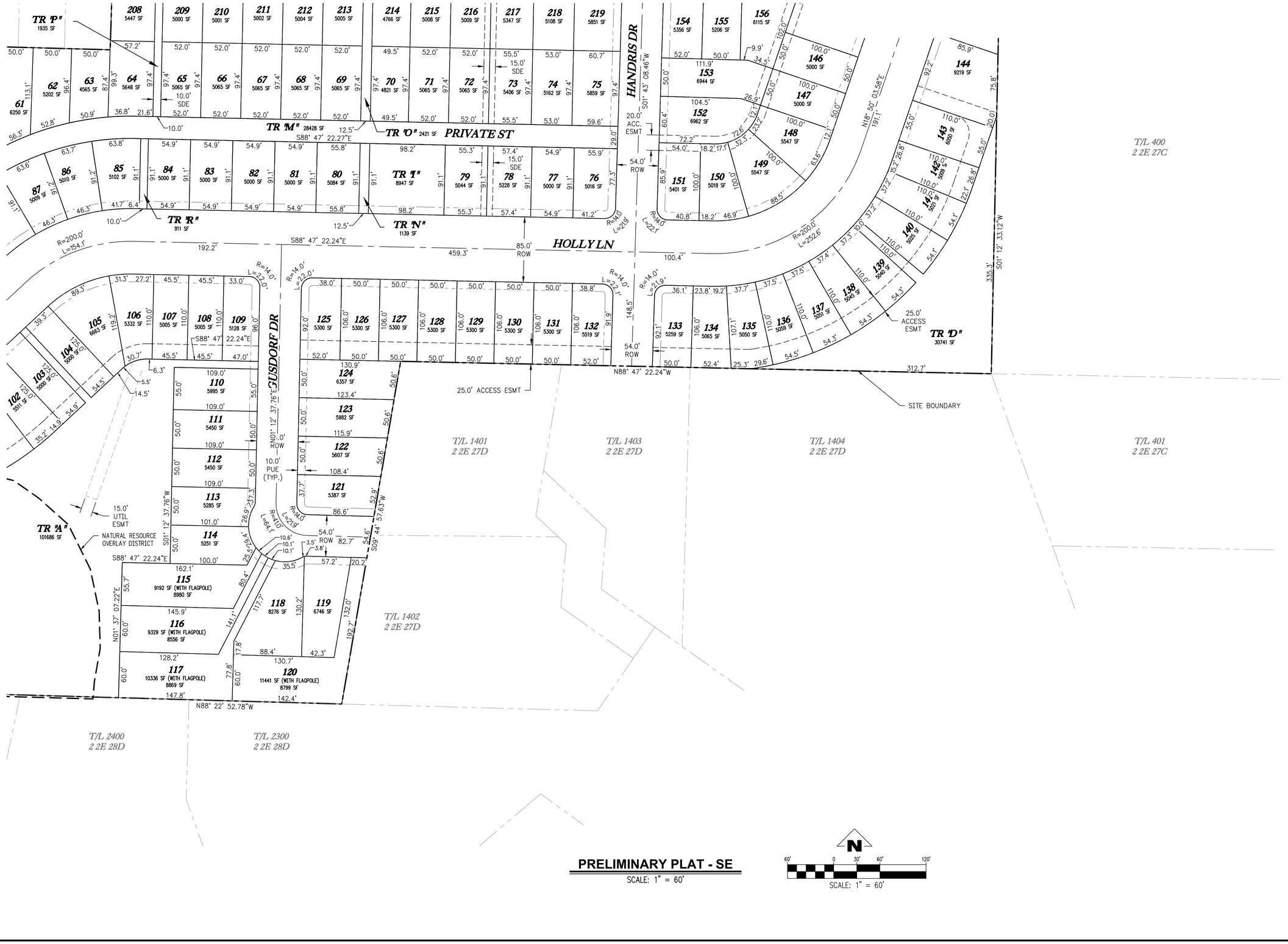
NO.	DATE	DESCRIPTION

EMERIO
ENGINEERING • SURVEYING • DESIGN
6445 SW FALLBROOK PLACE, SUITE 100
BEAVERTON, OREGON 97008
TEL: (503) 746-8812
FAX: (503) 620-2500
www.emeriodesign.com

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 19, 2007
PRELIMINARY NOT FOR CONSTRUCTION
EMERIO DESIGN CONSULTING HOUSE
EXPIRES: 12/31/2025

SHEET 5.1 OF 39

FILE P: \0082-012 Park Place II\dwg\plan\0082-012_05.1ppl01 SW, Layout: 5.1 PRELIMINARY PLAT SW, Plot Date: 7/2/2025 4:24 PM, by: David Burnett



PRELIMINARY PLAT - SE

SCALE: 1" = 60'

SCALE: 1" = 60'

PARK PLACE II
A SUBDIVISION OF
TAX LOT 2 2E 28D 100, 190, 302, 400, 500, 502, 3700
CITY OF OREGON CITY, OREGON

PRELIMINARY PLAT SE

REVISIONS

NO.	DATE	DESCRIPTION

EMERIO
ENGINEERING • SURVEYING • DESIGN
6445 SW FALLBROOK PLACE, SUITE 100
BEAVERTON, OREGON 97008
TEL: (503) 644-2042
FAX: (503) 639-9582
www.emeriodesign.com

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 19, 2007
DAVID L. BURNETT
PRELIMINARY NOT FOR CONSTRUCTION
EXPIRES: 12/31/2025

SHEET 5.2 OF 39

FILE:P:\0082-012 Park Place II\dwg\plan\0082-012_05.2plot ss, Layout: 5.2 PRELIMINARY PLAT SE, Plot Date: 7/2/2025 4:28 PM, by: David Burnett



PRELIMINARY PLAT - NE

SCALE: 1" = 60'

SCALE: 1" = 60'

PARK PLACE II
A SUBDIVISION OF
TAX LOT 2 2E 28D 100, 190, 302, 400, 500, 502, 3700
CITY OF OREGON CITY, OREGON

PRELIMINARY PLAT NE

REVISIONS

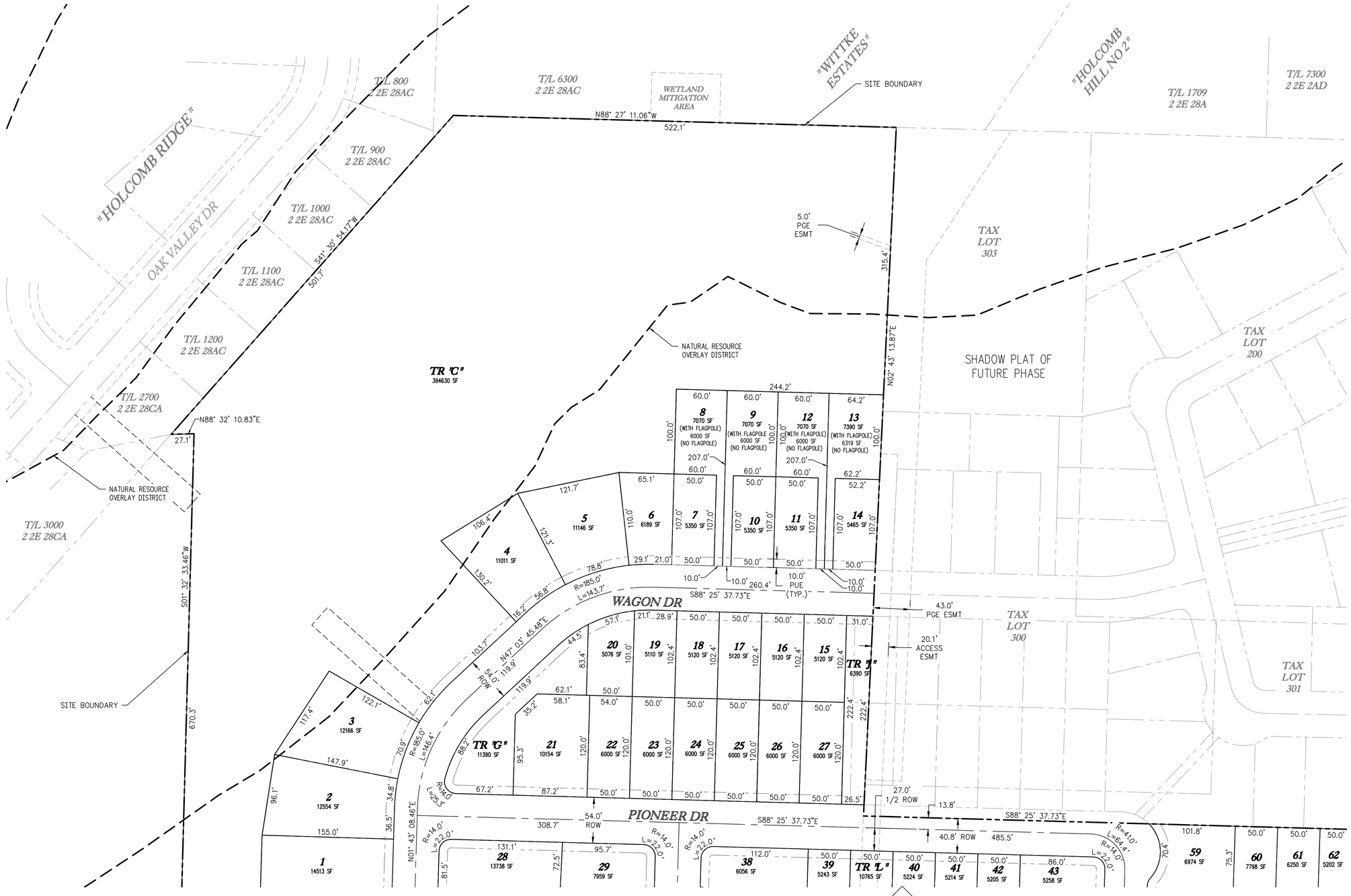
NO.	DATE	DESCRIPTION

EMERIO
ENGINEERING • SURVEYING • DESIGN
6445 SW FALLBROOK PLACE, SUITE 100
BEAVERTON, OREGON 97008
TEL: (503) 946-9512
FAX: (503) 646-9652
www.emeriodesign.com

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 15, 2007
DANIEL B. BURNETT
PRELIMINARY NOT FOR CONSTRUCTION
EXPIRES: 12/31/2025

SHEET 5.3 OF 39

FILE P:\10082-012 Park Place II\dwg\plan\10082-012_05.3pplat NE, Layout: 5.3 PRELIMINARY PLAT NE, Plot Date: 7/2/2025 4:30 PM, by: David Burnett



PRELIMINARY PLAT - NW

SCALE: 1" = 60'

SCALE: 1" = 60'

PARK PLACE II
A SUBDIVISION OF
TAX LOT 2 2E 28D 100, 190, 302, 400, 500, 502, 3700
CITY OF OREGON CITY, OREGON

PRELIMINARY PLAT NW

REVISIONS

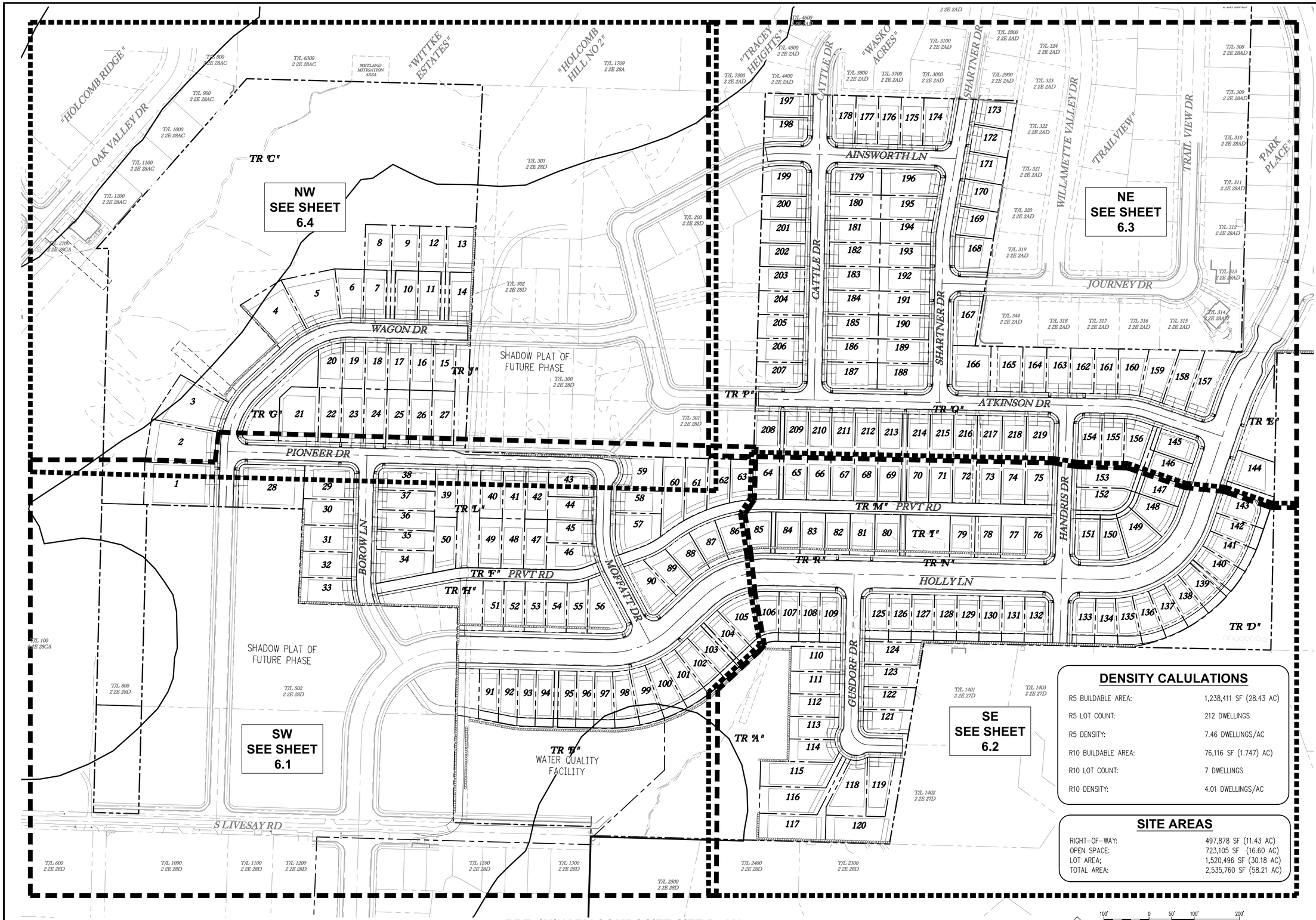
NO.	DATE	DESCRIPTION

EMERIO
ENGINEERING • SURVEYING • DESIGN
6445 SW FALLBROOK PLACE, SUITE 100
BEAVERTON, OREGON 97008
TEL: (503) 726-3912
FAX: (503) 626-8812
www.emeriodesign.com

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 13, 2007
TIMOTHY J. CROSBY
PRELIMINARY NOT FOR CONSTRUCTION
EXPIRES: 12/31/2025

SHEET 5.4 OF 39

FILE:P:\0082-012 Park Place II\Dwg\Plan\0082-012_05-4plat nw, Layout: 5.4 PRELIMINARY PLAT NW, Plot Date: 7/2/2025 4:32 PM, by: David Burnett



DENSITY CALULATIONS

R5 BUILDABLE AREA:	1,238,411 SF (28.43 AC)
R5 LOT COUNT:	212 DWELLINGS
R5 DENSITY:	7.46 DWELLINGS/AC
R10 BUILDABLE AREA:	76,116 SF (1.747) AC)
R10 LOT COUNT:	7 DWELLINGS
R10 DENSITY:	4.01 DWELLINGS/AC

SITE AREAS

RIGHT-OF-WAY:	497,878 SF (11.43 AC)
OPEN SPACE:	723,105 SF (16.60 AC)
LOT AREA;	1,520,496 SF (30.18 AC)
TOTAL AREA:	2,535,760 SF (58.21 AC)

PRELIMINARY COMPOSITE SITE PLAN
SCALE: 1" = 100'

N
100' 0 50' 100' 200'
SCALE: 1" = 100'

PARK PLACE II
A SUBDIVISION OF
TAX LOT 2 2E 28D 100, 190, 302, 400, 500, 502, 3700
CITY OF OREGON CITY, OREGON

PRELIMINARY COMPOSITE SITE PLAN

REVISIONS

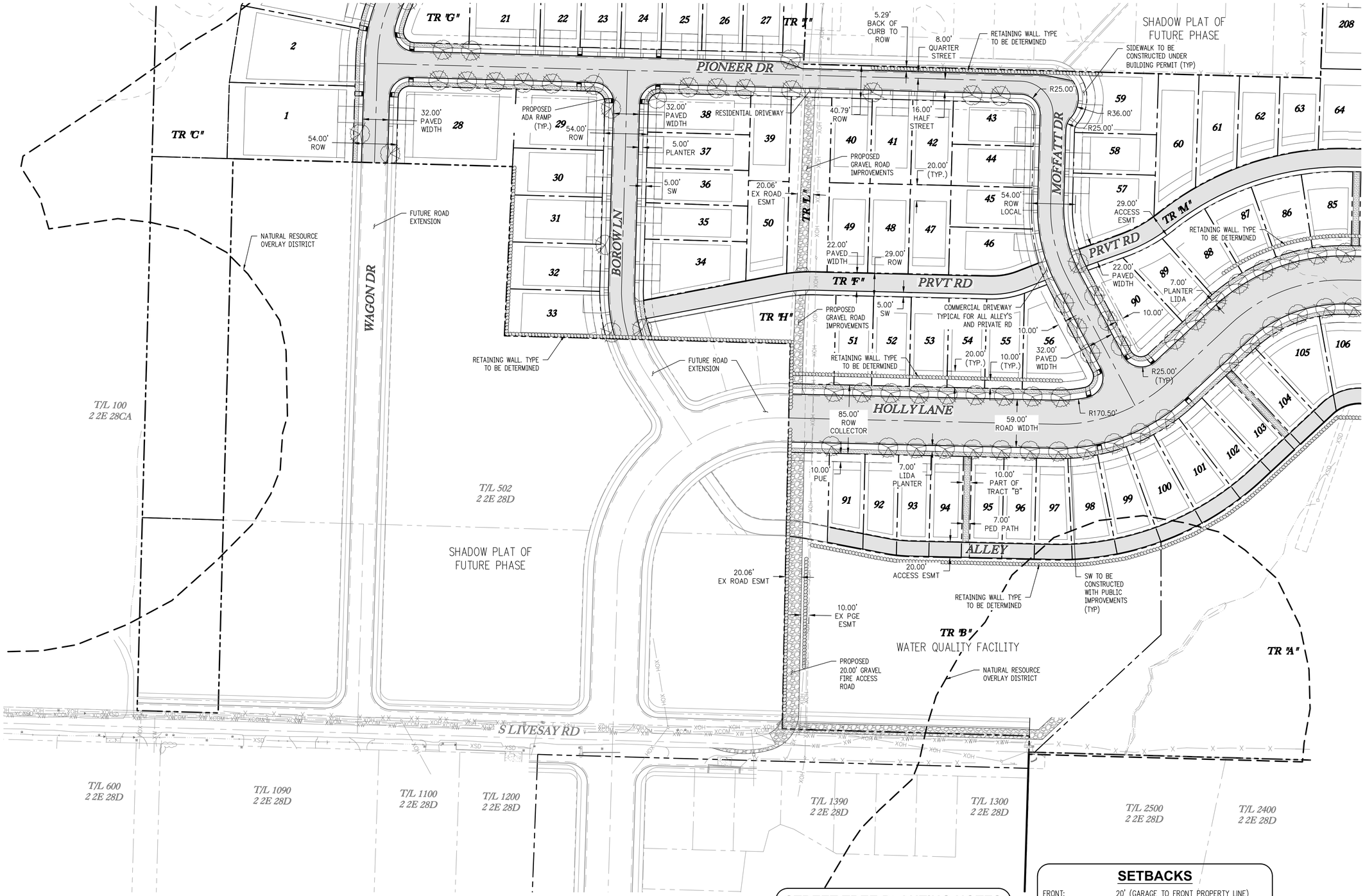
NO.	DATE	DESCRIPTION

EMERIO
ENGINEERING • SURVEYING • DESIGN
6445 SW FALLBROOK PLACE, SUITE 100
BEAVERTON, OREGON 97008
PH: (503) 848-8612
FAX: (503) 848-8892
www.emeriodesign.com

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 19, 2007
DAVID W. BURNETT
PRELIMINARY NOT FOR CONSTRUCTION
RENEWAL: 12/31/2025

SHEET 6.0 OF 39

FILE:P:\0082-012 Park Place II\dwg\plan\0082-012_06.0psite, Layout: 6.0 PRELIMINARY COMPOSITE SITE PLAN, Plot Date: 7/2/2025 4:36 PM, by: David Burnett



PRELIMIINARY SITE PLAN SW

SCALE: 1" = 60'

N

60' 0 30' 60' 120'

SCALE: 1" = 60'

STREET TREE PLANTING NOTES

ONE STREET TREE IS REQUIRED FOR EVERY THIRTY-FIVE (35) FEET OF PROPERTY FRONTAGE.

IF THE PEDESTRIAN CORRIDOR DOES NOT HAVE ADEQUATE SPACE WITHIN THE PLANTER STRIP, OR IF THE SIDEWALK IS CURB TIGHT, TREES MAY BE PLANTED WITHIN TEN (10) FEET OF THE PUBLIC ROW.

SETBACKS

FRONT:	20' (GARAGE TO FRONT PROPERTY LINE) 10' (BUILDING FACE TO FRONT PROPERTY LINE) 5' (FRONT PORCH TO FRONT PROPERTY LINE)
SIDE:	5' (INTERIOR) 7' (EXTERIOR – STREET SIDE/CORNER LOT)
REAR:	20' (BACK FACE TO BACK PROPERTY LINE) 15' (BACK PORCH TO BACK PROPERTY LINE)

PARK PLACE II
A SUBDIVISION OF
TAX LOT 2 2E 28D 100, 190, 302, 400, 500, 502, 3700
CITY OF OREGON CITY, OREGON

PRELIMINARY SITE PLAN SW

REVISIONS

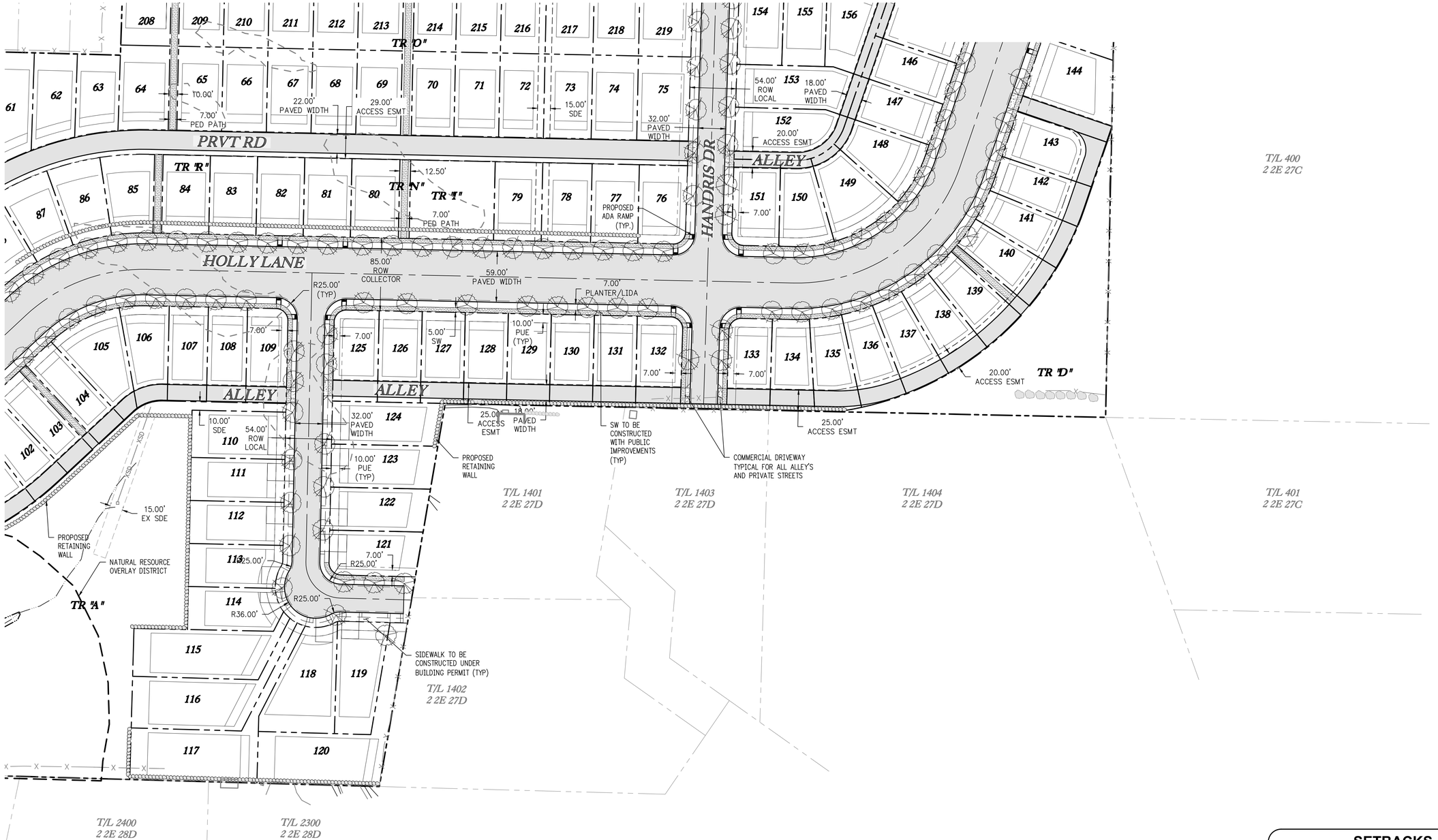
NO.	DATE	DESCRIPTION

EMERIO
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6445 SW FALLBROOK PLACE, SUITE 100
BEAVERTON, OREGON 97008
TEL: (503) 746-8812
FAX: (503) 639-9592
www.emeriodesign.com

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 2007
DANIEL L. STICKEL
PRELIMINARY NOT FOR CONSTRUCTION
EXPIRES: 12/31/2025

SHEET 6.1 OF 39

FILE P: \0082-012 Park Place II\dwg \plan \0082-012_06.1psite sw, Layout: 6.1 PRELIMINARY SITE PLAN SW, Plot Date: 7/2/2025 4:40 PM, by: David Burnett



PRELIMINARY SITE PLAN SE

SCALE: 1" = 60'

N

60' 0 30' 60' 120'

SCALE: 1" = 60'

SETBACKS

FRONT:	20' (GARAGE TO FRONT PROPERTY LINE) 10' (BUILDING FACE TO FRONT PROPERTY LINE) 5' (FRONT PORCH TO FRONT PROPERTY LINE)
SIDE:	5' (INTERIOR) 7' (EXTERIOR – STREET SIDE/CORNER LOT)
REAR:	20' (BACK FACE TO BACK PROPERTY LINE) 15' (BACK PORCH TO BACK PROPERTY LINE)

STREET TREE PLANTING NOTES

ONE STREET TREE IS REQUIRED FOR EVERY THIRTY-FIVE (35) FEET OF PROPERTY FRONTAGE.

IF THE PEDESTRIAN CORRIDOR DOES NOT HAVE ADEQUATE SPACE WITHIN THE PLANTER STRIP, OR IF THE SIDEWALK IS CURB TIGHT, TREES MAY BE PLANTED WITHIN TEN (10) FEET OF THE PUBLIC ROW.

PARK PLACE II
A SUBDIVISION OF
TAX LOT 2 2E 28D 100, 190, 302, 400, 500, 502, 3700
CITY OF OREGON CITY, OREGON

PRELIMINARY SITE PLAN SE

REVISIONS

NO.	DATE	DESCRIPTION

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6445 SW FALLBROOK PLACE, SUITE 100
BEAVERTON, OREGON 97008
PH: (503) 746-8812
FX: (503) 746-8992
www.emeriodesign.com

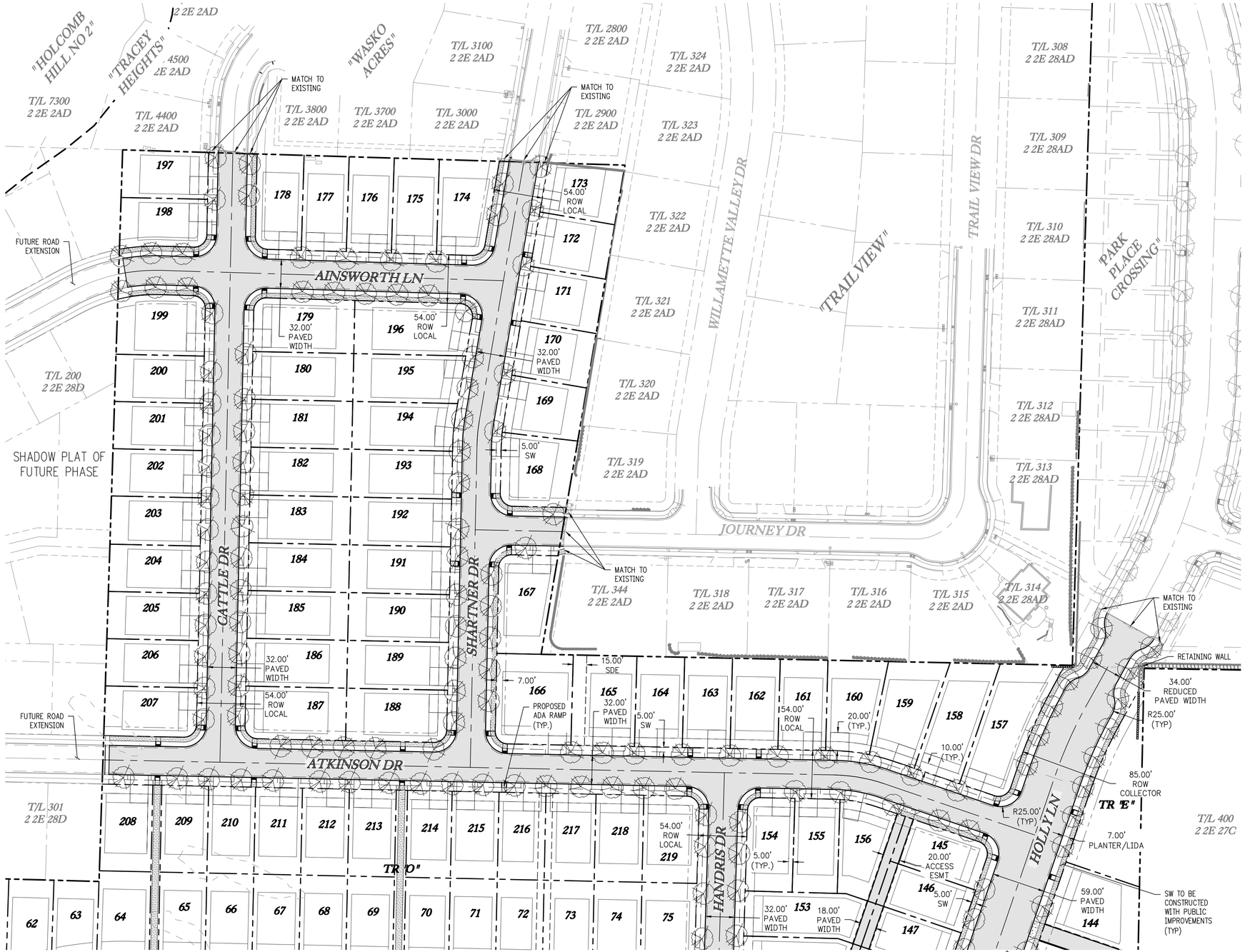
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 29, 2005
DAVID R. BURNETT
RENEWAL: 12/31/2025

PRELIMINARY NOT FOR CONSTRUCTION

EXPIRES: 12/31/2025

SHEET 6.2 OF 39

FILE:P:\0082-012 Park Place II\dwg\plan\0082-012_06.2psite se, Layout: 6.2 PRELIMINARY SITE PLAN SE, Plot Date: 7/2/2025 4:42 PM, by: David Burnett



PRELIMINARY SITE PLAN NE

SCALE: 1" = 60'

SCALE: 1" = 60'

SETBACKS

FRONT:	20' (GARAGE TO FRONT PROPERTY LINE) 10' (BUILDING FACE TO FRONT PROPERTY LINE) 5' (FRONT PORCH TO FRONT PROPERTY LINE)
SIDE:	5' (INTERIOR) 7' (EXTERIOR – STREET SIDE/CORNER LOT)
REAR:	20' (BACK FACE TO BACK PROPERTY LINE) 15' (BACK PORCH TO BACK PROPERTY LINE)

STREET TREE PLANTING NOTES

ONE STREET TREE IS REQUIRED FOR EVERY THIRTY–FIVE (35) FEET OF PROPERTY FRONTAGE.

IF THE PEDESTRIAN CORRIDOR DOES NOT HAVE ADEQUATE SPACE WITHIN THE PLANTER STRIP, OR IF THE SIDEWALK IS CURB TIGHT, TREES MAY BE PLANTED WITHIN TEN (10) FEET OF THE PUBLIC ROW.

PARK PLACE II
A SUBDIVISION OF
TAX LOT 2 2E 28D 100, 190, 302, 400, 500, 502, 3700
CITY OF OREGON CITY, OREGON

PRELIMINARY SITE PLAN NE

REVISIONS

NO.	DATE	DESCRIPTION

EMERIO
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6445 SW FALLBROOK PLACE, SUITE 100
BEAVERTON, OREGON 97008
TEL: (503) 946-9365
FAX: (503) 626-8802
www.emeriodesign.com

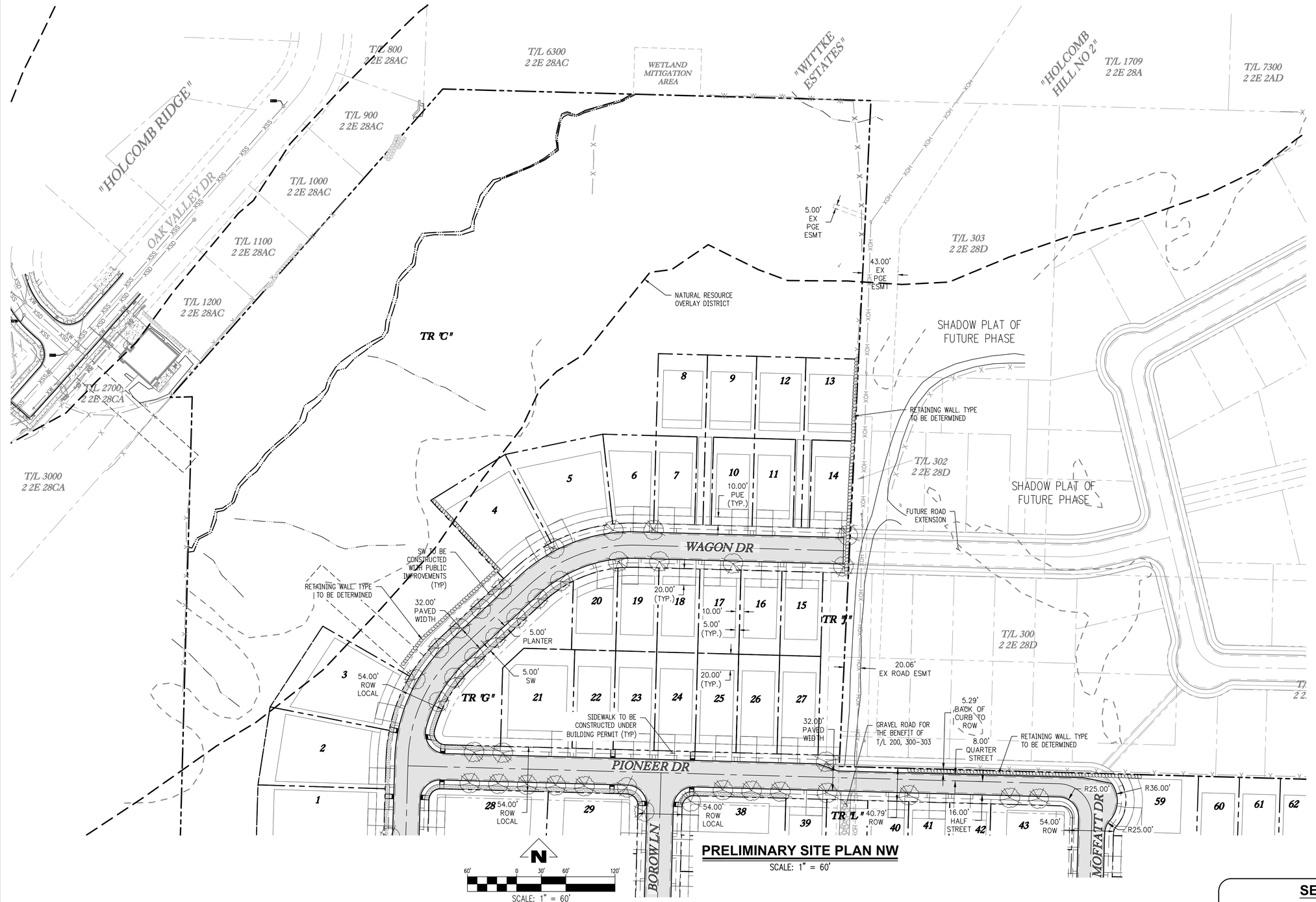
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 13, 2007
DAVID M. BURNETT
RENEWAL: 12/31/2025

PRELIMINARY NOT FOR CONSTRUCTION

EXPIRES: 12/31/2025

SHEET 6.3 OF 39

FILE:P:\0082-012 Park Place II\dwg\plan\0082-012_06.3psite ne, Layout: 6.3 PRELIMINARY SITE PLAN NE, Plot Date: 7/2/2025 4:45 PM, by: David Burnett



N

60' 0 30' 60' 120'

SCALE: 1" = 60'

PRELIMINARY SITE PLAN NW

SCALE: 1" = 60'

STREET TREE PLANTING NOTES

ONE STREET TREE IS REQUIRED FOR EVERY THIRTY-FIVE (35) FEET OF PROPERTY FRONTAGE.

IF THE PEDESTRIAN CORRIDOR DOES NOT HAVE ADEQUATE SPACE WITHIN THE PLANTER STRIP, OR IF THE SIDEWALK IS CURB TIGHT, TREES MAY BE PLANTED WITHIN TEN (10) FEET OF THE PUBLIC ROW.

SETBACKS

FRONT:	20' (GARAGE TO FRONT PROPERTY LINE) 10' (BUILDING FACE TO FRONT PROPERTY LINE) 5' (FRONT PORCH TO FRONT PROPERTY LINE)
SIDE:	5' (INTERIOR) 7' (EXTERIOR – STREET SIDE/CORNER LOT)
REAR:	20' (BACK FACE TO BACK PROPERTY LINE) 15' (BACK PORCH TO BACK PROPERTY LINE)

PARK PLACE II
A SUBDIVISION OF
TAX LOT 2 2E 28D 100, 190, 302, 400, 500, 502, 3700
CITY OF OREGON CITY, OREGON

PRELIMINARY SITE PLAN NW

REVISIONS

NO.	DATE	DESCRIPTION

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BEAVERTON, OREGON 97008
PH: (503) 746-8812
FAX: (503) 620-2565
www.emeriodesign.com

REGISTERED PROFESSIONAL ENGINEER
OREGON
JANUARY 15, 2002
KEVIN L. CRONIN
RENEWAL: 12/31/2025

PRELIMINARY NOT FOR CONSTRUCTION

EXPIRES: 12/31/2025

SHEET 6.4 OF 39

FILE:P:\0082-012 Park Place II\dwg\plan\0082-012_06.4psite NW, Layout: 6.4 PRELIMINARY SITE PLAN NW, Plot Date: 7/2/2025 4:47 PM, by: David Burnett

NW
SEE SHEET
7.4

NE
SEE SHEET
7.3

SW
SEE SHEET
7.1

SE
SEE SHEET
7.2

"HOLCOMB RIDGE"
OAK VALLEY DR
"WITTKE ESTATES"
"HOLCOMB HILL NO 2"
"TRACEY HEIGHTS"
CATTLE DR
"WASKO ACRES"
SHARTNER DR
AINSWORTH LN
"TRAILVIEW"
TRAIL VIEW DR
"PARK PLACE CROSSING"
WILLAMETTE VALLEY DR
JOURNEY DR
WAGON DR
SHADOW PLAT OF FUTURE PHASE
PIONEER DR
BOROWLN
MOFFATT DR
PRVT RD
HOLLY LN
GUSTAFORE DR
ATKINSON DR
HANDRIS DR
S LIVESAY RD
WATER QUALITY FACILITY
WETLAND MITIGATION AREA

TR "A" TR "B" TR "C" TR "D" TR "E" TR "F" TR "G" TR "I" TR "L" TR "M" TR "N" TR "O" TR "P" TR "R" TR "T"

T/L 100 2 2E 29CA
T/L 200 2 2E 28D
T/L 300 2 2E 28D
T/L 303 2 2E 28D
T/L 502 2 2E 28D
T/L 600 2 2E 28D
T/L 800 2 2E 28D
T/L 900 2 2E 28AC
T/L 1000 2 2E 28AC
T/L 1090 2 2E 28D
T/L 1100 2 2E 28AC
T/L 1100 2 2E 28D
T/L 1200 2 2E 28AC
T/L 1200 2 2E 28D
T/L 1300 2 2E 28D
T/L 1390 2 2E 28D
T/L 1401 2 2E 27D
T/L 1402 2 2E 27D
T/L 1403 2 2E 27D
T/L 1404 2 2E 27D
T/L 2300 2 2E 28D
T/L 2400 2 2E 28D
T/L 2500 2 2E 28D
T/L 3700 2 2E 28CA
T/L 4600 2 2E 28A

PRELIMINARY COMPOSITE UTILITY PLAN

SCALE: 1" = 100'

N

100' 0 50' 100' 200'

SCALE: 1" = 100'

PARK PLACE II
A SUBDIVISION OF
TAX LOT 2 2E 28D 100, 190, 302, 400, 500, 502, 3700
CITY OF OREGON CITY, OREGON

PRELIMINARY COMPOSITE UTILITY PLAN

REVISIONS

NO.	DATE	DESCRIPTION

EMERIO
ENGINEERING • SURVEYING • DESIGN
6445 SW FALLBROOK PLACE, SUITE 100
BEAVERTON, OREGON 97008
PH: (503) 848-8612
FAX: (503) 848-8892
www.emeriodesign.com

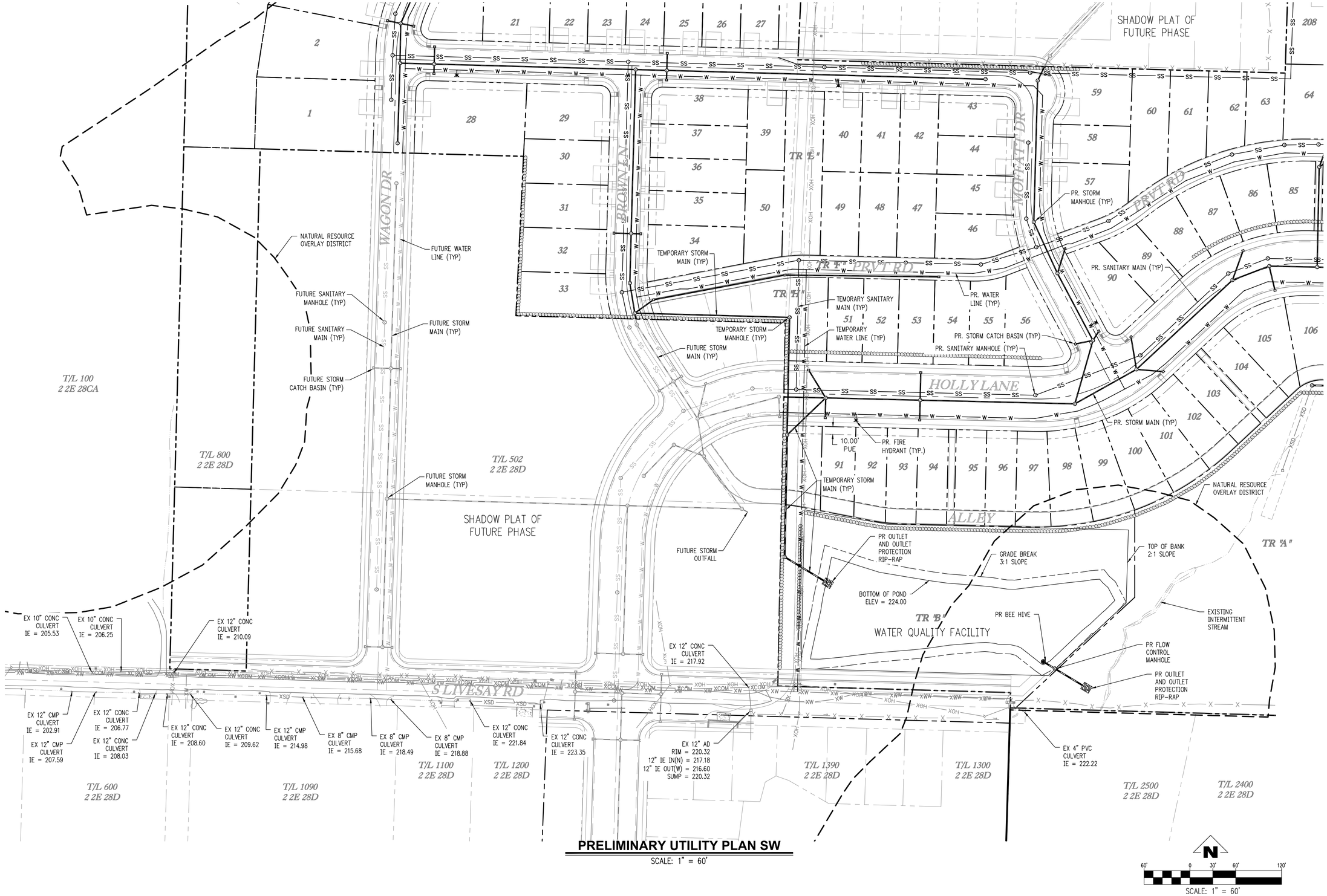
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 29, 2007
MATTHEW J. DELTING-DOLE

PRELIMINARY NOT FOR CONSTRUCTION

EXPIRES: 12/31/2025

SHEET
7.0
OF
39

FILE:P:\0082-012 Park Place II\dwg\plan\0082-012_07.0pu18, Layout: 7.0 PRELIMINARY COMPOSITE UTILITY PLAN, Plot Date: 7/2/2025 4:51 PM, by: David Burnett



PRELIMINARY UTILITY PLAN SW

SCALE: 1" = 60'

PARK PLACE II
A SUBDIVISION OF
TAX LOT 2 2E 28D 100, 190, 302, 400, 500, 502, 3700
CITY OF OREGON CITY, OREGON

PRELIMINARY UTILITY PLAN SW

REVISIONS

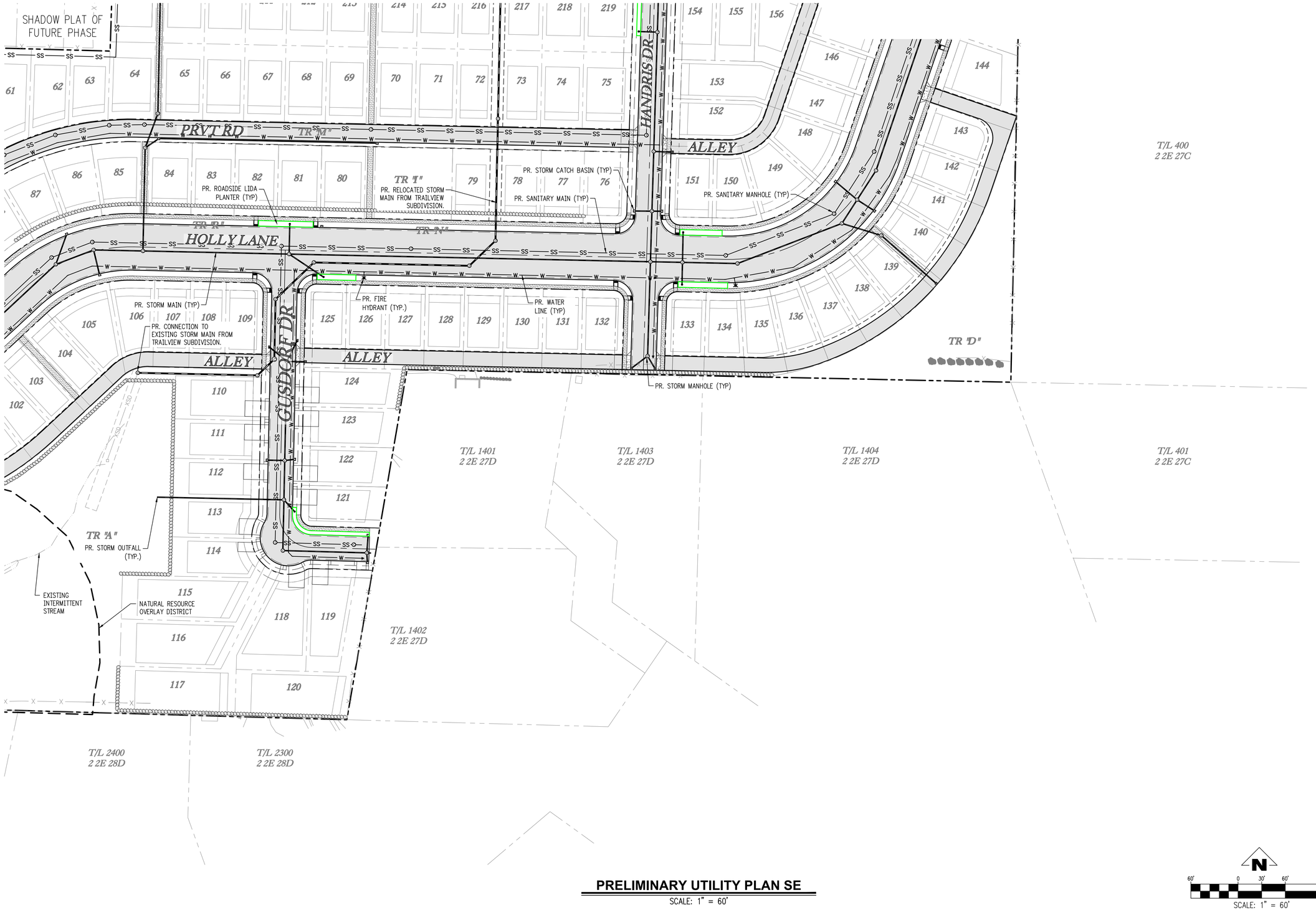
NO.	DATE	DESCRIPTION

EMERIO
ENGINEERING • SURVEYING • DESIGN
6445 SW FALLBROOK PLACE, SUITE 100
BEAVERTON, OREGON 97008
PH. (503) 946-9652
FAX: (503) 598-8592
www.emeriodesign.com

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 29, 2007
DAVID BURNETT
PRELIMINARY NOT FOR CONSTRUCTION
EXPIRES: 12/31/2025

SHEET 7.1 OF 39

FILE P:\0082-012 Park Place II\dwg\plan\0082-012_07.1pu01 sw, Layout: 7.1 PRELIMINARY UTILITY PLAN SW, Plot Date: 7/2/2025 4:55 PM, by: David Burnett



PRELIMINARY UTILITY PLAN SE

SCALE: 1" = 60'

N

60' 0 30' 60' 120'

SCALE: 1" = 60'

PARK PLACE II
A SUBDIVISION OF
TAX LOT 2 2E 28D 100, 190, 302, 400, 500, 502, 3700
CITY OF OREGON CITY, OREGON

PRELIMINARY UTILITY PLAN SE

REVISIONS

NO.	DATE	DESCRIPTION

EMERIO
ENGINEERING • SURVEYING • DESIGN
6445 SW FALLBROOK PLACE, SUITE 100
BEAVERTON, OREGON 97008
PH: (503) 946-9652
FX: (503) 626-8552
www.emeriodesign.com

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 27, 2007
DAVID E. BURNETT
RENEWAL: 12/31/2025

PRELIMINARY NOT FOR CONSTRUCTION

EXPIRES: 12/31/2025

SHEET 7.2 OF 39

FILE:P:\10082-012 Park Place II\dwg\plan\10082-012_07.2putil SE, Layout: 7.2 PRELIMINARY UTILITY PLAN SE, Plot Date: 7/2/2025 4:58 PM, by: David Burnett



PRELIMINARY UTILITY PLAN NE

SCALE: 1" = 60'

N

60' 0 30' 60' 120'

SCALE: 1" = 60'

PARK PLACE II
A SUBDIVISION OF
TAX LOT 2 2E 28D 100, 190, 302, 400, 500, 502, 3700
CITY OF OREGON CITY, OREGON

PRELIMINARY UTILITY PLAN NE

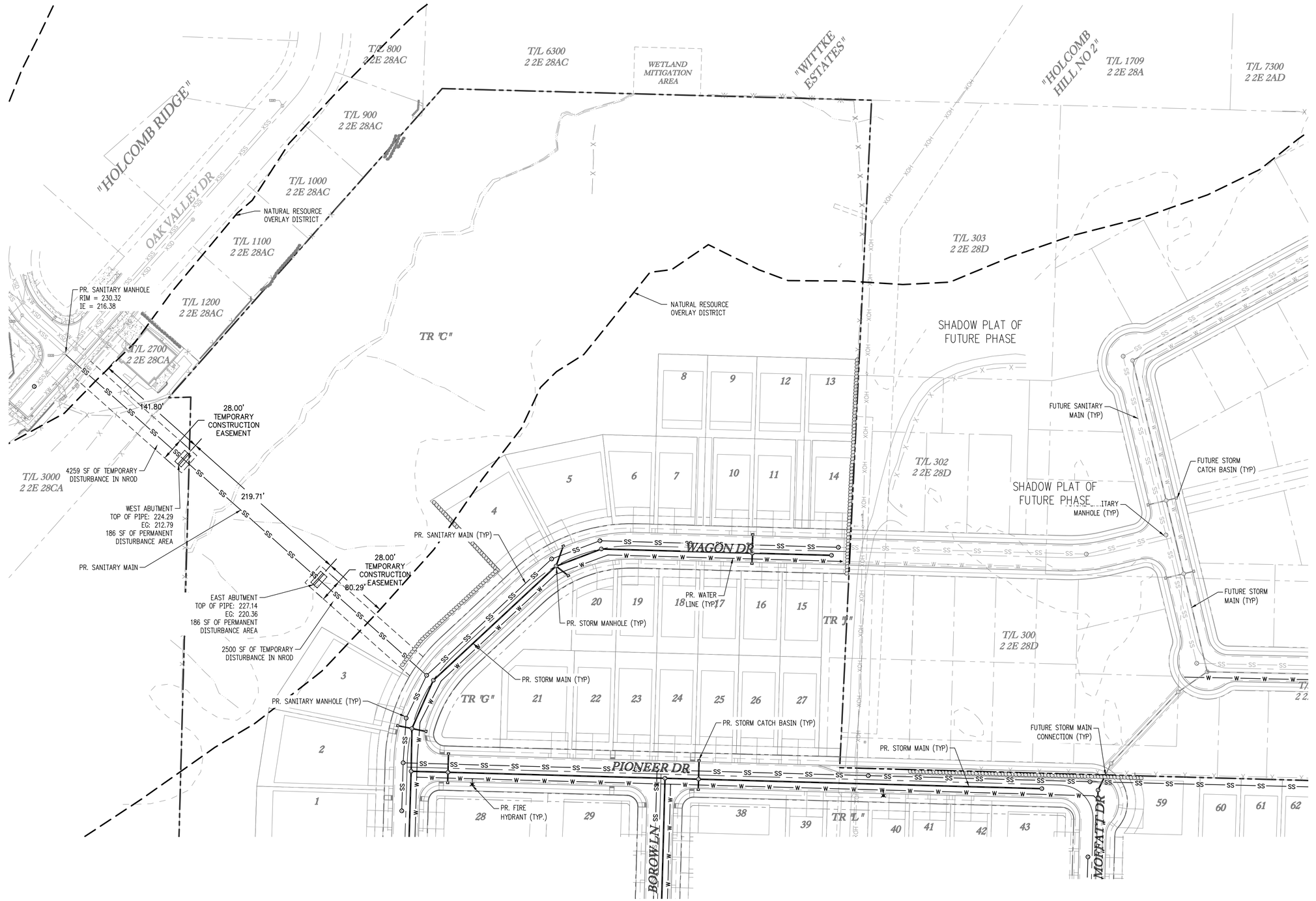
REVISIONS

NO.	DATE	DESCRIPTION

EMERIO
ENGINEERING • SURVEYING • DESIGN
6445 SW FALLBROOK PLACE, SUITE 100
BEAVERTON, OREGON 97008
TEL: (503) 746-8812
FAX: (503) 639-9592
www.emeriodesign.com

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 13, 2007
DAVID M. BURNETT
PRELIMINARY NOT FOR CONSTRUCTION
EXPIRES: 12/31/2025

SHEET
7.3
OF
39



PRELIMINARY UTILITY PLAN NW

SCALE: 1" = 60'

N

60' 0 30' 60' 120'

SCALE: 1" = 60'

PARK PLACE II
A SUBDIVISION OF
TAX LOT 2 2E 28D 100, 190, 302, 400, 500, 502, 3700
CITY OF OREGON CITY, OREGON

PRELIMINARY UTILITY PLAN NW

REVISIONS

NO.	DATE	DESCRIPTION

EMERIO
ENGINEERING • SURVEYING • DESIGN
6445 SW FALLBROOK PLACE, SUITE 100
BEAVERTON, OREGON 97008
TEL: (503) 746-8812
FAX: (503) 297-1854
www.emeriodesign.com

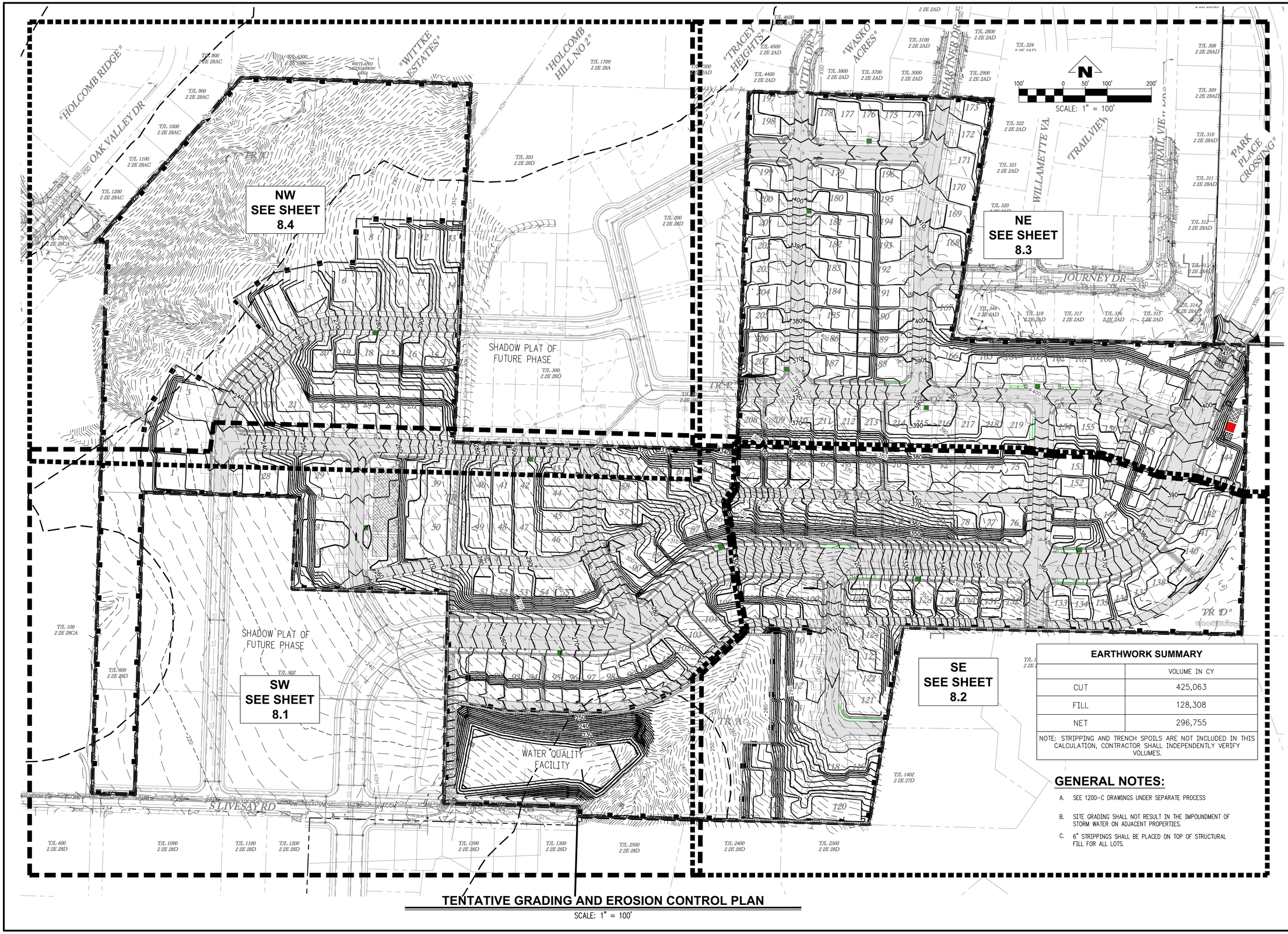
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 17, 2007
DAVID L. BURNETT
RENEWAL: 12/31/2025

PRELIMINARY NOT FOR CONSTRUCTION

EXPIRES: 12/31/2025

SHEET 7.4 OF 39

FILE P: \0082-012 Park Place II\dwg \plan \0082-012_07-4plu11 NW, Layout: 7.4 PRELIMINARY UTILITY PLAN NW, Plot Date: 7/2/2025 5:06 PM, by: David Burnett



TENTATIVE GRADING AND EROSION CONTROL PLAN

SCALE: 1" = 100'

EARTHWORK SUMMARY	
	VOLUME IN CY
CUT	425,063
FILL	128,308
NET	296,755

NOTE: STRIPPING AND TRENCH SPOILS ARE NOT INCLUDED IN THIS CALCULATION, CONTRACTOR SHALL INDEPENDENTLY VERIFY VOLUMES.

GENERAL NOTES:

A. SEE 1200-C DRAWINGS UNDER SEPARATE PROCESS

B. SITE GRADING SHALL NOT RESULT IN THE IMPOUNDMENT OF STORM WATER ON ADJACENT PROPERTIES.

C. 6" STRIPPINGS SHALL BE PLACED ON TOP OF STRUCTURAL FILL FOR ALL LOTS.

PARK PLACE II
A SUBDIVISION OF
TAX LOT 2 2E 28D 100, 190, 302, 400, 500, 502, 3700
CITY OF OREGON CITY, OREGON

TENTATIVE GRADING AND EROSION CONTROL PLAN

REVISIONS

NO.	DATE	DESCRIPTION

EMERIO
ENGINEERING • SURVEYING • DESIGN
6445 SW FALLBROOK PLACE, SUITE 100
BEAVERTON, OREGON 97008
TEL: (503) 726-8812
FAX: (503) 639-9592
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REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 15, 2007
DAVID M. BURNETT
PRELIMINARY
NOT FOR CONSTRUCTION
EXPIRES: 12/31/2025

SHEET
8.0
OF
39

FILE:P:\0082-012 Park Place II\Dwg\Plan\0082-012_08.0grad. Layout: 8.0 TENTATIVE GRADING AND EROSION CONTROL PLAN, Plot Date: 7/2/2025 5:14 PM, by: David Burnett



TENTATIVE GRADING AND EROSION CONTROL PLAN SW

SCALE: 1" = 60'

N

120' 0 30' 60' 120'

SCALE: 1" = 60'

LEGEND

- BOUNDARY OF SITE
- 422 EXISTING CONTOUR
- 424 PROPOSED CONTOUR
- PROPOSED SILT FENCE
- STRAW WATTLE
- LIMITS OF CONSTRUCTION (ORANGE CONSTRUCTION FENCING)
- DIRECTION OF STORMWATER FLOW
- STAGING AREA – FOR MATERIALS, FUEL (GAS AND OIL), AND EQUIPMENT
- SANITARY STATION
- STOCKPILE AREA (COVER WITH PLASTIC SHEETING, AS NECESSARY)
- GRAVEL CONSTRUCTION ENTRANCE
- BIOFILTER BAGS SURROUNDING SILTSACK–LINED CATCH BASIN
- BIO–FILTER BAG
- CONCRETE WASHOUT
- FIELD OFFICE
- CONNEX
- WASTE CONTAINER, WITH LID

GENERAL NOTES:

A. SEE 1200–C DRAWINGS UNDER SEPARATE PROCESS

B. SITE GRADING SHALL NOT RESULT IN THE IMPOUNDMENT OF STORM WATER ON ADJACENT PROPERTIES.

C. 6" STRIPPINGS SHALL BE PLACED ON TOP OF STRUCTURAL FILL FOR ALL LOTS.

PROPOSED TENTATIVE GRADING SLOPES TABLE				
NUMBER	MINIMUM SLOPE	MAXIMUM SLOPE	AREA (SF)	COLOR
1	0.00%	15.00%	1413175.93	
2	15.00%	20.00%	91448.77	
3	20.00%	30.00%	142323.21	
4	30.00%	40.00%	71950.74	
5	40.00%	50.00%	105413.58	
6	50.00%	100.00%	161078.70	

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CITY OF OREGON CITY, OREGON

TENTATIVE GRADING AND EROSION CONTROL PLAN SW

REVISIONS

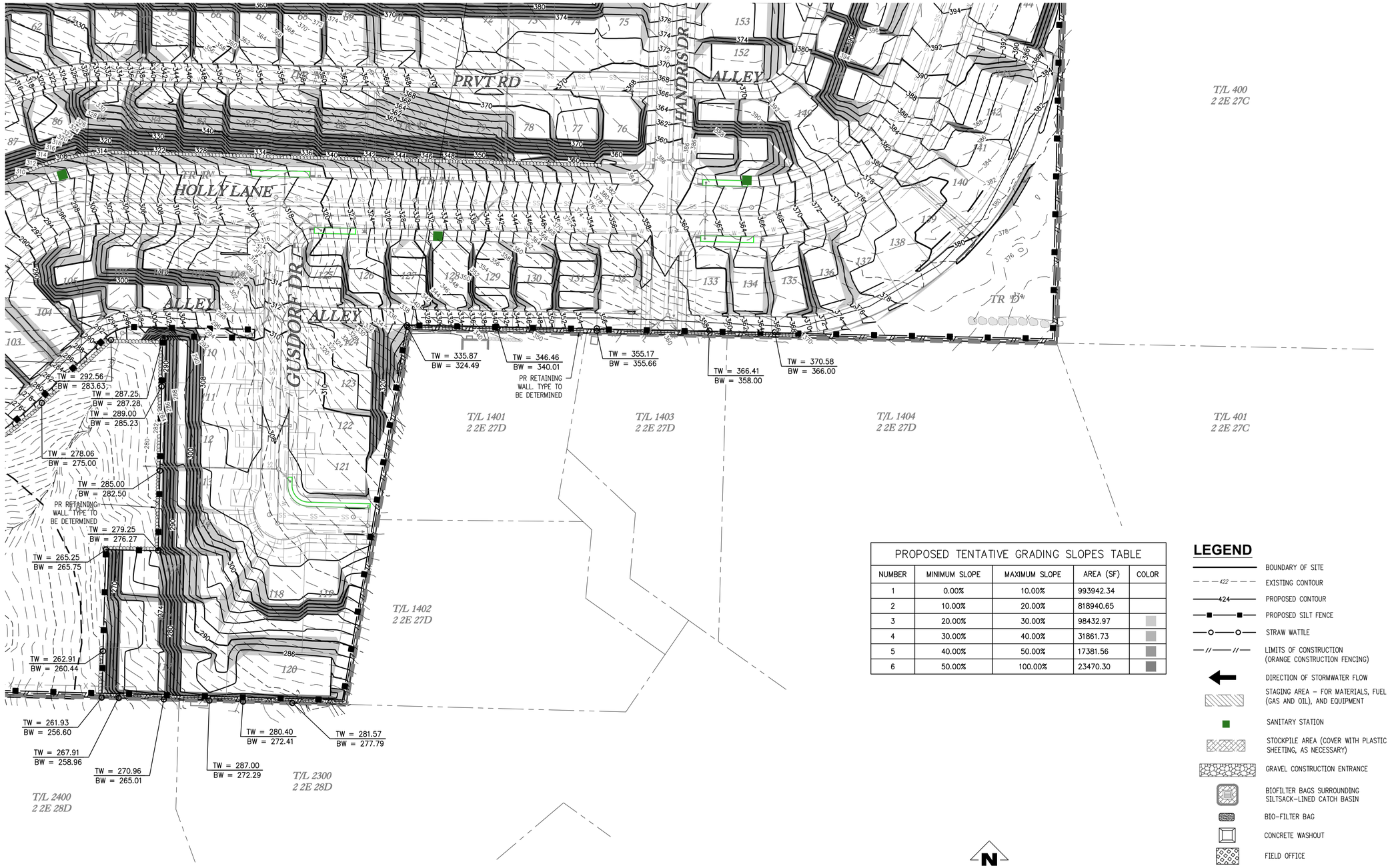
NO.	DATE	DESCRIPTION

EMERIO
ENGINEERING • SURVEYING • DESIGN
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BEAVERTON, OREGON 97008
PH: (503) 746-8812
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REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 29, 2007
CHRISTOPHER M. FOULTNER
PRELIMINARY NOT FOR CONSTRUCTION
EXPIRES: 12/31/2025

SHEET 8.1 OF 39

FILE:P:\0082–012 Park Place II\dwg\plan\0082–012_08.1grad, Layout: 8.1 TENTATIVE GRADING AND EROSION CONTROL PLAN – SW, Plot Date: 7/2/2025 5:27 PM, by: David Burnett



TENTATIVE GRADING AND EROSION CONTROL PLAN SE

SCALE: 1" = 60'

N

60' 0 30' 60' 120'

SCALE: 1" = 60'

PROPOSED TENTATIVE GRADING SLOPES TABLE				
NUMBER	MINIMUM SLOPE	MAXIMUM SLOPE	AREA (SF)	COLOR
1	0.00%	10.00%	993942.34	
2	10.00%	20.00%	818940.65	
3	20.00%	30.00%	98432.97	
4	30.00%	40.00%	31861.73	
5	40.00%	50.00%	17381.56	
6	50.00%	100.00%	23470.30	

LEGEND

- BOUNDARY OF SITE
- 422 EXISTING CONTOUR
- 424 PROPOSED CONTOUR
- PROPOSED SILT FENCE
- STRAW WATTLE
- LIMITS OF CONSTRUCTION (ORANGE CONSTRUCTION FENCING)
- DIRECTION OF STORMWATER FLOW
- STAGING AREA – FOR MATERIALS, FUEL (GAS AND OIL), AND EQUIPMENT
- SANITARY STATION
- STOCKPILE AREA (COVER WITH PLASTIC SHEETING, AS NECESSARY)
- GRAVEL CONSTRUCTION ENTRANCE
- BIOFILTER BAGS SURROUNDING SILTSACK–LINED CATCH BASIN
- BIO–FILTER BAG
- CONCRETE WASHOUT
- FIELD OFFICE
- CONNEX
- WASTE CONTAINER, WITH LID

GENERAL NOTES:

A. SEE 1200–C DRAWINGS UNDER SEPARATE PROCESS

B. SITE GRADING SHALL NOT RESULT IN THE IMPOUNDMENT OF STORM WATER ON ADJACENT PROPERTIES.

C. 6" STRIPPINGS SHALL BE PLACED ON TOP OF STRUCTURAL FILL FOR ALL LOTS.

PARK PLACE II
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TAX LOT 2 2E 28D 100, 190, 302, 400, 500, 502, 3700
CITY OF OREGON CITY, OREGON

TENTATIVE GRADING AND EROSION CONTROL PLAN SE

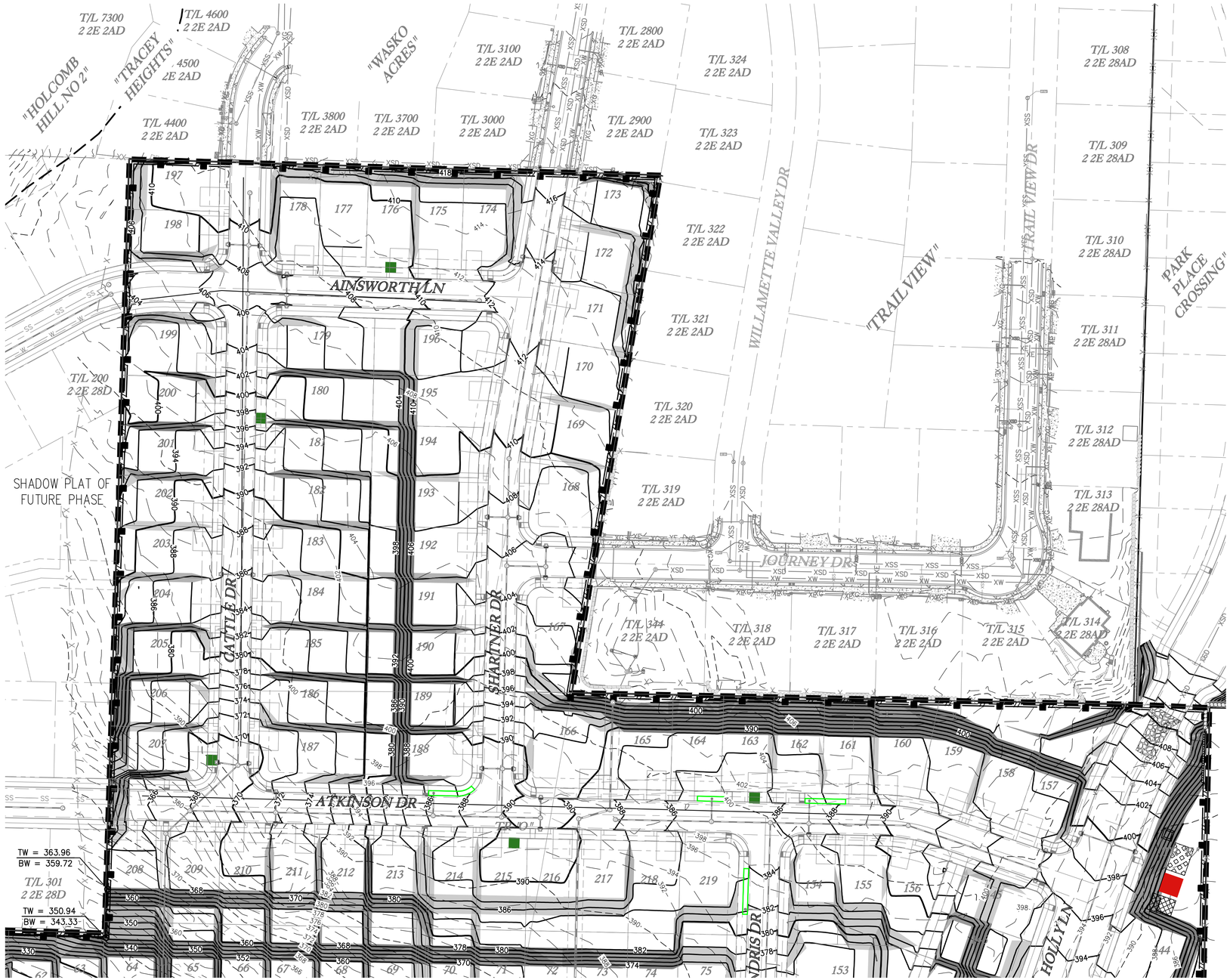
REVISIONS

NO.	DATE	DESCRIPTION

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REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 15, 2007
DAVID M. BURNETT
PRELIMINARY NOT FOR CONSTRUCTION
EMERIO DESIGN, LLC CONSULTING ENGINEERS
EXPIRES: 12/31/2025

SHEET
8.2
OF
39



TENTATIVE GRADING AND EROSION CONTROL PLAN NE

SCALE: 1" = 60'

N

120' 0 30' 60' 120'

SCALE: 1" = 60'

LEGEND

- BOUNDARY OF SITE
- 422 EXISTING CONTOUR
- 424 PROPOSED CONTOUR
- PROPOSED SILT FENCE
- STRAW WATTLE
- LIMITS OF CONSTRUCTION (ORANGE CONSTRUCTION FENCING)
- DIRECTION OF STORMWATER FLOW
- STAGING AREA – FOR MATERIALS, FUEL (GAS AND OIL), AND EQUIPMENT
- SANITARY STATION
- STOCKPILE AREA (COVER WITH PLASTIC SHEETING, AS NECESSARY)
- GRAVEL CONSTRUCTION ENTRANCE
- BIOFILTER BAGS SURROUNDING SILTSACK–LINED CATCH BASIN
- BIO–FILTER BAG
- CONCRETE WASHOUT
- FIELD OFFICE
- CONNEX
- WASTE CONTAINER, WITH LID

GENERAL NOTES:

A. SEE 1200–C DRAWINGS UNDER SEPARATE PROCESS

B. SITE GRADING SHALL NOT RESULT IN THE IMPOUNDMENT OF STORM WATER ON ADJACENT PROPERTIES.

C. 6" STRIPPINGS SHALL BE PLACED ON TOP OF STRUCTURAL FILL FOR ALL LOTS.

PROPOSED TENTATIVE GRADING SLOPES TABLE

NUMBER	MINIMUM SLOPE	MAXIMUM SLOPE	AREA (SF)	COLOR
1	0.00%	10.00%	1145657.85	
2	10.00%	20.00%	358966.85	
3	20.00%	30.00%	142323.21	
4	30.00%	40.00%	71950.74	
5	40.00%	50.00%	105413.58	
6	50.00%	100.00%	161078.70	

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TAX LOT 2 2E 28D 100, 190, 302, 400, 500, 502, 3700
CITY OF OREGON CITY, OREGON

TENTATIVE GRADING AND EROSION CONTROL PLAN NE

REVISIONS

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BEAVERTON, OREGON 97008
PH: (503) 746-8812
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OREGON
JULY 19, 2007
DAVID BURNETT
PRELIMINARY NOT FOR CONSTRUCTION
EXPIRES: 12/31/2025

SHEET 8.3 OF 39

FILE:P:\0082–012 Park Place II\dwg\plan\0082–012_08.3grnd, Layout: 8.3 TENTATIVE GRADING AND EROSION CONTROL PLAN – NE, Plot Date: 7/2/2025 5:35 PM, by: David Burnett



TENTATIVE GRADING AND EROSION CONTROL PLAN NW

SCALE: 1" = 60'

N

120' 0 30' 60' 120'

SCALE: 1" = 60'

LEGEND

- BOUNDARY OF SITE
- 422 EXISTING CONTOUR
- 424 PROPOSED CONTOUR
- PROPOSED SILT FENCE
- STRAW WATTLE
- LIMITS OF CONSTRUCTION (ORANGE CONSTRUCTION FENCING)
- DIRECTION OF STORMWATER FLOW
- STAGING AREA – FOR MATERIALS, FUEL (GAS AND OIL), AND EQUIPMENT
- SANITARY STATION
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- FIELD OFFICE
- CONNEX
- WASTE CONTAINER, WITH LID

GENERAL NOTES:

A. SEE 1200-C DRAWINGS UNDER SEPARATE PROCESS

B. SITE GRADING SHALL NOT RESULT IN THE IMPOUNDMENT OF STORM WATER ON ADJACENT PROPERTIES.

C. 6" STRIPPINGS SHALL BE PLACED ON TOP OF STRUCTURAL FILL FOR ALL LOTS.

PROPOSED TENTATIVE GRADING SLOPES TABLE				
NUMBER	MINIMUM SLOPE	MAXIMUM SLOPE	AREA (SF)	COLOR
1	0.00%	10.00%	993942.34	
2	10.00%	20.00%	818940.65	
3	20.00%	30.00%	98432.97	
4	30.00%	40.00%	31861.73	
5	40.00%	50.00%	17381.56	
6	50.00%	Vertical	40878.98	

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CITY OF OREGON CITY, OREGON

TENTATIVE GRADING AND EROSION CONTROL PLAN NW

REVISIONS

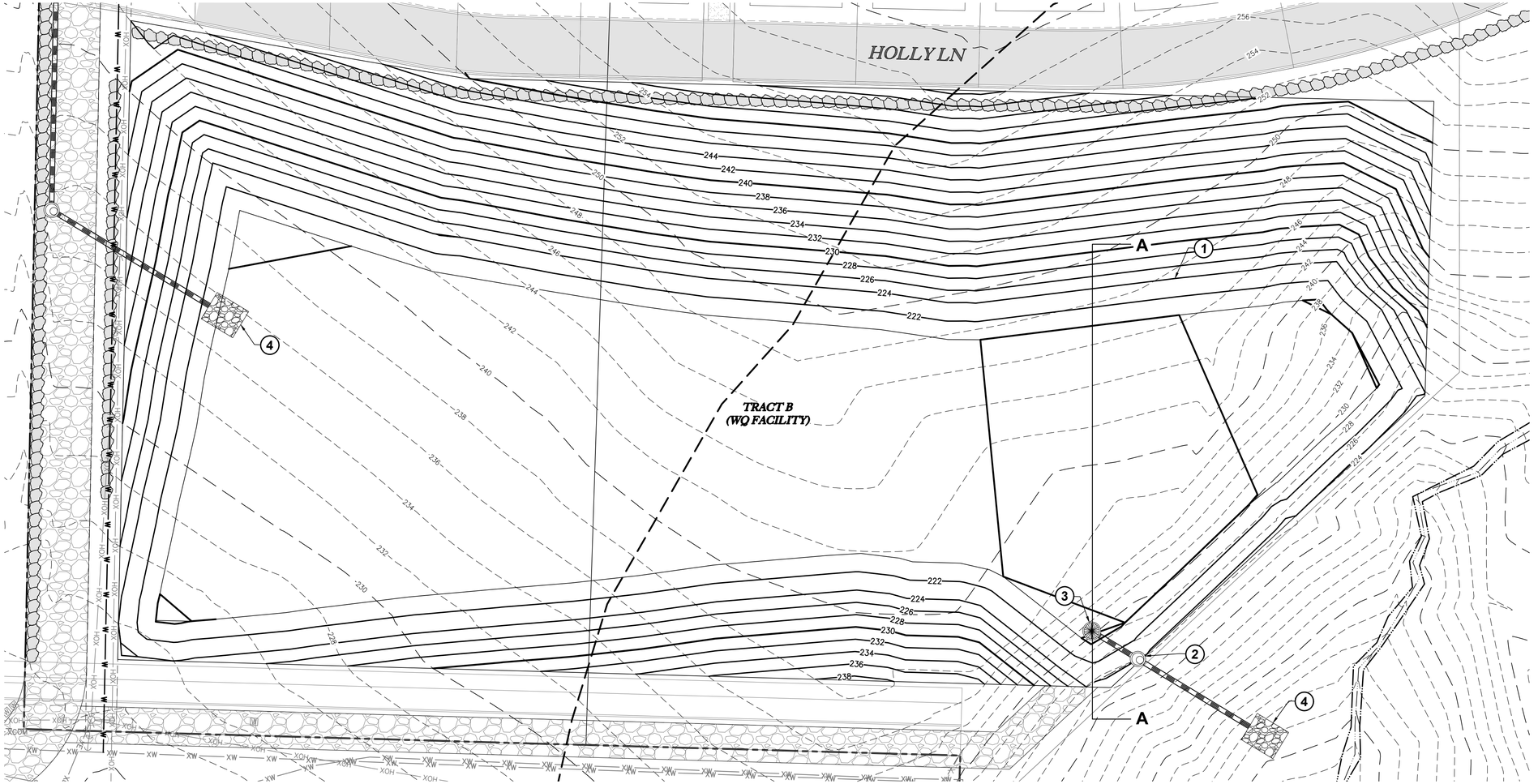
NO.	DATE	DESCRIPTION

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6445 SW FALLBROOK PLACE, SUITE 100
BEAVERTON, OREGON 97008
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FAX: (503) 626-8552
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OREGON
JULY 19, 2007
DANIEL J. GRIBBLE
RENEWAL: 12/31/2025
PRELIMINARY NOT FOR CONSTRUCTION
EXPIRES: 12/31/2025

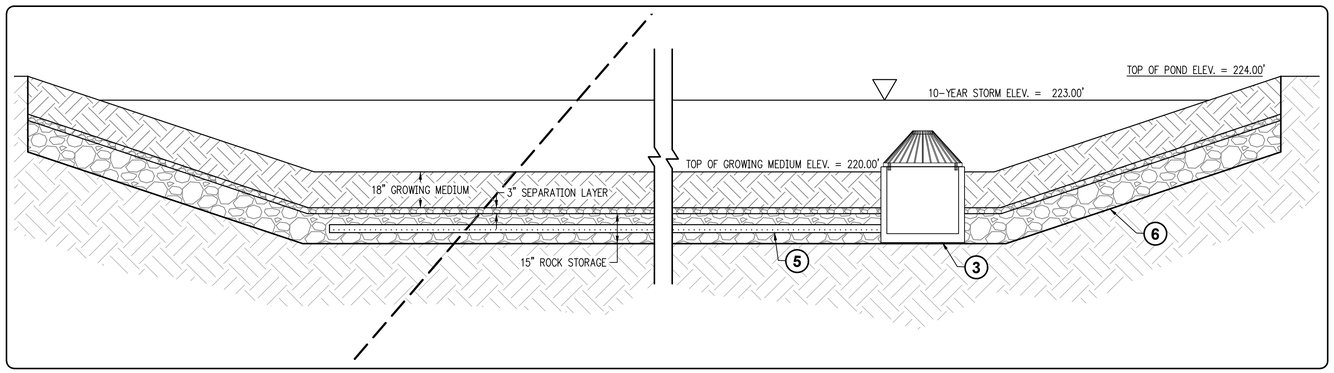
SHEET 8.4 OF 39

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WATER QUALITY FACILITY - PLAN

SCALE: 1"=20'



WATER QUALITY FACILITY - SECTION A-A

SCALE: N.T.S.

CONSTRUCTION NOTES:

1. INSTALL 4' HIGH CHAIN LINK FENCE AROUND THE PERIMETER OF THE POND. A 12x18" SIGN "PLEASE DO NOT DISTURB THE VEGETATION OR WILDLIFE. SIGN TO BE ALUMINUM WITH GREEN REFLECTIVE SHEETING AND SILK SCREEN LETTERING.
2. INSTALL FLOW CONTROL MANHOLE PER OC DWG 601-1 SHT 9.1.
3. INSTALL 60" BEEHIVE OVERFLOW MANHOLE PER DETAIL SHT 9.1
4. OUTFALL PROTECTION PER OC DWG 632 SHT 9.1
5. INSTALL 6" PERFORATED PIPE
6. INSTALL IMPERMEABLE GEOTEXTILE FABRIC

PARK PLACE II
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TAX LOT 2 2E 28D 100, 190, 302, 400, 500, 502, 3700
CITY OF OREGON CITY, OREGON

WATER QUALITY FACILITY PLAN

REVISIONS

NO.	DATE	DESCRIPTION

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6445 SW FALLBROOK PLACE, SUITE 100
BEAVERTON, OREGON 97008
TEL: (503) 746-8812
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www.emeriodesign.com

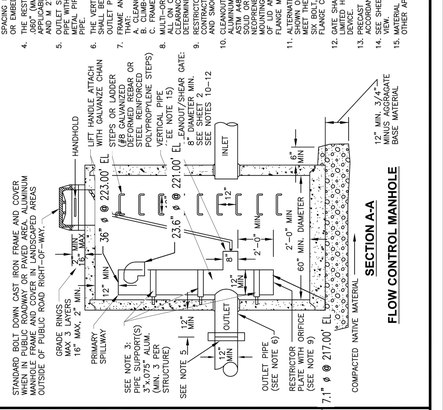
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 27, 2007
DAVID L. BURNETT
RENEWAL: 12/31/2025
PRELIMINARY NOT FOR CONSTRUCTION

EXPIRES: 12/31/2025

SHEET 9.0 OF 39

FILE P: \0082-012 Park Place II\dwg \plan \0082-012_09.0.dwg, Layout: 9.0 WATER QUALITY FACILITY - PLAN, Plot Date: 7/2/2025 5:42 PM, by: David Burnett

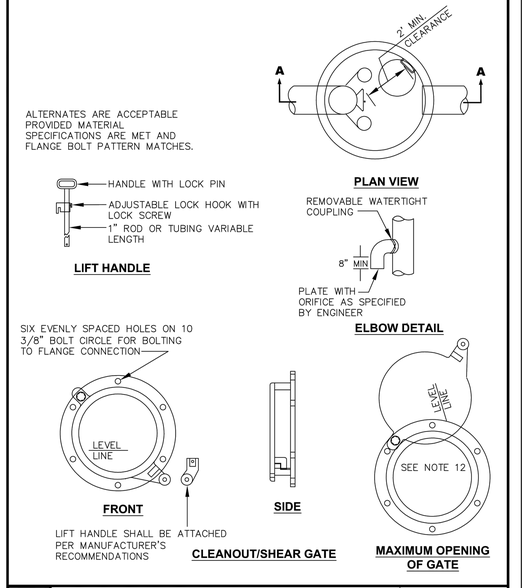
NOTES:
1. EXCEPT AS SHOWN OR NOTED, UNITS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. PIPE SUPPORTS AND RESTRICTOR/SEPARATOR SHALL BE OF THE SAME MATERIAL AND BE ANCHORED AT 3' MAX SPACING WITH 5/8" DIA STAINLESS STEEL DOWNSON BOLTS OR EMBEDDED 2" IN WALL.
3. THE RESTRICTOR/SEPARATOR SHALL BE FABRICATED FROM ASTM A36 CARBON STEEL PLATE AND MEET THE REQUIRED APPLICABLE SECTIONS OF AASHTO M 36, M 196, M197, AND M 274.
4. PIPE SHALL BE CONNECTED TO CULVERT OR SEWER PIPE WITH A STANDARD COUPLING BAND FOR CORRUGATED METAL PIPE, OR GROUTED INTO THE BELL OF CONCRETE PIPE.
5. THE VERTICAL RISER STEM OF THE RESTRICTOR/SEPARATOR PLATE SHALL BE CLEAR OF ANY OBSTRUCTIONS FROM THE OUTLET PIPE, WITH AN 12" MINIMUM DIAMETER.
6. A. CLEANOUT GATE IS VISABLE FROM TOP.
   B. MAINTAIN 2" MINIMUM CLEAR BETWEEN RISER AND GATE.
   C. FRAME IS CLEAR OF CURB (IF ANY EXISTS).
7. MULCH-ORIFICE ELBOWS MAY BE LOCATED AS SHOWN OR ON OPPOSITE SIDE OF MANHOLE. SEE ELBOW DETAIL FOR CLEARANCE SIZE OF ELBOWS AND PLACEMENT TO BE CONTRACTOR'S RESPONSIBILITY.
8. RESTRICTOR PLATE WITH ORIFICE AS SPECIFIED IN THE CONTRACT PLANS. SPECIFIED OPENING TO BE CUT ROUND BY ENGINEER.
9. CLEANOUT/SHEAR GATE: CONSTRUCTED WITH 8-26-2G-20A OR CAST IRON ASTM A48 CLASS 30B AS REQUIRED. LIFT HANDLE EITHER SOLID OR TUBING WITH ADJUSTABLE HOOK AS REQUIRED. SEALING SURFACES SHALL BE MACHINED TO ENSURE FLUSH MOUNTING FLANGE AND GATE FLANGE. MATING SURFACES SHALL BE MACHINED TO ENSURE WATERTIGHT FIT. FLANGE MOUNTING BOLTS SHALL BE 3/8" DIA STAINLESS.
10. ALTERNATE CLEANOUT/SHEAR GATES TO THE DESIGN SHOWN MAY BE USED PROVIDED THE ALTERNATE GATE SUPPLY MEET THE MATERIAL SPECIFICATIONS ABOVE AND HAVE A FLANGE WITH 8 HOLE, BOLT CIRCLE FOR BOLTING THE FLANGE CONNECTION.
11. GATE SHALL NOT OPEN BEYOND THE CLEAR OPENING BY DESIGN TO PREVENT BINDING DUE TO HINGE MOVEMENT, STOP TAB, OR SOME OTHER DEVICE.
12. PRECAST CONCRETE MANHOLE CONSTRUCTED IN ACCORDANCE WITH ASTM C478.
13. SEE SHEET 2 FOR DETAILS ON ELBOW AND FOR PLAN VIEW.
14. SECTION OF VERTICAL PIPE SHALL BE HDPE, PVC, OR OTHER APPROVED MATERIAL.



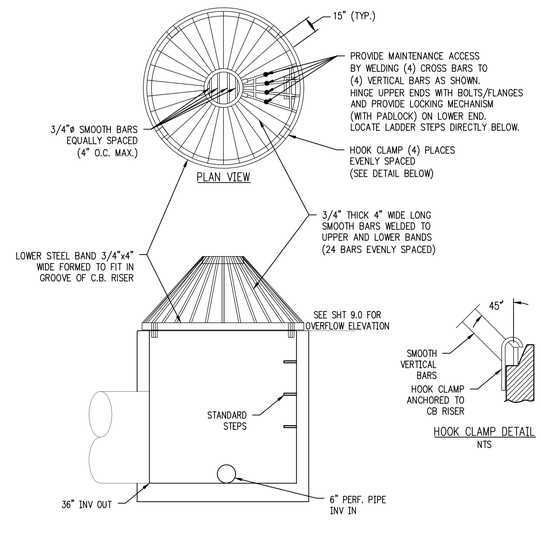
SECTION A-A

FLOW CONTROL MANHOLE

Public Works Standard Drawings	SCALE	NTS	
FLOW CONTROL MANHOLE - STORMWATER DETENTION TEE RISER TYPE	DATE	JAN '23	REV.
	ENGR.	DW	DRAWN KAE
	DRAWING NO.	601-1	

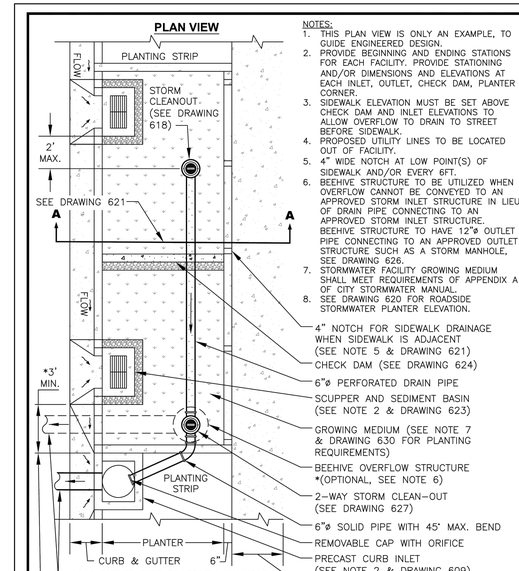


Public Works Standard Drawings	SCALE	NTS	
FLOW CONTROL MANHOLE - STORMWATER DETENTION TEE RISER TYPE	DATE	JAN '23	REV.
	ENGR.	DW	DRAWN KAE
	DRAWING NO.	601-2	

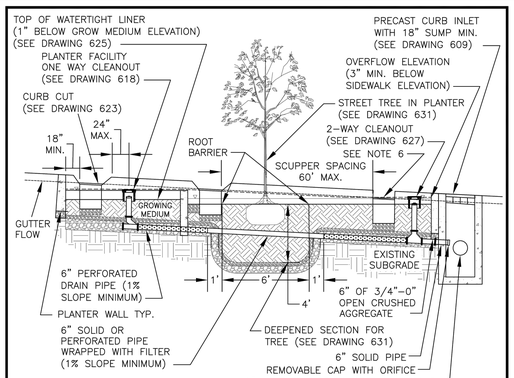


60"Ø BEEHIVE OVERFLOW MANHOLE

SCALE: NTS

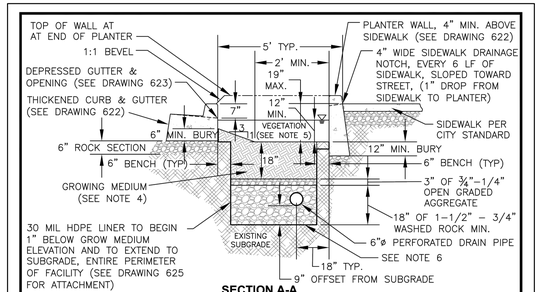


Public Works Standard Drawings	SCALE	NTS	
ROADSIDE STORMWATER PLANTER PLAN VIEW	DATE	JAN '23	REV.
	ENGR.	DW	DRAWN KAE
	DRAWING NO.	619	



NOTES:
1. PROVIDE PROTECTION FROM ALL VEHICLE TRAFFIC, EQUIPMENT STAGING, AND FOOT TRAFFIC PRIOR TO, DURING AND AFTER CONSTRUCTION.
2. SCUPPERS SHALL BE SPACED NO MORE THAN 60 FEET APART AND ONE AT EACH END OF A PLANTER.
3. SLOPE OF PLANTER TO NOT EXCEED 0.5%.
4. PIPE SHALL BE PVC D3034 SDR 35, 6" MINIMUM DIAMETER. PIPING MUST HAVE 1% SLOPE MINIMUM, BOTTOM OF PIPE SHALL BE SET AT 9" ABOVE EXISTING SUBGRADE.
5. ALL PIPE TO HAVE GASKET JOINTS AND GASKETED JOINT FITTINGS.
6. OVERFLOW
   - MUST FLOW TO APPROVED OUTLET STRUCTURE PER OREGON CITY STORMWATER MANUAL.
   - BEEHIVE STRUCTURE TO BE UTILIZED WHEN OVERFLOW CANNOT BE CONVEYED TO CURB INLET OR AN APPROVED STORM INLET STRUCTURE. SEE DRAWING 619 AND 626.
7. THIS ELEVATION VIEW IS ONLY AN EXAMPLE, TO GUIDE ENGINEERED DESIGN.

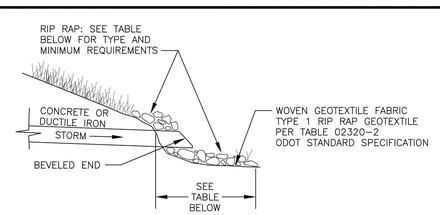
Public Works Standard Drawings	SCALE	NTS	
ROADSIDE STORMWATER PLANTER ELEVATION	DATE	JAN '23	REV.
	ENGR.	DW	DRAWN KAE
	DRAWING NO.	620	



SECTION A-A
PLANTER

NOTES:
1. PROVIDE PROTECTION FROM ALL VEHICLE TRAFFIC, EQUIPMENT STAGING, AND FOOT TRAFFIC PRIOR TO, DURING AND AFTER CONSTRUCTION.
2. DIMENSIONS:
   - TOP OF GROWING MEDIUM TO OVERFLOW ELEVATION SHALL BE A MINIMUM OF 12".
   - TOP OF SIDEWALK ELEVATION ADJACENT TO PLANTER SHALL BE NO LESS THAN 3" ABOVE GUTTER ELEVATION.
   - TOP OF SIDEWALK ELEVATION ADJACENT TO PLANTER SHALL BE NO GREATER THAN 19" FROM TOP OF PLANTER GROWTH MEDIUM.
3. PIPING:
   - PIPE SHALL BE PVC D3034 SDR 35, 6" MINIMUM DIAMETER WITHIN PLANTER. PIPING MUST HAVE 1% SLOPE, BOTTOM OF PIPE SHALL BE SET AT 9" ABOVE EXISTING SUBGRADE.
   - OVERFLOW SHALL BE PIPED TO A STANDARD CURB INLET/CATCH BASIN STRUCTURE OR STORM MANHOLE, SEE DRAWING 619.
4. GROWING MEDIUM: SEE APPENDIX A OF STORMWATER MANUAL FOR SPECIFICATION.
5. VEGETATION: REFER TO PLANTING REQUIREMENTS IN APPENDIX A OF STORMWATER MANUAL, SEE DRAWING 630 FOR PLANT SPACING REQUIREMENTS.
6. WATERTIGHT LINER (SEE DRAWING 625 FOR LINER ATTACHMENT REQUIREMENTS):
   - WHEN WITHIN CONTAMINATED SOIL OR 10' OF STRUCTURE FOUNDATION OR PAVED STRUCTURAL SECTION OR UNDERGROUND STRUCTURES, BOTTOM OF FACILITY MUST BE LINED WITH A WATERTIGHT LINER.
   - LINER SHALL BE 30 MIL HDPE OR APPROVED EQUAL.
   - LINER SHALL BE PLACED AROUND ENTIRE PERIMETER OF FACILITY.
   - LINER REQUIRED UNLESS FACILITY'S BOTTOM AND SIDES ARE MONOLITHIC CONCRETE.
7. CHECK DAMS:
   - REINFORCED CONCRETE CHECK DAMS SHALL BE PLACED AT LEAST EVERY 30 FEET.
8. MINIMUM PLANTER WALL HEIGHT OF 34".

Public Works Standard Drawings	SCALE	NTS	
ROADSIDE STORMWATER PLANTER SECTION	DATE	JAN '23	REV.
	ENGR.	DW	DRAWN KAE
	DRAWING NO.	621	



STORM OUTFALL DETAIL
N.T.S.

DISCHARGE VELOCITY AT DESIGN FLOW (fps)		MINIMUM REQUIRED PROTECTION DIMENSIONS				
GREATER THAN	LESS THAN OR EQUAL	TYPE	THICKNESS (ft)	WIDTH	LENGTH (USE GREATER OF)	HEIGHT OVER CROWN
0	5	ODOT CLASS 50 RIP RAP*	1.5	PIPE DIAMETER + 6 FT	8 FT OR 4 X PIPE DIAMETER	1 FT
5	10	ODOT CLASS 200 RIP RAP	2.5	GREATER OF: PIPE DIAMETER + 6 FT	12 FT OR 4 X PIPE DIAMETER	1 FT
10		ENGINEERED ENERGY DISSIPATER REQUIRED				

* THE CITY MAY REQUIRE ODOT CLASS 100 RIP RAP IN AREAS WITH A LIKELIHOOD OF VANDALISM.

NOTE:
1. PIPE HEADWALLS SHALL BE REQUIRED WHERE PIPE MATERIAL OTHER THAN CONCRETE OR DUCTILE IRON IS EXPOSED IN THE DESIGN OF AN OUTLET OR INLET PIPE OR WHERE REQUIRED TO STABILIZE SLOPE. DETAILS OF ALL HEADWALLS AND END PROTECTION SHALL BE INCLUDED IN THE CONSTRUCTION DRAWINGS.

Public Works Standard Drawings	SCALE	NTS	
STORM OUTFALL	DATE	JAN '23	REV.
	ENGR.	DW	DRAWN KAE
	DRAWING NO.	632	

PARK PLACE II
A SUBDIVISION OF
TAX LOT 2 2E 28D 100, 190, 302, 400, 500, 502, 3700
CITY OF OREGON CITY, OREGON

WATER QUALITY FACILITY DETAILS

REVISIONS

NO.	DATE	DESCRIPTION

EMERIO
ENGINEERING • SURVEYING • DESIGN
6445 SW FALLBROOK PLACE, SUITE 100
BEAVERTON, OREGON 97008
TEL: (503) 746-8812
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REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 13, 2007
DAVID K. BURNETT
PRELIMINARY NOT FOR CONSTRUCTION
PENDING PLAN REVIEW AND PERMITTING
EXPIRES: 12/31/2025

SHEET 9.1 OF 39

FILE:P:\0082-012 Park Place II\dwg\plan\0082-012_09.1pwg\set, Layout: 9.1 WATER QUALITY FACILITY DETAILS, Plot Date: 7/2/2025 5:45 PM, by: David Burnett



TEMPORARY ACCESS PLAN

SCALE: 1" = 80'

PARK PLACE II
A SUBDIVISION OF
TAX LOT 2 2E 28D 100, 190, 302, 400, 500, 502, 3700
CITY OF OREGON CITY, OREGON

TEMPORARY ACCESS PLAN

REVISIONS

NO.	DATE	DESCRIPTION

EMERIO
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REGISTERED PROFESSIONAL ENGINEER
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JULY 19, 2007
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EMERIO DESIGN CONSULTING HOUSE

PRELIMINARY NOT FOR CONSTRUCTION

EXPIRES: 12/31/2025

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OF
39

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Park Place Crossing II

Transportation Impact Study

Oregon City, Oregon

Date:
July 3, 2025

Prepared for:
ICON Construction & Development, LLC

Prepared by:
Myla Cross
Jennifer Danziger, PE

REGISTERED PROFESSIONAL ENGINEER
16168
Digitally Signed 2025.07.03 11:50:08-07'00'
OREGON
SEPT. 15, 1992
JENNIFER ELISE DANZIGER

RENEWS: 12/31/2025

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Executive Summary

1. Phase II of the Park Place Crossing project proposes construction of 219 single-family residential lots. The site is located south of Holcomb Boulevard and north of S Livesay Road in Oregon City, Oregon. The site includes six tax lots, Tax Map 22E28D Lots 100, 190, 400, 500, 3700, and 3701 totaling approximately 59.4 acres, and the zoning is Medium Density Residential (R-5).
2. For Phase II of the Park Place Crossing project, access to Holcomb Road will be available via future Street A to be constructed with Park Place Crossing Phase I and Winston Drive through the Trailview Subdivision north of the site. Street A, a local street, will connect to Holcomb Boulevard approximately 200 feet west of Jada Way. The development includes a section of Holly Lane, a planned collector; however, Holly Lane will not yet have any connections to the external street system.
3. The proposed Phase II development is estimated to generate 143 morning peak hour, 200 evening peak hour, and 1,972 daily trips.
4. No significant trends or crash patterns were identified beyond those associated with congestion and high speeds on OR 213; thus, no safety mitigation is recommended.
5. Sight distance standards are met at the site access intersections of Street A and Winston Drive at Holcomb Boulevard.
6. Left-turn lane warrants are not projected to be met at the site access intersections under buildout conditions; therefore, no left-turn lane is necessary or recommended.
7. Traffic signal warrants are not projected to be met at the site access intersections; therefore, no signalization is necessary or recommended.
8. All study intersections are projected to operate within the City of Oregon City standards under all analysis scenarios. Furthermore, all intersections are calculated to have a v/c ratio of 0.99 or better during the highest hour of the day, indicating no intersection is expected to be over capacity.
9. In general, changes in 95th percentile queuing between the year 2028 background and buildout conditions are anticipated to be small, one to two vehicles, and can be accommodated in the storage available. However, five intersections show 95th percentile queues that exceed the available storage, many under both background and buildout conditions. Proportionate share contributions are required at four of the five intersections as a condition of the annexation. The only additional mitigation is the potential restriping of the westbound left-turn lane to increase storage on Abernethy Road at Washington Street.

Project Description

Introduction

Phase II of the Park Place Crossing project proposes construction of 219 single-family residential lots. The site is located south of Holcomb Boulevard and north of S Livesay Road in Oregon City, Oregon.

Study Requirements

This Transportation Impact Study (TIS) examines the impacts of the proposed development on the surrounding transportation system and addresses the requirements detailed in Section OCMC 17.68 of the City of Oregon City's Municipal Code. Supporting data and calculations are included in the appendix to this report.

Study Area

Eight intersections were identified for study based on the City and Oregon Department of Transportation (ODOT) volume thresholds:

1. Holcomb Boulevard & Street A (Site Access)
2. Holcomb Boulevard & Winston Drive (Site Access)
3. Holcomb Boulevard/Abernethy Road & Redland Road
4. OR 213 & Redland Road
5. OR 213 & Prairie Schooner Way (also includes the Clackamas River Drive connection)
6. Washington Street & Abernethy Road/17th Street
7. Washington Street & 15th Street
8. Washington Street & 14th Street

Historical Context

A TIS dated August 2, 2017, was prepared for the Park Place Annexation (AN-17). The TIS addressed an approximately 92-acre site that included rezoning to 87.5 acres of residential use under R-5 zoning and 4.5 acres of Neighborhood Commercial zoning.

The TIS and addendum evaluated traffic impacts at 16 intersections. Based on the project impacts, the resulting conditions of approval (COA) required proportionate share contributions to the following Transportation System Plan (TSP) projects:

- Improvements for the I-205/OR-99E ramp terminal projects (TSP Projects D75 and D76)
- Main Street/14th Street/15th Street improvements (TSP Projects D7 and D8)
- Improvements for the intersection of OR213/Redland Road (TSP Project D79)
- Improvements for the Holly Lane/Holcomb Boulevard intersection (TSP Project D43)
- Improvements for the Holly Lane/Redland Road intersection (TSP Project D36)

In addition to the identified TSP projects, proportionate share contributions were required where TSP projects were not identified:

- Improvements for the Abernethy/Holcomb/Redland intersection: The project concept is to provide an additional lane on the eastbound approach; it may involve restriping or widening and signal modifications. No project cost is available at this time.
- A project to add a right-turn lane on westbound Beavercreek Road and a merge lane on northbound Highway 213 was identified in the July 2017 Highway 213 Corridor Alternative Mobility Study (Now TSP Project D95).

Even if these intersections do not meet the peak hour volume thresholds that warrant detailed traffic analysis, proportionate share contributions are anticipated based on the percentage of trips added by Phase II of the development.

Location Description

The proposed project intends to develop the site on Tax Lots 22E28D 100, 190, 400, 500, 3700, and 3701, which total approximately 59.4 acres. The zoning is Medium Density Residential (R-5). The development will include 219 single-family residential lots. The surrounding land uses are predominately residential homes and vacant lots.

Figure 1 shows the Phase II site in yellow and the prior Phase I site in light blue. A site plan is included in Appendix A.

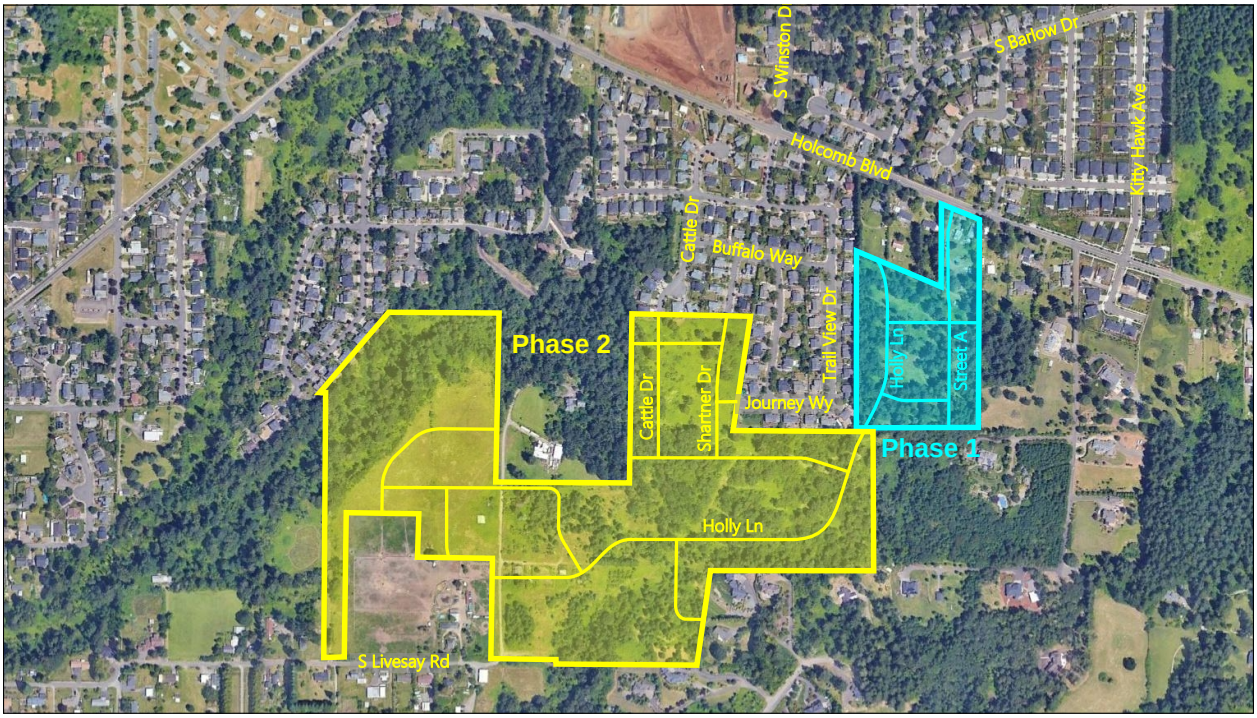


Figure 1: Project Location (image from Google Earth)

Site Access

For Phase II, access to Holcomb Road will be available via future Street A to be constructed with Park Place Crossing Phase I and Winston Drive through the Trailview Subdivision north of the site. Street A, a local street, will connect to Holcomb Boulevard approximately 200 feet west of Jada Way. The development includes a section of Holly Lane, a planned collector; however, Holly Lane will not yet have any connections to the external street system.

Transportation System

Vicinity Streets

The proposed development is expected to impact eleven roadways near the site. Table 1 provides a description of each of the vicinity roadways.

Table 1: Vicinity Roadway Descriptions

Street Name	Functional Classification	Travel Lanes	Speed	Curbs & Sidewalks	On-Street Parking	Bicycle Facilities
ODOT Jurisdiction						
OR 213	Expressway	4-5	55 mph	Partial East Side	Prohibited	Bike Lanes
Clackamas River Dr Connection	Minor Arterial	3	30 mph	None	Prohibited	Bike Lanes
City of Oregon City Jurisdiction						
Holcomb Blvd	Minor Arterial	2	35 mph	Partial Both Sides	Prohibited	Bike Lanes
Winston Dr	Local	2	25 mph	Both Sides	Permitted	None
Abernathy Rd	Minor Arterial	3	35 mph	Both Sides	Prohibited	None
Redland Rd	Minor Arterial	2	45 mph	None	Prohibited	Bike Lanes
Prairie Schooner Wy	Minor Arterial	5	30 mph	None	Prohibited	Bike Lanes
Washington St	Minor Arterial	2-4	30 mph	Partial Both Sides	Prohibited	Bike Lanes
17th St	Local	2	25 mph	Partial North Side	Permitted	None
15th St	Collector	2	25 mph	Both Sides	Partial	Partial
14th St	Collector/Local	2	25 mph	Both Sides	Permitted	None

Table Notes: Functional Classification based on Oregon City Transportation System Plan.

Study Intersections

Eight intersections were identified for analysis during project scoping. A summarized description of the study intersections is provided in Table 2. A vicinity map showing the project site, vicinity streets, and study intersection configurations is shown in Figure 2.

Table 2: Study Intersection Descriptions

	Intersection	Geometry	Traffic Control	Phasing/Stopped Approaches
1	Holcomb Blvd & Street A (Site Access)	Three-Legs	Unsignalized	NB Stop-Controlled
2	Holcomb Blvd & Winston Dr (Site Access)	Four-Legs	Unsignalized	NB/SB Stop-Controlled
3	Holcomb Blvd/ Abernathy Rd & Redland Rd	Four-Legs	Signalized	Protected Left-Turn All Approaches
4	OR 213 & Redland Rd	Three-Legs	Signalized	Protected NB Left-Turn EB & SB Right-Turn Overlap
5	OR 213 & Prairie Schooner Wy	Four-Legs	Signalized	Permitted EB/WB Right-Turn Free SB/NB Right-Turn
6	Washington St & Abernethy Rd/17th St	Four-Legs	Signalized	Permitted Left-Turn All Approaches
7	Washington St & 15th St	Four-Legs	Signalized	Permitted WB/EB Left-Turn Permitted/Protected NB/SB Left Turn
8	Washington St & 14th St	Four-Legs	Signalized	Permitted WB/EB Left-Turn Permitted/Protected NB/SB Left Turn

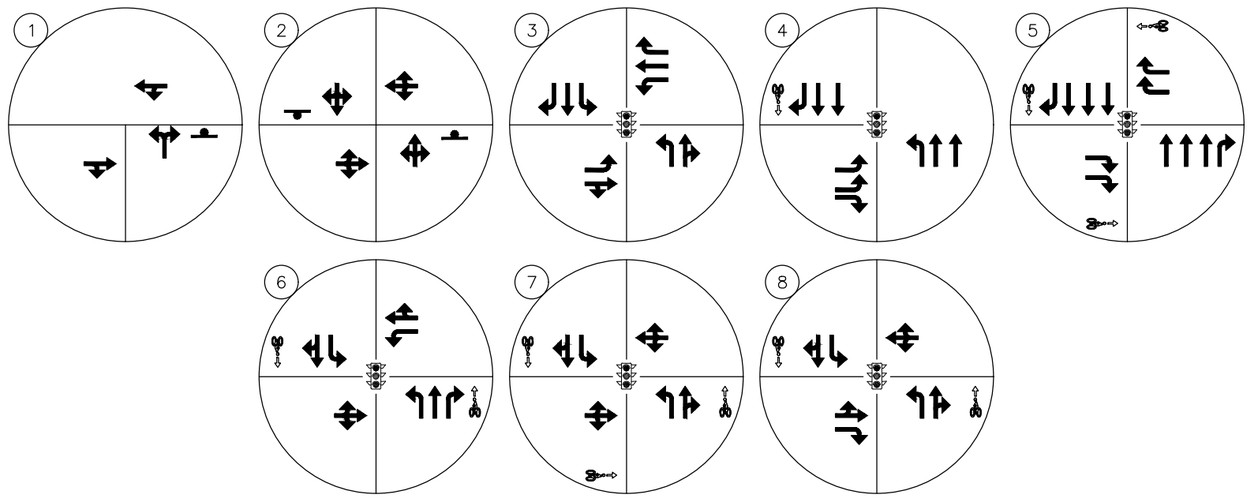
Transit

The project site is located near one transit line that has stops within a half-mile walking/biking distance from the site. TriMet bus line *#154 – Willamette/Clackamas Heights* provides service between West Linn's Willamette Neighborhood and Clackamas Heights, with a notable stop at Oregon City Transit Center. The nearest stops to the site are located at the intersection of Holcomb Boulevard & S Longview Way. Weekday service is scheduled from approximately 5:45 AM to 7:30 PM and has headways of approximately 45 to 60 minutes. Weekend service is not currently offered for this route.

Figure 2
Park Place Crossing Phase 2
7/1/2025

LEGEND

- STUDY INTERSECTION
- STOP SIGN
- TRAFFIC SIGNAL
- BIKE LANE
- PROJECT SITE
- INTERSTATE
- ARTERIAL ROADWAY
- COLLECTOR ROADWAY
- LOCAL ROADWAY





VICINITY MAP

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Site Trips

Trip Generation

To estimate trips that will be generated by the development, trip equations from the *Trip Generation Manual*[1] were used based the number of dwelling units (DU) and land use code 210: Single-Family Detached Housing. Because equations are used, trips were calculated for the cumulative development on the site (Phase I and II) and volumes from Phase I were subtracted to estimate the increase in trips associated with Phase II. The resulting trip generation estimates are summarized in Table 3. Detailed trip generation calculations are included in Appendix A.

Table 3: Trip Generation Summary

Development Phase	Intensity	Morning Peak Hour			Evening Peak Hour			Daily Trips
		In	Out	Total	In	Out	Total	
Total	272 DU	46	139	185	161	94	255	2,534
Phase I	53 DU	11	31	42	35	20	55	562
Phase II	219 DU	35	108	143	126	74	200	1,972

The proposed development is estimated to generate 143 morning peak hour, 200 evening peak hour, and 1,972 daily trips.

Trip Distribution

The directional distribution of site trips was generally based on the distribution utilized in the *Park Place Master Plan TIS*. The trip distribution in the TIS was estimated based on locations of likely trip destinations, locations of major transportation facilities in the site vicinity, and existing travel patterns at studied intersections. The following trip distribution is projected:

- Approximately 82 percent of site trips will travel to/from the east along Holcomb Boulevard
    - Approximately 40 percent will travel to/from the north along OR 213
        - Approximately 25 percent will travel to/from the northeast along I-205
        - Approximately 15 percent will travel to/from the southwest along I-205
    - Approximately 25 percent will travel to/from the west along Abernethy Road
        - Approximately 13 percent will travel to/from the south along Washington Street
        - Approximately 8 percent will travel to/from the north along OR 99E
        - Approximately 3 percent will travel to/from the south along Main Street
        - Approximately 1 percent will travel to/from the south along OR 99E

[1] Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 11th Edition, 2021.

    - Approximately 8 percent will travel to/from the south along OR 213
        - Approximately 4 percent will continue to/from the south along OR 213
        - Approximately 3 percent will travel to/from the west along Beavercreek Road
        - Approximately 1 percent will travel to/from the southeast along Beavercreek Road
    - Approximately 4 percent will travel to/from the southeast along Redland Road
        - Approximately 3 percent will travel to/from the west on S Anchor Way
        - Approximately 1 percent will travel to/from the south on Holly Lane
    - Approximately 5 percent of site trips will travel to/from locales within the immediate vicinity, including surrounding residential areas, Holcomb Elementary School, and other land-uses
- Approximately 18 percent of site trips will travel to/from the east along Holcomb Boulevard

Trip Assignment

The resulting site trip assignment for the study area intersections is presented in Figure 3. The estimates of intersection trips supporting the study area is included in Appendix A.

LEGEND

XX% PERCENT OF PROJECT TRIPS

TRIP GENERATION			
	IN	OUT	TOTAL
AM	38	114	152
PM	131	77	208

AM PEAK HOUR

PM PEAK HOUR

Washington Street
Abernethy Road
14th Street
15th Street
Prairie Schooner Way
Clackamas River Drive
OR 213
Apperson Boulevard
Swan Avenue
Holcomb Boulevard
Winston Drive
Livesay Road
Anchor Way
Redland Road
Street A
PHASE I
PHASE II
No Scale

SITE TRIP DISTRIBUTION & ASSIGNMENT

Proposed Development Plan

AM & PM Peak Hours

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Figure 3

Park Place Crossing Phase 2

7/1/2025

Traffic Volumes

Existing Conditions

Traffic counts were conducted at the study intersections on Thursday, May 29, 2025, from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM. Additionally, three-hour counts were collected at the state highway intersections to allow for a first- and second-hour analysis. School was still in session when the counts were collected. Each intersection's respective morning and evening peak hours were used for analysis.

Figure 4 shows the year 2025 existing traffic volumes at the study intersections during the morning and evening peak hours. The second highest hour volumes are shown at the intersection of OR 213 & Redland Road. Detailed counts are included in Appendix B.

Background Conditions

To analyze the impact of the proposed development on the nearby transportation facilities, an estimate of future traffic volumes is required. A buildout year of 2028 is assumed for the proposed development.

The ODOT Future Volume Tables show an average growth rate of 0.75 percent per year based on count locations at milepoint 0.16, south of Washington Street, and milepoint 0.50, south of Redland Road. This rate was applied for all volumes on OR 213 and the segment of Redland Road between OR 213 and Holcomb Boulevard. For all other roadways, a general growth rate of 1.0 percent per year was applied to address background growth.

In addition to the general growth, the following nearby developments are approved but were not yet constructed at the time of the traffic counts will be included as in-process traffic:

- Park Place Crossing Phase I
- Serres Farm Master Plan
- Thimble Creek South Phase I
- Clackamas Heights Redevelopment
- Abernathy Place
- North End Commercial Development

The in-process trip assignments are included in Appendix B.

The Clackamas County Courthouse opened at its new location on May 19, 2025. Because the counts were collected after the opening of the new location, this project was not included as an in-process project.

Figure 5 shows the projected year 2028 background traffic volumes at the study intersections during the morning and evening peak hours.

Buildout Conditions

The trips to be generated by the proposed development (see *Site Trips* section) were added to the year 2028 background traffic volumes to estimate the year 2028 traffic volumes with the full buildout and occupancy of the proposed development.

Figure 6 shows year 2028 buildout traffic volumes at the study intersections during the morning and evening peak hours.

Local Street Volumes

The local street volumes on Winston Drive and Street A are estimated in Table 4 to demonstrate that the first two phases of Park Place Crossing can be developed without placing a significant traffic burden on local streets by keeping the average daily traffic volume (ADT) at or below 2,000 vehicles per day.

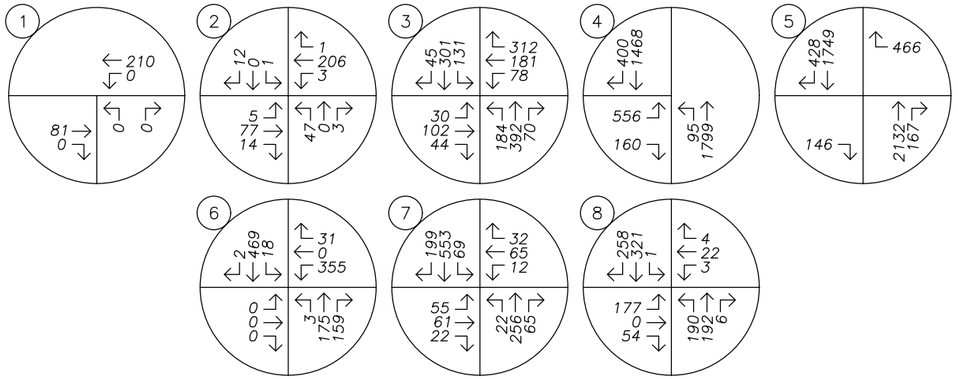
Table 4: Trip Generation & Local Street ADT Summary

Condition	Volume at Holcomb Boulevard			
	PM Peak Hour		ADT*	
	Street A	Winston Dr	Street A	Winston Dr
2025 Existing	0	83	0	830
2028 Background (including Phase I)	26	85	260	850
2028 Buildout (including Phase I & II)	177	134	1,770	1,340

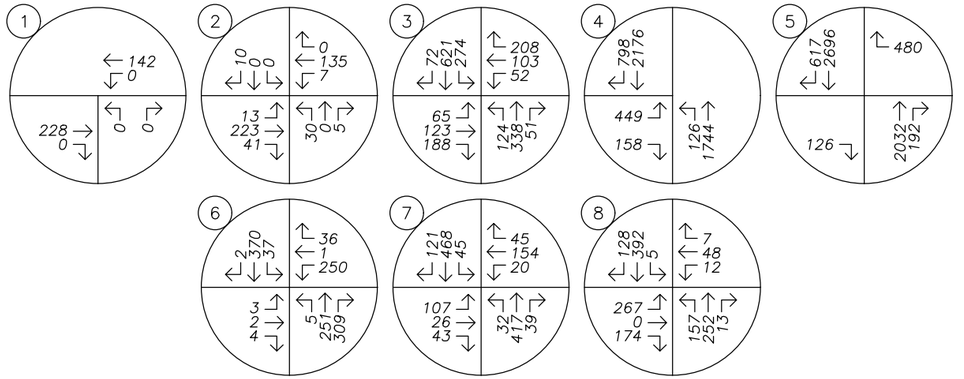
** The average daily traffic volume, ADT, is estimated at 10 times the PM peak hour volume. This ratio is slightly higher than the ratio of weekday to PM peak hour for land use code 210.*

As demonstrated in this analysis, all local residential streets in the area including Winston Drive and all streets within the existing neighborhood immediately north of the site will have under 2,000 vehicles per day with construction of Phase II of the development without the connection of Holly Lane to Holcomb Boulevard.

AM PEAK HOUR



PM PEAK HOUR



2nd Hour

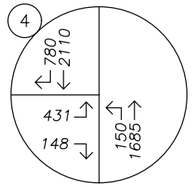




Figure 4
Park Place Crossing Phase 2
7/1/2025

TRAFFIC VOLUMES
Year 2025 Existing Conditions
AM & PM Peak Hours

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AM PEAK HOUR

PM PEAK HOUR

2nd Hour

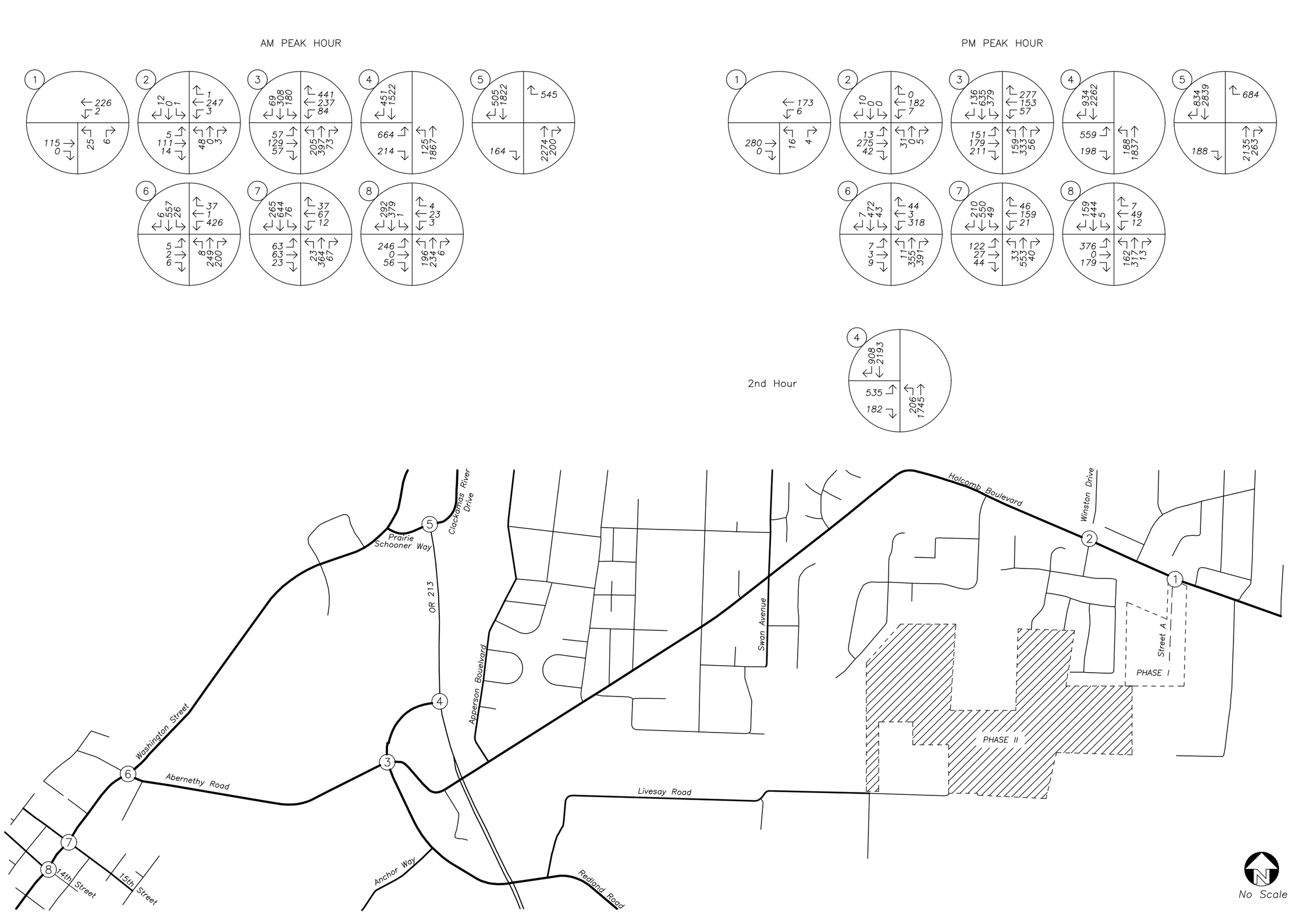
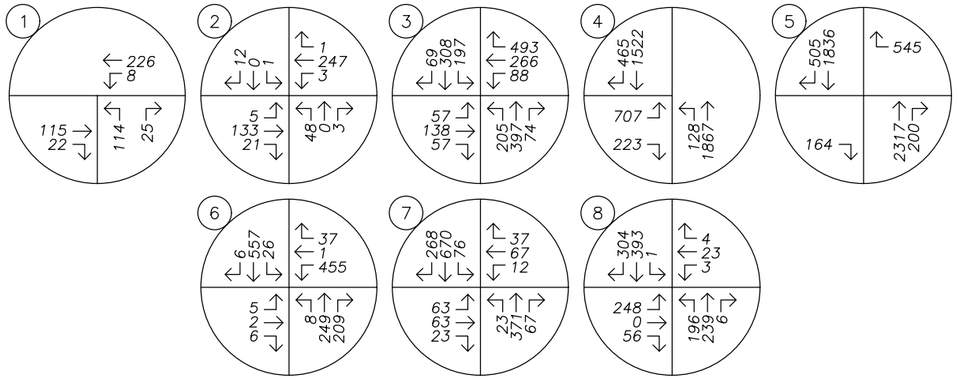


Figure 5
Park Place Crossing Phase 2
7/1/2025

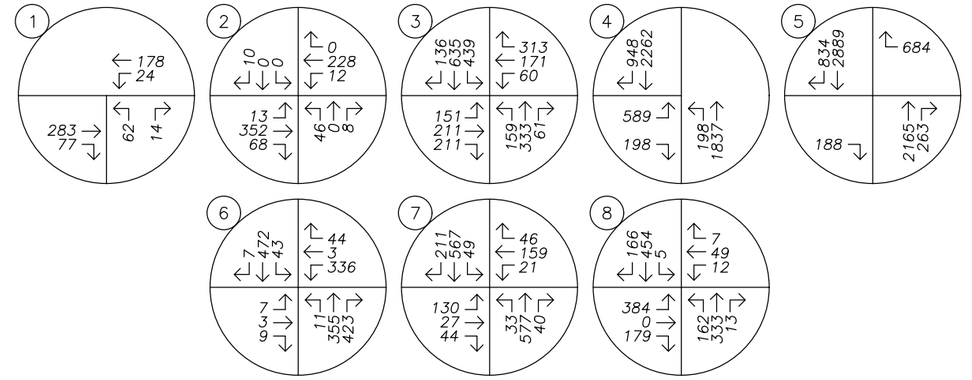
TRAFFIC VOLUMES
Year 2028 Background Conditions
AM & PM Peak Hours

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AM PEAK HOUR



PM PEAK HOUR



2nd Hour

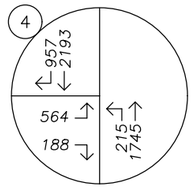




Figure 6
Park Place Crossing Phase 2
7/1/2025

TRAFFIC VOLUMES
Year 2028 Buildout Conditions
AM & PM Peak Hours

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Safety Analysis

Crash History Review

Using data obtained from ODOT's Crash Data System, a review of approximately five years of the most recent available crash history (January 2019 through December 2023) was performed at the study intersections. The crash data was evaluated based on the number of crashes, the type of collisions, and the severity of the collisions. Crash severity is based on injuries sustained by people involved in the crash, and includes five categories:

- Property Damage Only (PDO)
- Suspected Serious Injury (Injury A)
- Suspected Minor Injury (Injury B)
- Possible Injury (Injury C)
- Fatal Injury

Crash rates provide the ability to compare safety risks at different intersections by accounting for both the number of crashes that have occurred during the study period and the number of vehicles that typically travel through the intersection. Crash rates were calculated using the common assumption that traffic counted during the evening peak hour volume (PHV) represents approximately 10 percent of the average daily traffic (ADT) at the intersection.

Table 5 provides a summary of crash types while Table 6 summarizes crash severities and rates for each of the study intersections. Detailed crash data is provided in Appendix C.

Table 5: Crash Type Summary

Intersection		Crash Type						Total Crashes
		Turn	Rear End	Angle	Fixed Object	Side-Swipe	Ped/ Bike	
2	Holcomb Blvd & Winston Dr	0	0	1	0	0	0	1
3	Holcomb Blvd & Redland Rd	0	7	1	0	1	0	9
4	OR 213 & Redland Rd	13	29	0	0	0	0	42
5	OR 213 & Prairie Schooner Wy	1	9	1	0	0	0	11
6	Washington St & Abernathy Rd	0	0	0	3	0	0	3
7	Washington St & 15th St	1	3	4	0	0	0	8
8	Washington St & 14th St	6	2	1	1	0	0	10

Table 6: Crash Severity and Rate Summary

Intersection		Severity					Total Crashes	PHV	ODOT 90th % Rate	Crash Rate
		PDO	C	B	A	Fatal				
2	Holcomb Blvd & Winston Dr	0	0	0	1	0	1	464	0.408	0.118
3	Holcomb Blvd & Redland Rd	5	2	2	0	0	9	2,219	0.860	0.222
4	OR 213 & Redland Rd	12	17	9	4	0	42	5,481	0.509	0.420
5	OR 213 & Prairie Schooner Wy	3	5	3	0	0	11	6,178	0.860	0.097
6	Washington St & Abernathy Rd	2	0	1	0	0	3	1,270	0.860	0.129
7	Washington St & 15th St	5	2	1	0	0	8	1,517	0.860	0.289
8	Washington St & 14th St	7	1	2	0	0	10	1,455	0.860	0.376

Crash Severity

Five crashes resulted in an injury classified as *Injury A* (suspected serious injury); none resulted in a fatality.

Four of the crashes at the OR 213 & Redland Road intersection resulted in an injury classified as *Injury A*:

- A rear-end collision occurred when the driver of a passenger vehicle struck a stopped vehicle at the intersection; the direction the vehicles were traveling was not reported. The driver of the striking vehicle had a suspended license and was reported to have failed to avoid the vehicle ahead. The driver of the striking vehicle sustained injuries consistent with an *Injury A* classification, the driver of the struck vehicle sustained no injuries. The crash occurred in January 2023 under clear, dry, daytime conditions.
- A rear-end collision occurred when the driver of a northbound passenger vehicle struck a stopped passenger vehicle at the intersection; the struck passenger vehicle was then forced by impact into an additional passenger vehicle. The driver of the striking vehicle was reported to have been feeling physically ill and failed to avoid the vehicle ahead. The driver of the striking vehicle sustained injuries consistent with an *Injury A* classification, the drivers of the two struck vehicles sustained no injuries. The crash occurred in May 2019 under clear, dry, daytime conditions.
- A turning collision occurred when the driver of southbound passenger vehicle traveling straight struck a northbound left-turning passenger vehicle. The driver of the striking vehicle was reported to have been distracted by a navigation system or GPS device and disregarded the traffic signal. The driver of the striking vehicle sustained no injuries, the driver of the struck vehicle sustained injuries consistent with an *Injury A* classification. The crash occurred in September 2020 under clear, dry, dawn conditions.
- A turning collision occurred when the driver of a southbound passenger vehicle traveling straight struck a northbound left-turning vehicle, the struck passenger vehicle was then forced by impact into an additional northbound left-turning passenger vehicle. The driver of the striking vehicle was reported to have disregarded the traffic signal due to inattention. The driver of the striking vehicle sustained no injuries, the driver and passenger of the first struck vehicle sustained injuries consistent with an *Injury A* classification, and the driver of the second struck vehicle sustained no injuries. The crash occurred in September 2022 under clear, dry, dusk conditions.

One of the crashes at the Holcomb Boulevard & Winston Drive intersection resulted in an injury classified as *Injury A*:

- An angle collision occurred when the driver of a southbound passenger vehicle traveling straight on Winston Drive struck a westbound passenger vehicle traveling straight on Holcomb Boulevard. The driver of the striking vehicle was reported to have not yielded the right of way while the driver of the struck vehicle was reported to have been exceeding the speed limit and being inattentive. The driver of the striking vehicle sustained injuries consistent with an *Injury A* classification, the driver and two passengers of the struck vehicle sustained injuries consistent with an *Injury B* classification.

Vulnerable Users

No crashes involving vulnerable users (i.e., pedestrians or bicyclists) were reported at any of the intersections.

ODOT SPIS Review

The ODOT 2023 Safety Priority Index System (SPIS) list is based on reported crash data for the years 2020 through 2022. The OR 213 & Redland Road intersection was listed in the worst 5 percent of the SPIS list: At this intersection, approximately 69 percent of the crashes are rear-end collisions. The highway has a posted speed of 55 mph, and this intersection is very congested during peak hours. The high frequency of rear-end collisions reflects these conditions. The Oregon City TSP does identify a long-term project (D79) to add a third through lane in each direction to reduce congestion at the intersection.

ODOT 90th Percentile Crash Rates

Intersection crash rates were compared to the published statewide 90th percentile crash rates within ODOT's APM. According to Exhibit 4-1: Intersection Crash Rates per MEV by Land Type and Traffic Control in the APM, intersections which experience crash rates in excess of 90th percentile crash rates should be "flagged for further analysis".

Based on the crash analysis, none of the study intersections had a rate above the respective ODOT 90th percentile crash rates.

Conclusion

Based on the most recent five years of available crash data, no significant safety hazards were identified at the intersections. Accordingly, no mitigation is recommended as part of this development application.

Sight Distance Evaluation

A sight distance analysis was performed for the site access intersections on Holcomb Boulevard. Both intersection sight distance (ISD) and stopping sight distance (SSD) were assessed. The ISD is an operational measure, intended to provide sufficient line of sight along the major street so that a driver could turn from the minor street without impeding traffic flow. The SSD is the minimum requirement to ensure safe operation of the roadway. Stopping sight distance allows an oncoming driver to see a hazard in the roadway, react, and come to a complete stop if necessary to avoid a collision. As long as the available intersection sight distance is at least equal to the minimum required stopping sight distance for the design speed of the roadway, adequate sight distance is available for safe operation of the intersection.

To evaluate the sight distance available at these intersections, sight lines were measured in accordance with the current AASHTO manual.[2] According to AASHTO, the driver's eye is assumed to be 14.5 feet from the near edge of the nearest travel lane of the intersecting street and at a height of 3.5 feet above the minor-street approach pavement. The vehicle driver's eye-height along the major-street approach is assumed to be 3.5 feet above the cross-street pavement.

Holcomb Boulevard has a posted speed limit of 35 mph in both directions, thus the minimum recommended ISD is 390 feet and the required SSD is 250 feet for the Winston Drive & Street A intersections.

The following observations were made at the future Street A intersection:

- Sight distance was measured to exceed 390 feet west of the proposed site access, which meets the minimum recommended ISD.
- Sight distance was measured to be 300 feet east of the proposed site access, which is less than the recommended ISD but exceeds the minimum required SSD.

The following observations were made at the Winston Drive intersection:

- Sight distance was measured to exceed 390 feet west of the site access, which meets the minimum recommended ISD.
- Sight distance was measured to exceed 390 feet east of the site access, which meets the minimum recommended ISD.

Sight distance standards are met at for the site access intersections of Street A and Winston Drive at Holcomb Boulevard.

Access Spacing

According to Oregon City's TSP, Holcomb Boulevard operates under the jurisdiction of Oregon City within the City's urban growth boundary (UGB) and is classified as a Minor Arterial. The following spacing standards apply along Holcomb Boulevard (measured centerline to centerline):

- Maximum Block Size: 530 feet
- Minimum Block Size: 150 feet

Street A

The distance from the proposed site access (Street A) to Jada Way is approximately 200 feet and the distance to S Barlow Road is more than 200 feet, meeting the standards.

Winston Drive

Winston Drive is an existing roadway but will provide the proposed development access to the greater transportation network. The distance from Winston Drive to S Barlow is approximately 450 feet, and the distance

[2] American Association of State Highway and Transportation Officials (AASHTO), A Policy on Geometric Design of Highways and Streets, 7th Edition, 2018.

to the nearest intersection to be constructed by the Serres Farm development is approximately 350 feet, meeting the standard.

Warrant Analysis

Left-Turn Lane Warrants

A left-turn refuge lane is primarily a safety consideration for the major street, removing left-turning vehicles from the through traffic stream. The left-turn lane warrants examined used the methodology outlined in the National Cooperative Highway Research Program Report 457, published by the Transportation Research Board in 2001. These turn-lane warrants are evaluated based on the number of left-turning vehicles, the number of advancing and opposing vehicles, and the roadway travel speed.

Left-turn lane warrants are not projected to be met at any of the applicable study intersections under buildout conditions; therefore, no left-turn lane is necessary or recommended.

Preliminary Traffic Signal Warrants

Preliminary traffic signal warrants were examined for the site access to determine whether the installation of a new traffic signal will be warranted at the intersection upon site buildout. Methodologies were based on the *Manual on Uniform Traffic Control Devices*[3] (MUTCD). Warrant 1, Eight-Hour Vehicular Volumes, was evaluated based on the common assumption that traffic counted during the evening peak hour represents 10 percent of the average daily traffic (ADT) and that the 8th highest hour is 5.65 percent of the daily volume.

Based on the preliminary analysis, traffic signal warrants are not projected to be met at any of the unsignalized study intersections under buildout conditions. Accordingly, no signalization of the unsignalized study intersections is necessary or recommended.

[3] Federal Highway Administration, *Manual on Uniform Traffic Control Devices*, 11th Edition, 2023

Operational Analysis

Intersection Capacity Analysis

A capacity and delay analysis were conducted for each of the study intersections per the signalized and unsignalized intersection analysis methodologies in the *Highway Capacity Manual* (HCM)[4]. Intersections are generally evaluated based on the average control delay experienced by vehicles and are assigned a grade according to their operation. The level of service (LOS) of an intersection can range from LOS A, which indicates very little or no delay experienced by vehicles, to LOS F, which indicates a high degree of congestion and delay. The volume-to-capacity (v/c) ratio is a measure that compares the traffic volumes (demand) against the available capacity of an intersection.

Based on the City of Oregon City Guidelines for Transportation Impact Analysis, intersection capacity performance shall be determined for the peak hour periods using the HCM 7th edition. The HCM methodology does not calculate the overall v/c ratio of signalized intersections. For these intersections, the v/c ratio was calculated based on methods detailed in ODOT's APM *Section 13 Signalized Intersection Analysis*.

Performance Standards

The City of Oregon City requires all intersections within the study area to maintain an acceptable level of service upon full buildout of the proposed land use action.

ODOT

The following performance standards apply to intersections under the jurisdiction of ODOT:

- OR 213 s a state facility, therefore, the ODOT performance target from Table 7 of the Oregon Highway Plan[5] should be applied. The intersections of OR 213 & Redland Road, and OR 213 & Prairie Schooner Way/Clackamas River Drive lie within Oregon City's Regional Center. For a highway within a regional center, the target v/c ratio is 1.1 for the highest hour of the day and of 0.99 for the second highest consecutive hour (before or after) of the day.

Oregon City

The following performance standards apply to intersections under the jurisdiction of Oregon City and are located within the regional center:

- 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.
- 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

[4] Transportation Research Board, *Highway Capacity Manual 7th Edition*, 2022.

[5] Oregon Department of Transportation, 1999 Oregon Highway Plan Including amendments November 1999 through January 2023.

intersections, this standard applies to movements on the major street. There is no performance standard for the minor street approaches.

The following performance standards apply to intersections under the jurisdiction of Oregon City and are located outside of the regional center but designated on the arterial and throughway network, as defined in the regional transportation plan:

- 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.
- 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.

Future Transportation Network

The Notice of Decision for the County Courthouse project (GLUA-22-00033: General Land Use Application, MAS-22-00004: Detailed Development Plan, NROD-22-00020: Natural Resources Overlay District) dated March 2, 2023, includes COA 47 related to the intersection of OR 213 & Redland Road. The condition requires that the applicant (Clackamas County) shall "construct capacity improvements at the OR 213 & Redland Road intersection to alleviate projected operations deficiencies." It requires a "third southbound through lane on OR 213 through the intersection of OR 213 & Redland Road and the reconstruction of the exclusive southbound right-turn lane from the highway onto Redland Road at current storage length, with appropriate taper transition back to three southbound travel lanes prior to the existing sign bridge across OR 213." The condition also allows for an alternative improvement at the intersection if can bring the intersection back into compliance with operational standards. The capacity improvement must be completed within five years of the final decision, which would be Spring of 2028.

The operations analysis assumes that the required improvement of a third southbound will be constructed under both background and buildout conditions. An alternative improvement of a third eastbound left lane on Redland Road plus a third northbound receiving lane is also considered under year 2028 background and buildout conditions.

Delay & Capacity Analysis

The LOS, delay, and v/c results of the capacity analysis are shown in Table 7 for the morning and evening peak hours. When intersection operations for the highest hour resulted in a v/c ratio no greater than 0.99 (i.e., the standard for the second highest consecutive hour), then no second hour analysis was performed because the lower volume in the second hour will also meet the performance standard. Detailed results are provided in Appendix D.

Table 7: Capacity Analysis Summary

Intersection & Condition	Performance Standard	Morning Peak Hour			Evening Peak Hour		
		LOS	Delay (s)	V/C	LOS	Delay (s)	V/C
1. Holcomb Blvd & Street A (Site Access)							
2028 Buildout	0.99	B	13	0.26	B	15	0.20
2. Holcomb Blvd & Winston Dr (Site Access)							
2025 Existing	0.99	B	12	0.10	B	13	0.08
2028 Background		B	13	0.11	B	15	0.10
2028 Buildout		B	13	0.12	C	19	0.20
3. Holcomb Blvd/Abernathy Road & Redland Rd (Highest Hour)							
2025 Existing	1.1/0.99[1]	C	23	0.62	C	30	0.76
2028 Background		C	29	0.69	D	43	0.83
2028 Buildout		C	31	0.72	D	54	0.88
4. OR 213 & Redland Rd (Highest Hour)							
2025 Existing	1.1/0.99[2]	B	14	0.72	B	15	0.92
2028 Background[3]		B	15	0.77	B	13	0.84
2028 Buildout[3]		B	16	0.79	B	15	0.86
2028 Background Alternative (3EBL)[4]		B	14	0.71	B	18	0.96
2028 Buildout Alternative (3EBL)[4]		B	15	0.72	B	20	0.98
5. OR 213 & Prairie Schooner Wy (Highest Hour)							
2025 Existing	1.1/0.99[2]	A	9	0.62	B	12	0.74
2028 Background		B	10	0.68	B	18	0.85
2028 Buildout		B	10	0.68	B	18	0.86
6. Washington St & Abernathy Rd/17th St (Highest Hour)							
2025 Existing	1.1/0.99[1]	B	15	0.53	B	17	0.44
2028 Background		B	17	0.71	B	19	0.57
2028 Buildout		B	17	0.73	B	20	0.58
7. Washington St & 15th St (Highest Hour)							
2025 Existing	1.1/0.99[1]	B	12	0.62	B	15	0.57
2028 Background		B	13	0.74	B	15	0.71
2028 Buildout		B	14	0.76	B	16	0.73

Table 7: Capacity Analysis Summary

Intersection & Condition	Performance Standard	Morning Peak Hour			Evening Peak Hour		
		LOS	Delay (s)	V/C	LOS	Delay (s)	V/C
8. Washington St & 14th St (Highest Hour)							
2025 Existing	1.1/0.99[1]	B	12	0.69	B	18	0.72
2028 Background		B	11	0.82	C	23	0.89
2028 Buildout		B	11	0.84	C	23	0.91

Notes:

1. *For intersections under Oregon City jurisdiction within a Regional Center, a v/c target of 1.1 applies to the highest hour and a v/c target of 0.99 applies to the second highest hour. If the v/c ratio for the highest hour was 0.99 or better, then a second hour analysis was not performed.*
2. *For intersections under ODOT jurisdiction, a v/c target of 1.1 applies to the highest hour and a v/c target of 0.99 applies to the second highest hour. If the v/c ratio for the highest hour was 0.99 or better, then a second hour analysis was not performed.*
3. *The lane configuration at the intersection assumes the required Clackamas County Courthouse mitigation of a third southbound through lane on OR 213 at Redland Road. To account for the effects of the merge from 3 to 2 lanes south of the intersection, a lane utilization factor of 0.80 was applied to the southbound approach.*
4. *The lane configuration at the intersection assumes an alternative Clackamas County Courthouse mitigation of a third eastbound left-turn lane on Redland Road at OR 213.*

As shown, all study intersections are expected to meet performance standards under all analysis scenarios. Furthermore, all intersections are calculated to have a v/c ratio of 0.99 or better during the highest hour of the day, indicating no intersection is expected to be over capacity.

Queuing Analysis

An analysis of projected queuing was conducted for the study intersections. The 95th percentile queue lengths were estimated based on the same Synchro/SimTraffic simulations used for the delay calculations. The 95th percentile queue is a statistical measurement which indicates there is a 5 percent chance that the queue may exceed this length during the analysis period; however, given this is a probability, the 95th percentile queue length may theoretically never be met or observed in the field.

The 95th percentile queue lengths reported in the simulation are presented in Table 8 for the morning and evening peak hours. Reported queue lengths were rounded to the nearest 25 feet, equivalent to an average vehicle length. Available storage is measured as the length of a turn lane or the distance the closest upstream intersection. Detailed queuing analysis reports are included in Appendix D.

Table 8: 95th Percentile Queueing Analysis Summary

Intersection/Movement	Available Storage (ft)	2028 Background Queue (ft)		2028 Buildout Queue (ft)	
		Morning	Evening	Morning	Evening
1. Holcomb Blvd & Street A (Site Access)					
NB Approach	100	-	-	75	75
2. Holcomb Blvd & Winston Dr (Site Access)					
NB Approach	100	50	50	50	50
SB Approach	100	50	25	50	50
3. Holcomb Blvd/Abernethy Road & Redland Road					
EB Left-Turn Lane	175	100	275	100	275
EB Through-Right Lane	>1,000	175	600	200	950
WB Left-Turn Lane	150	125	100	150	125
WB Through Lane	620	275	175	350	200
WB Right-Turn Lane	150	225	150	225	175
NB Left-Turn Lane	250	250	275	250	300
NB Through-Right Lane	900	425	525	350	700
SB Left-Turn Lane	350	175	400	200	500
SB Through Lane	820	275	500	275	700
SB Right-Turn Lane	350	25	275	25	325
4. OR 213 & Redland Road					
EB Left-Turn Lanes	760	300	625	300	650
EB Right-Turn Lane	740	225	525	225	550
NB Left-Turn Lane	450	200	475	200	450
NB Through Lanes	>1,000	350	1,000	350	1,000
SB Through Lanes	>1,000	250	700	250	800
SB Right-Turn Lane	>1,000	75	625	100	750
5. Prairie Schooner Way/Clackamas River Dr & OR 213					
EB Right-Turn Lanes	325	100	125	100	125
WB Right-Turn Lanes	700	325	350	300	350
NB Through Lanes	>1,000	225	225	225	200
SB Through Lanes	>1,000	225	475	225	650

Table 8: 95th Percentile Queueing Analysis Summary

Intersection/Movement	Available Storage (ft)	2028 Background Queue (ft)		2028 Buildout Queue (ft)	
		Morning	Evening	Morning	Evening
6. Abernethy Road/17th Street & Washington Street					
EB Approach	270	50	150	50	50
WB Left-Turn Lane	175	300	275	300	275
WB Through-Right Lan	600	250	100	250	175
NB Left-Turn Lane	125	25	25	25	25
NB Through-Right Lane	475	125	175	150	150
NB Right-Turn Lane	225	75	75	75	75
SB Left-Turn Lane	250	100	50	100	50
SB Through-Right Lane	600	325	200	325	200
7. 15th Street & Washington Street					
EB Approach	210	150	200	150	200
WB Approach	200	125	175	125	200
NB Left-Turn Lane	100	75	125	75	125
NB Through-Right Lane	265	275	350	275	325
SB Left-Turn Lane	100	200	150	200	175
SB Through-Right Lane	280	650	575	600	550
8. 14th Street & Washington Street					
EB Left-Turn Lane	100	250	550	250	400
EB Through-Right Lane	200	125	250	100	225
WB Approach	200	50	100	50	75
NB Left-Turn Lane	100	175	150	150	150
NB Through-Right Lane	280	150	200	125	200
SB Left-Turn Lane	100	25	50	-	50
SB Through-Right Lane	265	350	350	375	350

In general, changes in 95th percentile queuing between the year 2028 background and buildout conditions are anticipated to be small, one to two vehicles, and can be accommodated in the storage available. However, five intersections show 95th percentile queues that exceed the available storage under both background and buildout conditions. The locations and movements are discussed below along with planned or potential mitigation.

- Holcomb Boulevard/Abernethy Road & Redland Road: EB Left, WB Right, NB Left, SB Left. Although 95th percentile queues would exceed the available storage of the turn lanes, the queues in the through lanes are not expected to extend to the upstream intersections. Conditions of approval for the annexation require a proportionate share contribution for improvements at this intersection. A TSP project is not identified but the project concept is to provide an additional lane on the eastbound

approach; it may involve restriping or widening and signal modifications. No additional mitigation is recommended.

- OR 213 & Redland Road – NB Left. The queuing for the northbound left-turn lane only exceeds in the 2028 background condition. This result reflect the variability of the simulations and can be addressed with the improvements required for the Clackamas County Courthouse. No additional mitigation is recommended.
- Washington Street & Abernethy Road/17th Street – WB Left. On the westbound approach, the 95th percentile queue is expected to exceed the striped storage under both background and buildout conditions; however, Abernethy Road has a two-way, left-turn lane which can accommodate longer queues without impacting the adjacent through lane. The left-turn lane could be restriped to provide more storage without widening the roadway.
- Washington Street & 15th Street – NB Left, NB Through-Right, SB Left, SB Through Right. Conditions of approval for the annexation require a proportionate share contribution for TSP Projects D7 and D8, improvements at this intersection. These projects would convert 14th Street to one-way eastbound flow and 15th Street to one-way westbound flow along with new bicycle facilities. No additional mitigation is recommended.
- Washington Street & 14th Street – EB Left, EB Through-Right, NB Left, SB Through-Right. Conditions of approval for the annexation require a proportionate share contribution for TSP Projects D7 and D8, improvements at this intersection. These projects would convert 14th Street to one-way eastbound flow and 15th Street to one-way westbound flow along with new bicycle facilities. No additional mitigation is recommended.

As discussed, proportionate share contributions are required at four of the five intersections as a condition of the annexation. The only additional mitigation is the potential restriping of the westbound left-turn lane to increase storage on Abernethy Road at Washington Street.

Conclusions

Key findings of this study include:

- No significant trends or crash patterns were identified beyond those associated with congestion and high speeds on OR 213; thus, no safety mitigation is recommended.
- Sight distance standards are met at the site access intersections of Street A and Winston Drive at Holcomb Boulevard.
- Left-turn lane warrants are not projected to be met at the site access intersections under buildout conditions; therefore, no left-turn lane is necessary or recommended.
- Traffic signal warrants are not projected to be met at the site access intersections; therefore, no signalization is necessary or recommended.
- All study intersections are projected to operate within the City of Oregon City standards under all analysis scenarios. Furthermore, all intersections are calculated to have a v/c ratio of 0.99 or better during the highest hour of the day, indicating no intersection is expected to be over capacity.
- In general, changes in 95th percentile queuing between the year 2028 background and buildout conditions are anticipated to be small, one to two vehicles, and can be accommodated in the storage available. However, five intersections show 95th percentile queues that exceed the available storage, many under both background and buildout conditions. Proportionate share contributions are required at four of the five intersections as a condition of the annexation. The only additional mitigation is the potential restriping of the westbound left-turn lane to increase storage on Abernethy Road at Washington Street.

Appendix A – Site Information

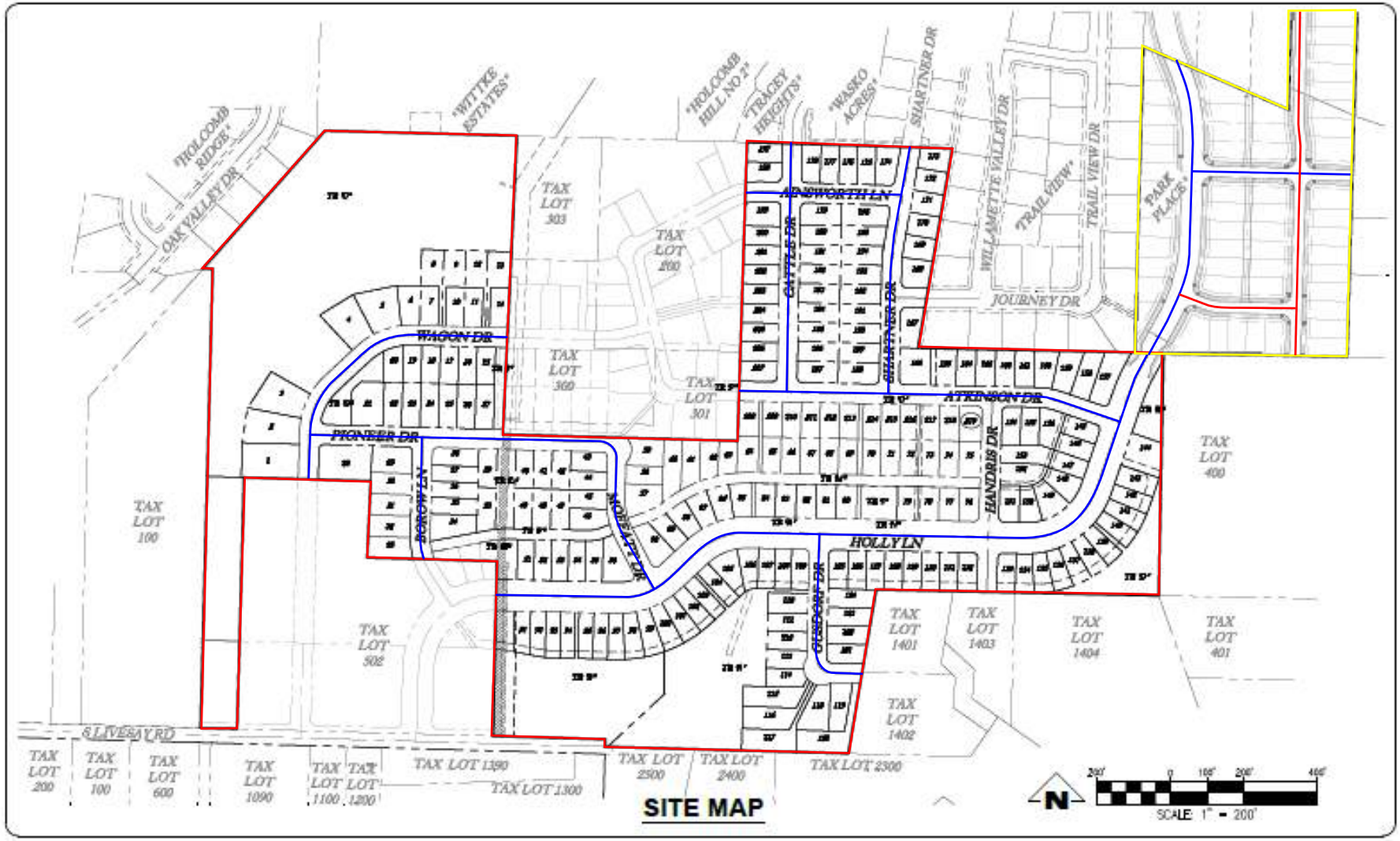
Site Plan

Trip Generation Calculations

Trip Assignment Calculations at Area Intersections

PARK PLACE II

219 - LOT SUBDIVISION
S.E. 1/4 SEC. 28 T.2S R.2E. W.M.
TAX MAP 22E28D TAX LOTS 100, 190, 302, 400, 500, 3700, AND 3701
OREGON CITY, OREGON



SITE MAP

PROJECT CONTACTS

OWNER:
ICON CONSTRUCTION & DEVELOPMENT

SURVEYOR:
AKS ENGINEERING & FORESTRY, LLC

GEOTECHNICAL ENGINEER:
GEOPACIFIC

CIVIL ENGINEER:
EMERIO DESIGN, LLC

SITE DATA

AREA:	59.54 AC
ZONING:	R-5 AND R-10
PROPOSED DENSITY:	

TRIP GENERATION CALCULATIONS Phase I

Source: Trip Generation Manual, 11th Edition

Land Use:	Single-Family Detached Housing
Land Use Code:	210.3
Land Use Subcategory:	All Sites
Setting/Location	General Urban/Suburban
Variable:	Dwelling Units
Trip Type:	Vehicle
Formula Type:	Equation
Variable Quantity:	53

AM PEAK HOUR

Trip Rate: =EXP(0.91*LN($X5)+0.12)

	Enter	Exit	Total
Directional Split	25%	75%	
Trip Ends	11	31	42

PM PEAK HOUR

Trip Rate: =EXP(0.94*LN($X5)+0.27)

	Enter	Exit	Total
Directional Split	63%	37%	
Trip Ends	35	20	55

WEEKDAY

Trip Rate: =EXP(0.92*LN($X5)+2.68)

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	281	281	562

Source: Trip Generation Manual, 11th Edition

TRIP GENERATION CALCULATIONS Phase II

Source: Trip Generation Manual, 11th Edition

Land Use:	Single-Family Detached Housing
Land Use Code:	210
Land Use Subcategory:	All Sites
Setting/Location	General Urban/Suburban
Variable:	Dwelling Units
Trip Type:	Vehicle
Formula Type:	Equation
Variable Quantity:	219

AM PEAK HOUR

Trip Rate: =EXP(0.91*LN($X2)+0.12)

	Enter	Exit	Total
Directional Split	25%	75%	
Trip Ends	38	114	152

PM PEAK HOUR

Trip Rate: =EXP(0.94*LN($X2)+0.27)

	Enter	Exit	Total
Directional Split	63%	37%	
Trip Ends	131	77	208

WEEKDAY

Trip Rate: =EXP(0.92*LN($X2)+2.68)

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	1,038	1,038	2,076

SATURDAY

Trip Rate: =EXP(0.97*LN($X2)+2.4)

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	1,027	1,027	2,054

Source: Trip Generation Manual, 11th Edition

TRIP GENERATION CALCULATIONS Phases I & II

Source: Trip Generation Manual, 11th Edition

Land Use:	Single-Family Detached Housing
Land Use Code:	210
Land Use Subcategory:	All Sites
Setting/Location	General Urban/Suburban
Variable:	Dwelling Units
Trip Type:	Vehicle
Formula Type:	Equation
Variable Quantity:	272

AM PEAK HOUR

Trip Rate: =EXP(0.91*LN($X2)+0.12)

	Enter	Exit	Total
Directional Split	25%	75%	
Trip Ends	46	139	185

PM PEAK HOUR

Trip Rate: =EXP(0.94*LN($X2)+0.27)

	Enter	Exit	Total
Directional Split	63%	37%	
Trip Ends	161	94	255

WEEKDAY

Trip Rate: =EXP(0.92*LN($X2)+2.68)

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	1,267	1,267	2,534

SATURDAY

Trip Rate: =EXP(0.97*LN($X2)+2.4)

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	1,267	1,267	2,534

Source: Trip Generation Manual, 11th Edition

Plan Submitted

Phase of Development	Intensity		Morning Peak Hour			Evening Peak Hour			Daily Trips
			In	Out	Total	In	Out	Total	
PPC Total	272	Dwelling Units	46	139	185	161	94	255	2,534
PPC Phase I	53	Dwelling Units	11	31	42	35	20	55	562
PPC Phase II	219	Dwelling Units	35	108	143	126	74	200	1,972

Trip Assignment

Intersection	In	Out	Threshold	AM	PM	Comments
Holcomb Blvd & Street A	79%	79%	20	113	158	Analyze operations in TIS
Holcomb Blvd & Winston Dr	86%	86%	20	123	172	Analyze operations in TIS
Holcomb Blvd/Abernethy Rd & Redland Rd	82%	82%	20	117	164	Analyze operations in TIS
OR 213 & Redland Rd	48%	48%	50	89	96	Analyze operations in TIS
OR 213 & Prairie Schooner Wy/Clackamas River Dr	40%	40%	50	74	80	Analyze operations in TIS
OR 213 & I-205 NB	40%	40%	50	74	80	No stopped movements, do not analyze
OR 213 & I-205 SB	15%	15%	50	28	30	Below threshold, do not analyze
Washington St & Abernethy Rd/17th S	25%	25%	20	46	50	Analyze operations in TIS
Washington St & 15th St	25%	25%	20	46	50	Analyze operations in TIS
Washington St & 14h St	20%	20%	20	37	40	Analyze operations in TIS
Main St & 15th St	6%	2%	20	11	12	Analyze operations in TIS
Main St & 14th St	6%	10%	20	11	12	Analyze operations in TIS
OR 99E & 15th St	5%	5%	50	9	10	Below threshold, do not analyze
OR 99E & 14th St	15%	15%	50	28	30	Below threshold, do not analyze

ODOT Threshold: 50 Peak Hour Trips
Oregon City Threshold: 20 Peak Hour Trips

Appendix B – Volumes

Traffic Counts

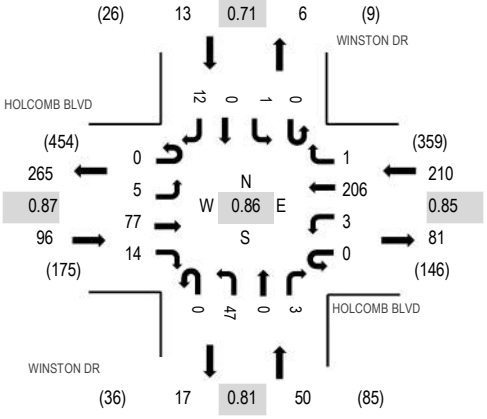
In-Process Trips

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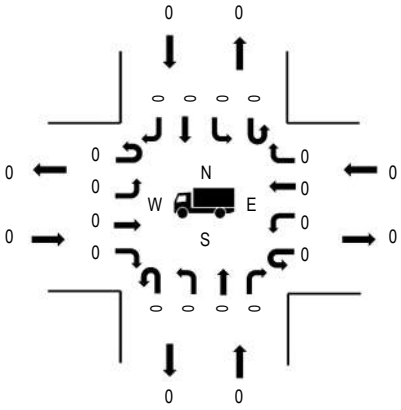
Location: 1 WINSTON DR & HOLCOMB BLVD AM
Date: Thursday, May 29, 2025
Peak Hour: 07:25 AM - 08:25 AM
Peak 15-Minutes: 07:50 AM - 08:05 AM

Peak Hour

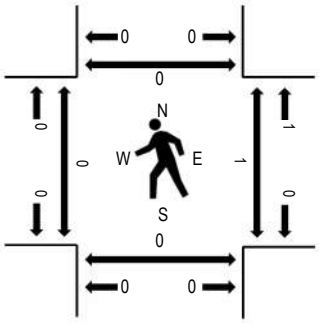
Motorized Vehicles



Heavy Vehicles



Pedestrians



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.87
WB	0.0%	0.85
NB	0.0%	0.81
SB	0.0%	0.71
All	0.0%	0.86

Traffic Counts - Motorized Vehicles

Interval Start Time	HOLCOMB BLVD Eastbound				HOLCOMB BLVD Westbound				WINSTON DR Northbound				WINSTON DR Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
7:00 AM	0	0	0	0	0	1	11	0	0	4	0	0	0	0	0	2	18	329
7:05 AM	0	1	5	0	0	0	5	0	0	3	0	2	0	0	0	1	17	346
7:10 AM	0	0	2	1	0	0	15	0	0	4	0	0	0	0	0	1	23	356
7:15 AM	0	0	2	0	0	0	13	0	0	7	0	0	0	0	0	2	24	362
7:20 AM	0	0	3	0	0	1	15	0	0	1	0	0	0	0	0	1	21	359
7:25 AM	0	0	4	0	0	1	22	0	0	4	0	1	0	0	0	1	33	369
7:30 AM	0	0	2	0	0	0	22	0	0	7	0	0	0	0	0	2	33	359
7:35 AM	0	1	4	2	0	0	16	1	0	5	0	0	0	0	0	1	30	351
7:40 AM	0	0	7	1	0	0	19	0	0	5	0	1	0	0	0	0	33	343
7:45 AM	0	1	4	2	0	0	14	0	0	3	0	1	0	0	0	0	25	339
7:50 AM	0	0	9	1	0	1	13	0	0	5	0	0	0	1	0	3	33	342
7:55 AM	0	1	9	2	0	1	21	0	0	3	0	0	0	0	0	2	39	328
8:00 AM	0	0	6	1	0	0	21	0	0	6	0	0	0	0	0	1	35	316
8:05 AM	0	0	7	1	0	0	15	0	0	3	0	0	0	0	0	1	27	
8:10 AM	0	0	10	2	0	0	14	0	0	2	0	0	0	0	0	1	29	
8:15 AM	0	0	8	1	0	0	11	0	0	1	0	0	0	0	0	0	21	
8:20 AM	0	2	7	1	0	0	18	0	0	3	0	0	0	0	0	0	31	
8:25 AM	0	0	7	1	0	1	10	0	0	3	0	0	0	0	0	1	23	
8:30 AM	0	0	9	0	0	0	12	0	0	1	0	0	0	0	0	3	25	
8:35 AM	0	0	6	2	0	0	10	1	0	2	0	0	0	0	0	1	22	
8:40 AM	0	0	7	1	0	0	18	0	0	2	0	0	0	0	0	1	29	
8:45 AM	0	1	8	1	0	1	15	0	0	2	0	0	0	0	0	0	28	
8:50 AM	0	0	2	2	0	0	12	0	0	2	0	1	0	0	0	0	19	
8:55 AM	0	0	11	7	0	0	8	0	0	1	0	0	0	0	0	0	27	
Count Total	0	7	139	29	0	7	350	2	0	79	0	6	0	1	0	25	645	
Peak Hour	0	5	77	14	0	3	206	1	0	47	0	3	0	1	0	12	369	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

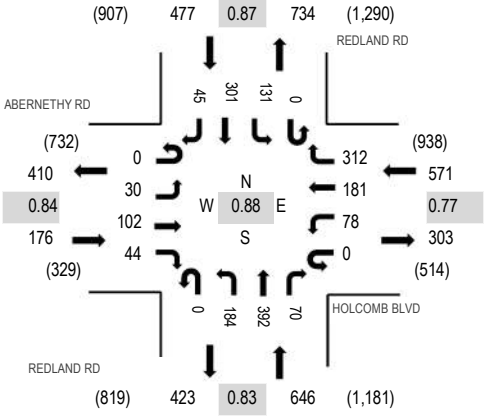
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0
7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0
7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0	7:10 AM	1	0	0	0	1
7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0
7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0
7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0
7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0
7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0
7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0
7:55 AM	0	0	0	0	0	7:55 AM	0	0	0	0	0	7:55 AM	0	0	1	0	1
8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0
8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0
8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0
8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0
8:25 AM	0	0	0	0	0	8:25 AM	0	0	0	0	0	8:25 AM	0	0	0	0	0
8:30 AM	1	0	0	0	1	8:30 AM	0	0	0	0	0	8:30 AM	0	0	0	0	0
8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0
8:40 AM	0	0	0	0	0	8:40 AM	0	0	0	0	0	8:40 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0
8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	2	2
8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	0	0	8:55 AM	2	2	0	0	4
Count Total	1	0	0	0	1	Count Total	0	0	0	0	0	Count Total	3	2	1	2	8
Peak Hour	0	0	0	0	0	Peak Hour	0	0	0	0	0	Peak Hour	0	0	1	0	1

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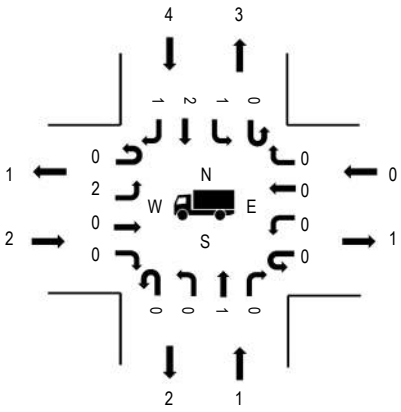
Location: 2 REDLAND RD & HOLCOMB BLVD AM
Date: Thursday, May 29, 2025
Peak Hour: 07:20 AM - 08:20 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour

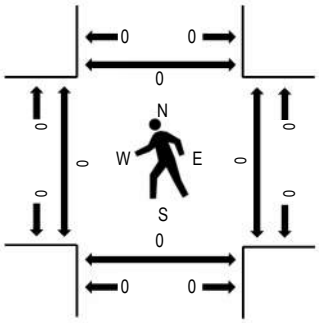
Motorized Vehicles



Heavy Vehicles



Pedestrians



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	1.1%	0.84
WB	0.0%	0.77
NB	0.2%	0.83
SB	0.8%	0.87
All	0.4%	0.88

Traffic Counts - Motorized Vehicles

Interval Start Time	ABERNETHY RD Eastbound				HOLCOMB BLVD Westbound				REDLAND RD Northbound				REDLAND RD Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
7:00 AM	0	2	7	5	0	3	8	6	0	16	25	3	0	6	24	4	109	1,753
7:05 AM	0	7	3	5	0	3	5	22	0	12	31	4	0	6	22	4	124	1,806
7:10 AM	0	1	3	3	0	0	8	19	0	19	30	1	0	8	21	7	120	1,836
7:15 AM	0	3	5	4	0	2	11	22	0	12	26	2	0	10	19	1	117	1,854
7:20 AM	0	5	8	5	0	1	17	14	0	14	35	6	0	8	18	3	134	1,870
7:25 AM	0	0	10	0	0	0	14	23	0	26	38	4	0	8	23	2	148	1,862
7:30 AM	0	3	7	1	0	6	10	21	0	20	32	4	0	23	15	3	145	1,842
7:35 AM	0	4	4	1	0	6	12	22	0	19	44	11	0	8	23	8	162	1,824
7:40 AM	0	1	12	5	0	10	16	17	0	18	33	9	0	7	33	1	162	1,784
7:45 AM	0	2	14	2	0	10	14	33	0	12	35	6	0	10	18	9	165	1,739
7:50 AM	0	6	11	1	0	11	16	34	0	19	35	8	0	15	28	2	186	1,722
7:55 AM	0	2	7	8	0	9	22	39	0	7	21	7	0	12	43	4	181	1,674
8:00 AM	0	2	9	6	0	11	12	30	0	19	29	6	0	7	27	4	162	1,602
8:05 AM	0	2	5	6	0	6	14	40	0	10	27	5	0	10	26	3	154	
8:10 AM	0	3	9	3	0	5	17	23	0	14	27	3	0	13	21	0	138	
8:15 AM	0	0	6	6	0	3	17	16	0	6	36	1	0	10	26	6	133	
8:20 AM	0	2	6	4	0	8	8	26	0	13	19	0	0	6	28	6	126	
8:25 AM	0	1	8	3	0	6	9	19	0	15	25	5	0	9	24	4	128	
8:30 AM	0	3	7	7	0	7	12	7	0	21	18	3	0	13	24	5	127	
8:35 AM	0	2	4	7	0	5	5	18	0	13	30	7	0	5	20	6	122	
8:40 AM	0	3	6	4	0	3	4	24	0	12	28	4	0	5	20	4	117	
8:45 AM	0	3	8	5	0	7	11	28	0	15	29	5	0	10	23	4	148	
8:50 AM	0	0	4	4	0	7	5	18	0	21	26	6	0	11	31	5	138	
8:55 AM	0	0	6	8	0	7	6	8	0	9	25	5	0	10	23	2	109	
Count Total	0	57	169	103	0	136	273	529	0	362	704	115	0	230	580	97	3,355	
Peak Hour	0	30	102	44	0	78	181	312	0	184	392	70	0	131	301	45	1,870	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

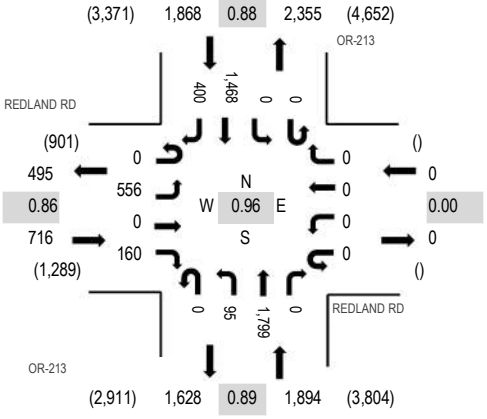
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0
7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0
7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0
7:15 AM	1	0	0	0	1	7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0
7:20 AM	1	0	0	0	1	7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0
7:25 AM	0	1	0	0	1	7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0
7:30 AM	0	0	0	1	1	7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0
7:35 AM	0	0	0	1	1	7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0
7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0
7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0
7:55 AM	1	0	0	0	1	7:55 AM	0	0	0	0	0	7:55 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0
8:05 AM	0	0	0	1	1	8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0
8:10 AM	0	0	0	1	1	8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0
8:20 AM	1	0	0	0	1	8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0
8:25 AM	0	0	0	0	0	8:25 AM	0	0	0	0	0	8:25 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0	8:30 AM	0	0	0	0	0	8:30 AM	0	0	0	0	0
8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0
8:40 AM	0	0	0	1	1	8:40 AM	0	0	0	0	0	8:40 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0
8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0
8:55 AM	0	0	0	1	1	8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	0	0
Count Total	4	1	0	6	11	Count Total	0	0	0	0	0	Count Total	0	0	0	0	0
Peak Hour	2	1	0	4	7	Peak Hour	0	0	0	0	0	Peak Hour	0	0	0	0	0

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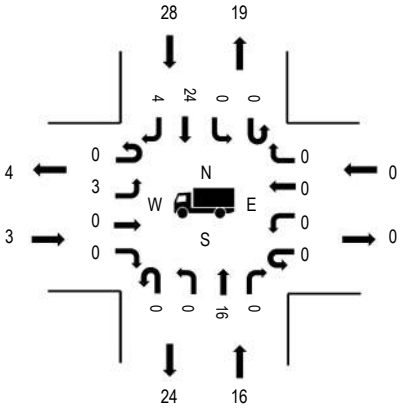
Location: 3 OR-213 & REDLAND RD AM
Date: Thursday, May 29, 2025
Peak Hour: 07:25 AM - 08:25 AM
Peak 15-Minutes: 07:55 AM - 08:10 AM

Peak Hour

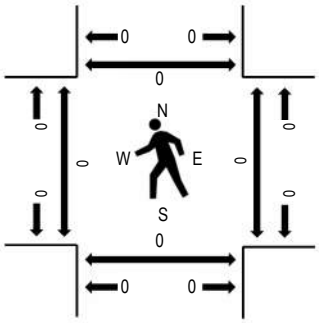
Motorized Vehicles



Heavy Vehicles



Pedestrians



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.4%	0.86
WB	0.0%	0.00
NB	0.8%	0.89
SB	1.5%	0.88
All	1.0%	0.96

Traffic Counts - Motorized Vehicles

Interval Start Time	REDLAND RD Eastbound				REDLAND RD Westbound				OR-213 Northbound				OR-213 Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
7:00 AM	0	40	0	3	0	0	0	0	0	5	149	0	0	0	88	28	313	4,260
7:05 AM	0	50	0	10	0	0	0	0	0	2	133	0	0	0	61	30	286	4,349
7:10 AM	0	48	0	6	0	0	0	0	0	2	198	0	0	0	84	36	374	4,456
7:15 AM	0	31	0	6	0	0	0	0	0	3	189	0	0	0	86	26	341	4,424
7:20 AM	0	58	0	10	0	0	0	0	0	6	158	0	0	0	88	21	341	4,428
7:25 AM	0	47	0	7	0	0	0	0	0	8	167	0	0	0	79	27	335	4,478
7:30 AM	0	42	0	8	0	0	0	0	0	13	181	0	0	0	123	29	396	4,465
7:35 AM	0	48	0	15	0	0	0	0	0	10	149	0	0	0	99	35	356	4,393
7:40 AM	0	57	0	9	0	0	0	0	0	7	152	0	0	0	128	27	380	4,394
7:45 AM	0	41	0	10	0	0	0	0	0	9	138	0	0	0	148	32	378	4,351
7:50 AM	0	47	0	22	0	0	0	0	0	5	158	0	0	0	117	41	390	4,317
7:55 AM	0	60	0	27	0	0	0	0	0	11	110	0	0	0	116	46	370	4,295
8:00 AM	0	43	0	15	0	0	0	0	0	1	153	0	0	0	155	35	402	4,204
8:05 AM	0	43	0	20	0	0	0	0	0	5	142	0	0	0	144	39	393	
8:10 AM	0	54	0	13	0	0	0	0	0	2	142	0	0	0	103	28	342	
8:15 AM	0	36	0	8	0	0	0	0	0	18	141	0	0	0	112	30	345	
8:20 AM	0	38	0	6	0	0	0	0	0	6	166	0	0	0	144	31	391	
8:25 AM	0	49	0	11	0	0	0	0	0	10	138	0	0	0	94	20	322	
8:30 AM	0	18	0	3	0	0	0	0	0	13	151	0	0	0	109	30	324	
8:35 AM	0	38	0	8	0	0	0	0	0	6	151	0	0	0	132	22	357	
8:40 AM	0	49	0	12	0	0	0	0	0	7	139	0	0	0	103	27	337	
8:45 AM	0	38	0	12	0	0	0	0	0	17	138	0	0	0	122	17	344	
8:50 AM	0	36	0	7	0	0	0	0	0	11	150	0	0	0	128	36	368	
8:55 AM	0	20	0	10	0	0	0	0	0	6	128	0	0	0	90	25	279	
Count Total	0	1,031	0	258	0	0	0	0	0	183	3,621	0	0	0	2,653	718	8,464	
Peak Hour	0	556	0	160	0	0	0	0	0	95	1,799	0	0	0	1,468	400	4,478	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

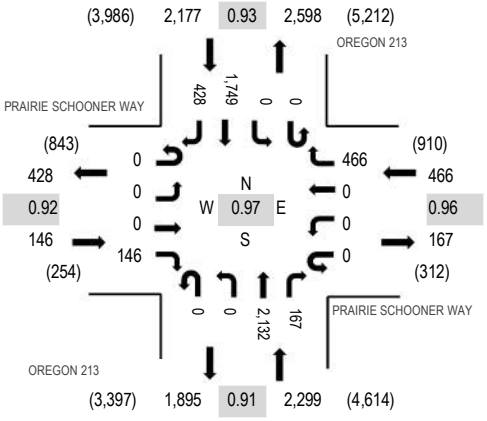
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	0	1	0	4	5	7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0
7:05 AM	0	2	0	1	3	7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0
7:10 AM	0	1	0	2	3	7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0
7:15 AM	1	0	0	1	2	7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0
7:20 AM	1	0	0	2	3	7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0
7:25 AM	1	0	0	0	1	7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0
7:30 AM	0	2	0	2	4	7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0
7:35 AM	0	2	0	3	5	7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0
7:40 AM	0	1	0	2	3	7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	0	0
7:45 AM	0	0	0	2	2	7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0
7:50 AM	0	2	0	4	6	7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0
7:55 AM	1	1	0	2	4	7:55 AM	0	0	0	0	0	7:55 AM	0	0	0	0	0
8:00 AM	0	1	0	2	3	8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0
8:05 AM	0	1	0	4	5	8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0
8:10 AM	0	1	0	2	3	8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0
8:15 AM	0	3	0	3	6	8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0
8:20 AM	1	2	0	2	5	8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0
8:25 AM	0	1	0	2	3	8:25 AM	0	0	0	0	0	8:25 AM	0	0	0	0	0
8:30 AM	0	3	0	5	8	8:30 AM	0	0	0	0	0	8:30 AM	0	0	0	0	0
8:35 AM	0	6	0	1	7	8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0
8:40 AM	0	2	0	3	5	8:40 AM	0	0	0	0	0	8:40 AM	0	0	0	0	0
8:45 AM	0	1	0	3	4	8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0
8:50 AM	0	1	0	4	5	8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0
8:55 AM	0	4	0	1	5	8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	0	0
Count Total	5	38	0	57	100	Count Total	0	0	0	0	0	Count Total	0	0	0	0	0
Peak Hour	3	16	0	28	47	Peak Hour	0	0	0	0	0	Peak Hour	0	0	0	0	0

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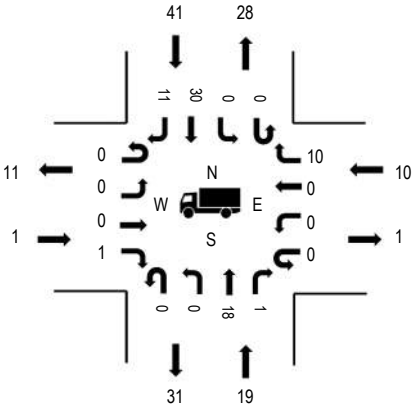
Location: 4 OREGON 213 & PRAIRIE SCHOONER WAY AM
Date: Thursday, May 29, 2025
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 07:50 AM - 08:05 AM

Peak Hour

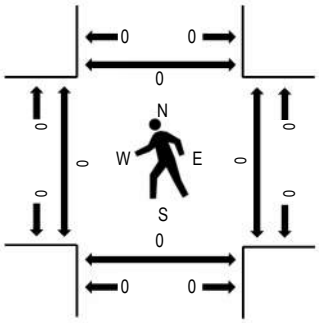
Motorized Vehicles



Heavy Vehicles



Pedestrians



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.7%	0.92
WB	2.1%	0.96
NB	0.8%	0.91
SB	1.9%	0.93
All	1.4%	0.97

Traffic Counts - Motorized Vehicles

Interval Start Time	PRAIRIE SCHOONER WAY Eastbound				PRAIRIE SCHOONER WAY Westbound				OREGON 213 Northbound				OREGON 213 Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
7:00 AM	0	0	0	12	0	0	0	27	0	0	185	10	0	0	103	29	366	4,837
7:05 AM	0	0	0	2	0	0	0	31	0	0	172	8	0	0	93	24	330	4,925
7:10 AM	0	0	0	6	0	0	0	36	0	0	217	10	0	0	112	18	399	5,004
7:15 AM	0	0	0	7	0	0	0	27	0	0	219	10	0	0	102	37	402	5,008
7:20 AM	0	0	0	5	0	0	0	28	0	0	199	10	0	0	109	40	391	5,036
7:25 AM	0	0	0	4	0	0	0	46	0	0	198	15	0	0	102	31	396	5,083
7:30 AM	0	0	0	7	0	0	0	28	0	0	210	17	0	0	144	36	442	5,088
7:35 AM	0	0	0	11	0	0	0	35	0	0	181	12	0	0	147	40	426	5,056
7:40 AM	0	0	0	11	0	0	0	47	0	0	180	5	0	0	145	30	418	5,022
7:45 AM	0	0	0	19	0	0	0	33	0	0	187	15	0	0	132	25	411	5,029
7:50 AM	0	0	0	17	0	0	0	29	0	0	184	17	0	0	160	35	442	5,026
7:55 AM	0	0	0	5	0	0	0	45	0	0	154	11	0	0	175	24	414	4,996
8:00 AM	0	0	0	17	0	0	0	45	0	0	183	16	0	0	154	39	454	4,927
8:05 AM	0	0	0	9	0	0	0	37	0	0	162	17	0	0	146	38	409	
8:10 AM	0	0	0	17	0	0	0	46	0	0	171	15	0	0	125	29	403	
8:15 AM	0	0	0	14	0	0	0	51	0	0	157	13	0	0	145	50	430	
8:20 AM	0	0	0	10	0	0	0	39	0	0	190	13	0	0	143	43	438	
8:25 AM	0	0	0	9	0	0	0	31	0	0	173	16	0	0	133	39	401	
8:30 AM	0	0	0	9	0	0	0	65	0	0	152	11	0	0	133	40	410	
8:35 AM	0	0	0	18	0	0	0	27	0	0	184	10	0	0	119	34	392	
8:40 AM	0	0	0	14	0	0	0	36	0	0	172	14	0	0	137	52	425	
8:45 AM	0	0	0	13	0	0	0	64	0	0	152	16	0	0	135	28	408	
8:50 AM	0	0	0	12	0	0	0	35	0	0	179	13	0	0	132	41	412	
8:55 AM	0	0	0	6	0	0	0	22	0	0	141	18	0	0	117	41	345	
Count Total	0	0	0	254	0	0	0	910	0	0	4,302	312	0	0	3,143	843	9,764	
Peak Hour	0	0	0	146	0	0	0	466	0	0	2,132	167	0	0	1,749	428	5,088	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

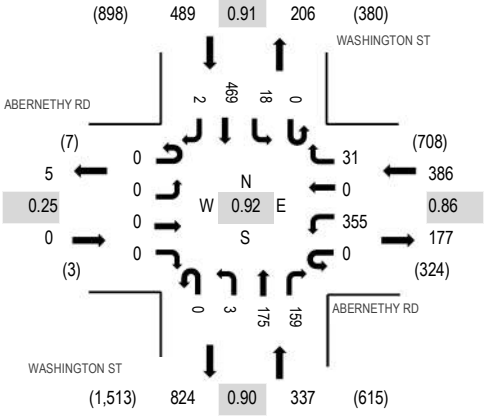
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	0	1	1	6	8	7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0
7:05 AM	0	2	0	3	5	7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0
7:10 AM	0	1	1	2	4	7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0
7:15 AM	0	1	1	1	3	7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0
7:20 AM	1	0	1	2	4	7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0
7:25 AM	0	1	2	1	4	7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0
7:30 AM	0	2	1	5	8	7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0
7:35 AM	0	2	1	5	8	7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0
7:40 AM	0	1	1	4	6	7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	0	0
7:45 AM	0	0	2	1	3	7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0
7:50 AM	0	1	0	6	7	7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0
7:55 AM	0	3	1	1	5	7:55 AM	0	0	0	0	0	7:55 AM	0	0	0	0	0
8:00 AM	0	1	1	4	6	8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0
8:05 AM	0	0	1	2	3	8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0
8:10 AM	0	2	1	3	6	8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0
8:15 AM	0	2	0	4	6	8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0
8:20 AM	1	4	1	2	8	8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0
8:25 AM	0	1	0	4	5	8:25 AM	0	0	0	0	0	8:25 AM	0	0	0	0	0
8:30 AM	0	2	2	5	9	8:30 AM	0	0	0	0	0	8:30 AM	0	0	0	0	0
8:35 AM	0	7	0	2	9	8:35 AM	0	0	0	1	1	8:35 AM	0	0	0	0	0
8:40 AM	0	2	0	4	6	8:40 AM	0	0	0	0	0	8:40 AM	0	0	0	0	0
8:45 AM	0	1	0	4	5	8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0
8:50 AM	0	1	0	3	4	8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0
8:55 AM	0	4	1	2	7	8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	0	0
Count Total	2	42	19	76	139	Count Total	0	0	0	1	1	Count Total	0	0	0	0	0
Peak Hour	1	19	10	41	71	Peak Hour	0	0	0	0	0	Peak Hour	0	0	0	0	0

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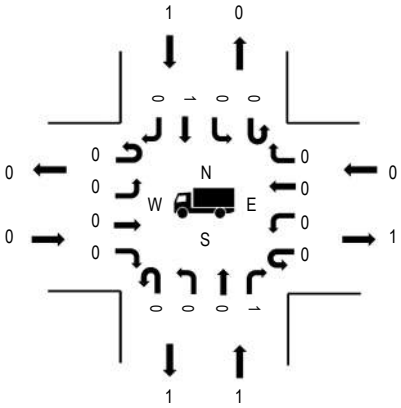
Location: 5 WASHINGTON ST & ABERNETHY RD AM
Date: Thursday, May 29, 2025
Peak Hour: 07:40 AM - 08:40 AM
Peak 15-Minutes: 07:40 AM - 07:55 AM

Peak Hour

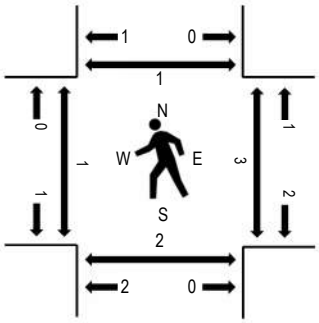
Motorized Vehicles



Heavy Vehicles



Pedestrians



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.25
WB	0.0%	0.86
NB	0.3%	0.90
SB	0.2%	0.91
All	0.2%	0.92

Traffic Counts - Motorized Vehicles

Interval Start Time	ABERNETHY RD Eastbound				ABERNETHY RD Westbound				WASHINGTON ST Northbound				WASHINGTON ST Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
7:00 AM	0	0	0	0	0	23	0	0	0	0	5	12	0	1	21	0	62	1,071
7:05 AM	0	1	0	0	0	21	0	2	0	0	7	10	0	0	20	1	62	1,112
7:10 AM	0	0	0	0	0	27	0	1	0	0	7	5	0	3	30	0	73	1,138
7:15 AM	0	0	0	0	0	22	0	4	0	0	5	10	0	2	26	0	69	1,159
7:20 AM	0	0	0	0	0	31	0	2	0	0	12	17	0	0	23	0	85	1,176
7:25 AM	0	0	0	0	0	25	0	8	0	0	14	8	0	1	34	0	90	1,193
7:30 AM	0	0	0	0	0	35	0	2	0	0	13	10	0	0	31	0	91	1,198
7:35 AM	0	0	0	0	0	22	0	2	0	0	17	13	0	1	40	0	95	1,204
7:40 AM	0	0	0	0	0	44	0	5	0	0	10	20	0	0	39	0	118	1,212
7:45 AM	0	0	0	0	0	33	0	1	0	0	14	12	0	4	45	0	109	1,199
7:50 AM	0	0	0	0	0	31	0	0	0	0	14	12	0	1	45	0	103	1,185
7:55 AM	0	0	0	0	0	37	0	1	0	1	19	20	0	2	33	1	114	1,184
8:00 AM	0	0	0	0	0	29	0	4	0	0	20	10	0	2	38	0	103	1,153
8:05 AM	0	0	0	0	0	25	0	2	0	1	7	11	0	0	42	0	88	
8:10 AM	0	0	0	0	0	23	0	1	0	1	15	16	0	2	36	0	94	
8:15 AM	0	0	0	0	0	28	0	2	0	0	18	10	0	1	27	0	86	
8:20 AM	0	0	0	0	0	27	0	4	0	0	21	14	0	0	35	1	102	
8:25 AM	0	0	0	0	0	24	0	3	0	0	8	11	0	0	49	0	95	
8:30 AM	0	0	0	0	0	22	0	4	0	0	8	11	0	4	48	0	97	
8:35 AM	0	0	0	0	0	32	0	4	0	0	21	12	0	2	32	0	103	
8:40 AM	0	1	0	0	0	16	0	5	0	0	19	20	0	0	44	0	105	
8:45 AM	0	0	0	0	0	25	0	1	0	1	11	8	0	1	48	0	95	
8:50 AM	0	1	0	0	0	26	0	3	0	0	19	12	0	0	41	0	102	
8:55 AM	0	0	0	0	0	17	0	2	0	0	10	13	0	0	41	0	83	
Count Total	0	3	0	0	0	645	0	63	0	4	314	297	0	27	868	3	2,224	
Peak Hour	0	0	0	0	0	355	0	31	0	3	175	159	0	18	469	2	1,212	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

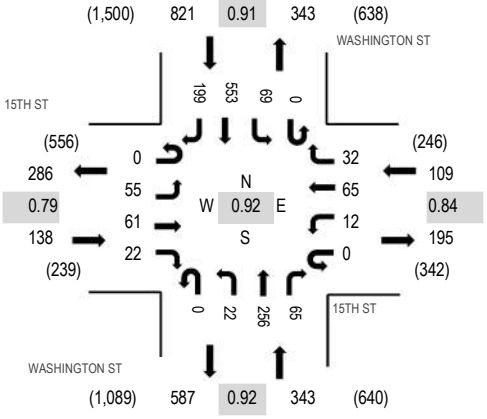
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0
7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0
7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0
7:15 AM	0	0	0	1	1	7:15 AM	0	0	0	0	0	7:15 AM	1	0	0	0	1
7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0
7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0
7:35 AM	0	1	0	0	1	7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0
7:40 AM	0	0	0	1	1	7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0
7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0	7:50 AM	1	0	0	1	2
7:55 AM	0	1	0	0	1	7:55 AM	0	0	0	0	0	7:55 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0	8:00 AM	0	2	1	0	3
8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0
8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0
8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0
8:25 AM	0	0	0	0	0	8:25 AM	0	1	0	0	1	8:25 AM	0	0	2	0	2
8:30 AM	0	0	0	0	0	8:30 AM	0	0	0	0	0	8:30 AM	0	0	0	0	0
8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0
8:40 AM	0	0	0	0	0	8:40 AM	0	0	0	0	0	8:40 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0
8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0
8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	0	0
Count Total	0	2	0	2	4	Count Total	0	1	0	0	1	Count Total	2	2	3	1	8
Peak Hour	0	1	0	1	2	Peak Hour	0	1	0	0	1	Peak Hour	1	2	3	1	7

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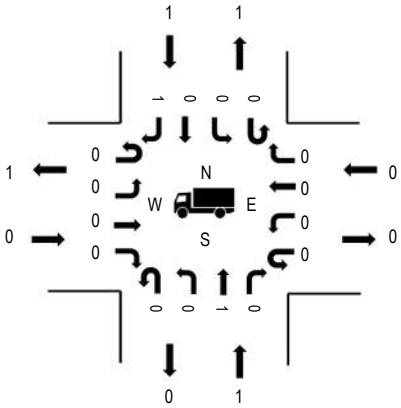
Location: 6 WASHINGTON ST & 15TH ST AM
Date: Thursday, May 29, 2025
Peak Hour: 07:40 AM - 08:40 AM
Peak 15-Minutes: 07:50 AM - 08:05 AM

Peak Hour

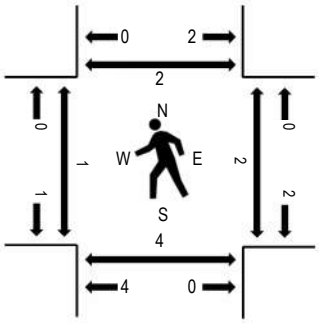
Motorized Vehicles



Heavy Vehicles



Pedestrians



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.79
WB	0.0%	0.84
NB	0.3%	0.92
SB	0.1%	0.91
All	0.1%	0.92

Traffic Counts - Motorized Vehicles

Interval Start Time	15TH ST Eastbound				15TH ST Westbound				WASHINGTON ST Northbound				WASHINGTON ST Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
7:00 AM	0	3	2	1	0	0	8	1	0	2	14	4	0	4	30	11	80	1,246
7:05 AM	0	4	4	0	0	1	5	2	0	2	12	4	0	6	22	14	76	1,292
7:10 AM	0	1	2	1	0	1	13	2	0	0	8	4	0	4	29	15	80	1,323
7:15 AM	0	1	3	2	0	2	7	3	0	1	11	0	0	2	40	9	81	1,364
7:20 AM	0	6	3	1	0	4	5	2	0	0	24	5	0	3	42	9	104	1,380
7:25 AM	0	2	0	0	0	2	8	0	0	2	19	5	0	3	41	19	101	1,392
7:30 AM	0	3	2	3	0	2	4	2	0	1	19	5	0	3	40	14	98	1,397
7:35 AM	0	6	5	3	0	2	9	6	0	3	18	4	0	6	49	10	121	1,410
7:40 AM	0	1	2	2	0	0	5	6	0	4	24	2	0	5	58	15	124	1,411
7:45 AM	0	3	7	1	0	0	7	3	0	4	21	2	0	10	48	17	123	1,397
7:50 AM	0	6	5	2	0	0	9	1	0	0	19	3	0	6	55	11	117	1,392
7:55 AM	0	3	11	2	0	2	5	2	0	2	34	12	0	4	51	13	141	1,405
8:00 AM	0	7	5	4	0	0	3	1	0	3	23	7	0	5	48	20	126	1,379
8:05 AM	0	3	6	2	0	0	9	1	0	0	13	4	0	7	45	17	107	
8:10 AM	0	2	8	2	0	1	5	6	0	0	28	3	0	5	43	18	121	
8:15 AM	0	7	5	1	0	3	1	2	0	1	19	4	0	6	30	18	97	
8:20 AM	0	9	2	2	0	0	5	2	0	1	23	10	0	4	39	19	116	
8:25 AM	0	4	4	3	0	1	6	2	0	3	15	3	0	0	43	22	106	
8:30 AM	0	4	3	1	0	1	5	4	0	2	13	6	0	9	51	12	111	
8:35 AM	0	6	3	0	0	4	5	2	0	2	24	9	0	8	42	17	122	
8:40 AM	0	4	3	1	0	0	9	4	0	0	31	6	0	5	33	14	110	
8:45 AM	0	6	2	5	0	0	8	5	0	6	13	7	0	7	48	11	118	
8:50 AM	0	6	5	0	0	2	4	3	0	1	27	8	0	5	52	17	130	
8:55 AM	0	7	3	1	0	0	10	1	0	3	19	9	0	4	42	16	115	
Count Total	0	104	95	40	0	28	155	63	0	43	471	126	0	121	1,021	358	2,625	
Peak Hour	0	55	61	22	0	12	65	32	0	22	256	65	0	69	553	199	1,411	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

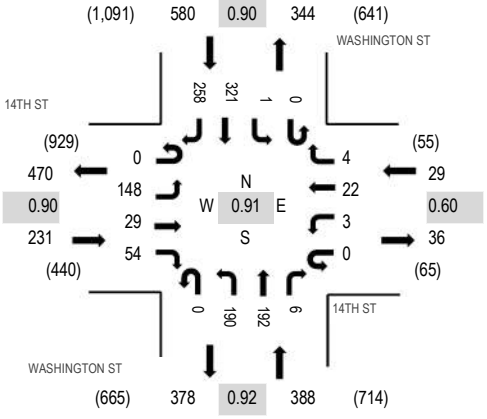
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	0	0	1	0	1	7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0
7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0
7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0
7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0
7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0
7:35 AM	0	1	0	0	1	7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0
7:40 AM	0	0	0	1	1	7:40 AM	0	0	0	0	0	7:40 AM	1	0	0	0	1
7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0
7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0
7:55 AM	0	1	0	0	1	7:55 AM	0	0	0	0	0	7:55 AM	0	4	0	0	4
8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	1	1
8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	1	1
8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0
8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0
8:25 AM	0	0	0	0	0	8:25 AM	0	0	1	0	1	8:25 AM	0	0	2	0	2
8:30 AM	0	0	0	0	0	8:30 AM	0	0	0	0	0	8:30 AM	0	0	0	0	0
8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0
8:40 AM	0	0	0	0	0	8:40 AM	0	0	0	0	0	8:40 AM	2	2	0	0	4
8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0
8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0
8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	0	0	8:55 AM	0	0	1	0	1
Count Total	0	2	1	1	4	Count Total	0	0	1	0	1	Count Total	3	6	3	2	14
Peak Hour	0	1	0	1	2	Peak Hour	0	0	1	0	1	Peak Hour	1	4	2	2	9

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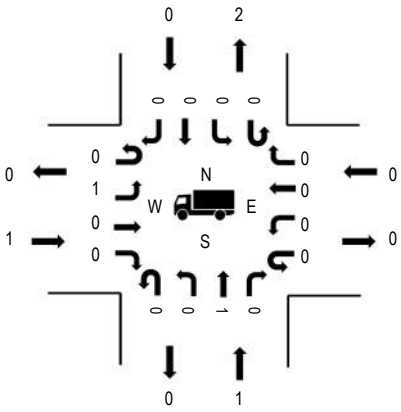
Location: 7 WASHINGTON ST & 14TH ST AM
Date: Thursday, May 29, 2025
Peak Hour: 07:25 AM - 08:25 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour

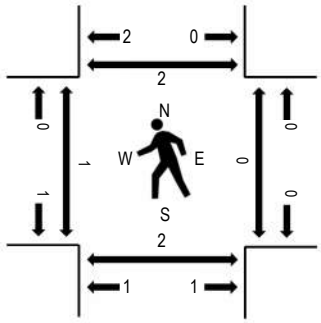
Motorized Vehicles



Heavy Vehicles



Pedestrians



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.4%	0.90
WB	0.0%	0.60
NB	0.3%	0.92
SB	0.0%	0.90
All	0.2%	0.91

Traffic Counts - Motorized Vehicles

Interval Start Time	14TH ST Eastbound				14TH ST Westbound				WASHINGTON ST Northbound				WASHINGTON ST Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
7:00 AM	0	9	1	0	0	0	1	0	0	18	13	0	0	0	13	21	76	1,137
7:05 AM	0	8	1	1	0	0	1	0	0	24	8	0	0	0	11	11	65	1,164
7:10 AM	0	8	0	5	0	1	2	0	0	17	6	1	0	0	9	19	68	1,187
7:15 AM	0	4	1	3	0	0	4	0	0	21	8	4	0	0	18	24	87	1,227
7:20 AM	0	15	1	4	0	1	7	0	0	10	15	1	0	0	18	31	103	1,225
7:25 AM	0	9	1	2	0	0	3	0	0	23	15	1	0	0	20	23	97	1,228
7:30 AM	0	11	2	2	0	1	3	0	0	16	14	0	0	0	26	20	95	1,218
7:35 AM	0	15	2	3	0	0	1	0	0	14	16	0	0	0	35	22	108	1,226
7:40 AM	0	8	1	3	0	0	4	1	0	17	17	1	0	0	29	21	102	1,215
7:45 AM	0	4	3	7	0	0	1	0	0	14	22	0	0	0	37	22	110	1,199
7:50 AM	0	12	3	7	0	0	3	0	0	18	16	1	0	0	30	22	112	1,191
7:55 AM	0	18	3	4	0	1	0	0	0	7	26	0	0	0	26	29	114	1,185
8:00 AM	0	15	3	5	0	0	1	0	0	17	14	1	0	0	23	24	103	1,163
8:05 AM	0	10	4	4	0	0	2	0	0	8	9	1	0	0	31	19	88	
8:10 AM	0	13	1	5	0	1	1	1	0	22	17	0	0	0	26	21	108	
8:15 AM	0	17	3	4	0	0	1	0	0	14	8	1	0	0	17	20	85	
8:20 AM	0	16	3	8	0	0	2	2	0	20	18	0	0	1	21	15	106	
8:25 AM	0	8	3	1	0	0	3	0	0	16	9	1	0	2	28	16	87	
8:30 AM	0	14	1	8	0	0	3	0	0	9	9	1	0	0	28	30	103	
8:35 AM	0	17	0	4	0	0	0	0	0	9	18	0	0	0	22	27	97	
8:40 AM	0	18	3	3	0	0	1	0	0	15	18	0	0	1	17	10	86	
8:45 AM	0	17	1	5	0	0	0	1	0	12	14	0	0	0	21	31	102	
8:50 AM	0	18	3	6	0	0	0	0	0	11	13	0	0	0	30	25	106	
8:55 AM	0	13	3	2	0	0	1	0	0	9	16	0	0	0	28	20	92	
Count Total	0	297	47	96	0	5	45	5	0	361	339	14	0	4	564	523	2,300	
Peak Hour	0	148	29	54	0	3	22	4	0	190	192	6	0	1	321	258	1,228	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

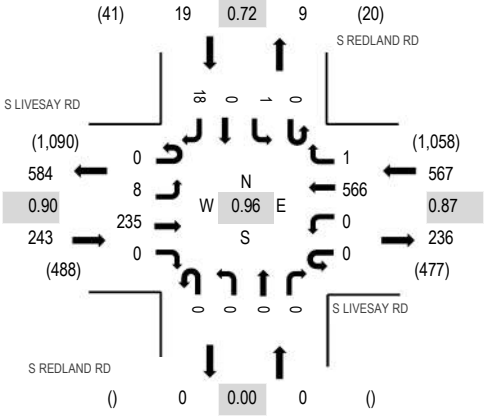
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0
7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0
7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0	7:15 AM	1	0	0	0	1	7:15 AM	0	0	0	0	0
7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0
7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0
7:35 AM	1	0	0	0	1	7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0
7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0
7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0
7:55 AM	0	1	0	0	1	7:55 AM	0	0	0	0	0	7:55 AM	1	0	0	0	1
8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0	8:00 AM	0	1	0	1	2
8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0	8:05 AM	0	1	0	0	1
8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	1	1
8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0
8:25 AM	0	1	0	0	1	8:25 AM	0	0	0	0	0	8:25 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0	8:30 AM	0	0	0	0	0	8:30 AM	0	1	2	0	3
8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0	8:35 AM	0	0	1	0	1
8:40 AM	0	0	0	0	0	8:40 AM	0	0	0	0	0	8:40 AM	1	0	2	0	3
8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0	8:45 AM	1	0	0	0	1
8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0
8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	0	0	8:55 AM	0	2	1	0	3
Count Total	1	2	0	0	3	Count Total	1	0	0	0	1	Count Total	3	5	6	2	16
Peak Hour	1	1	0	0	2	Peak Hour	0	0	0	0	0	Peak Hour	1	2	0	2	5

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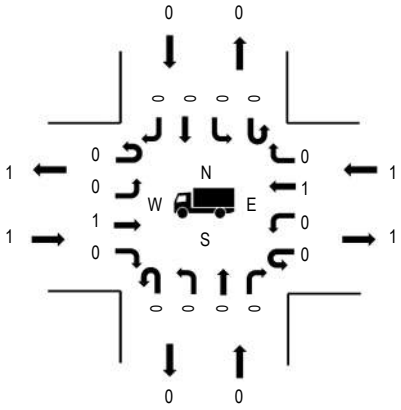
Location: 8 S REDLAND RD & S LIVESAY RD AM
Date: Thursday, May 29, 2025
Peak Hour: 07:20 AM - 08:20 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour

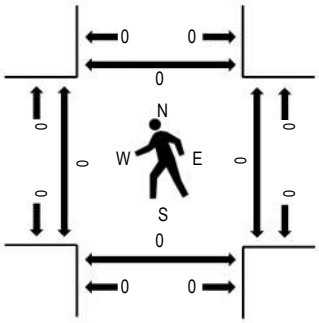
Motorized Vehicles



Heavy Vehicles



Pedestrians



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.4%	0.90
WB	0.2%	0.87
NB	0.0%	0.00
SB	0.0%	0.72
All	0.2%	0.96

Traffic Counts - Motorized Vehicles

Interval Start Time	S LIVESAY RD Eastbound				S LIVESAY RD Westbound				S REDLAND RD Northbound				S REDLAND RD Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
7:00 AM	0	0	16	0	0	0	41	0	0	0	0	0	0	0	0	2	59	790
7:05 AM	0	1	13	0	0	0	39	1	0	0	0	0	0	0	0	0	54	802
7:10 AM	0	0	18	0	0	0	44	0	0	0	0	0	0	2	0	3	67	816
7:15 AM	0	0	13	0	0	0	35	0	0	0	0	0	0	0	0	1	49	816
7:20 AM	0	0	15	0	0	0	65	0	0	0	0	0	0	0	0	1	81	829
7:25 AM	0	0	6	0	0	0	53	0	0	0	0	0	0	0	0	1	60	812
7:30 AM	0	0	12	0	0	0	46	0	0	0	0	0	0	0	0	0	58	818
7:35 AM	0	1	12	0	0	0	55	1	0	0	0	0	0	0	0	2	71	825
7:40 AM	0	0	30	0	0	0	43	0	0	0	0	0	0	0	0	1	74	821
7:45 AM	0	0	21	0	0	0	48	0	0	0	0	0	0	0	0	2	71	816
7:50 AM	0	0	17	0	0	0	50	0	0	0	0	0	0	1	0	1	69	824
7:55 AM	0	1	30	0	0	0	44	0	0	0	0	0	0	0	0	2	77	821
8:00 AM	0	1	25	0	0	0	44	0	0	0	0	0	0	0	0	1	71	797
8:05 AM	0	2	22	0	0	0	42	0	0	0	0	0	0	0	0	2	68	
8:10 AM	0	1	26	0	0	0	36	0	0	0	0	0	0	0	0	4	67	
8:15 AM	0	2	19	0	0	0	40	0	0	0	0	0	0	0	0	1	62	
8:20 AM	0	3	24	0	0	0	35	1	0	0	0	0	0	0	0	1	64	
8:25 AM	0	0	16	0	0	0	48	0	0	0	0	0	0	0	0	2	66	
8:30 AM	0	0	25	0	0	0	39	0	0	0	0	0	0	0	0	1	65	
8:35 AM	0	2	19	0	0	0	45	0	0	0	0	0	0	1	0	0	67	
8:40 AM	0	1	23	0	0	0	41	1	0	0	0	0	0	1	0	2	69	
8:45 AM	0	0	24	0	0	0	54	0	0	0	0	0	0	0	0	1	79	
8:50 AM	0	1	24	0	0	0	37	0	0	0	0	0	0	0	0	4	66	
8:55 AM	0	0	22	0	0	0	30	0	0	0	0	0	0	0	0	1	53	
Count Total	0	16	472	0	0	0	1,054	4	0	0	0	0	0	5	0	36	1,587	
Peak Hour	0	8	235	0	0	0	566	1	0	0	0	0	0	1	0	18	829	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

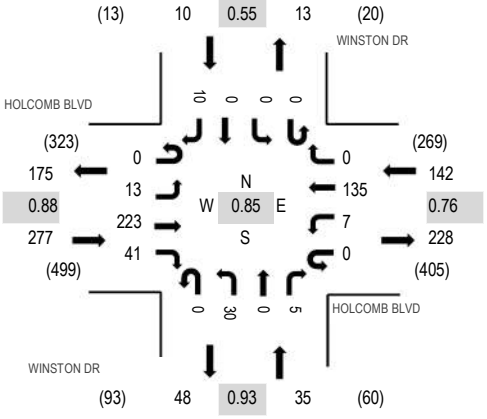
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0
7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0
7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0
7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0
7:25 AM	0	0	1	0	1	7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0
7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0
7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0
7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0
7:55 AM	0	0	0	0	0	7:55 AM	0	0	0	0	0	7:55 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0
8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0
8:10 AM	1	0	0	0	1	8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0
8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0
8:25 AM	0	0	0	0	0	8:25 AM	0	0	0	0	0	8:25 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0	8:30 AM	0	0	0	0	0	8:30 AM	0	0	0	0	0
8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0
8:40 AM	1	0	0	0	1	8:40 AM	0	0	0	0	0	8:40 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0
8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0
8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	0	0
Count Total	2	0	1	0	3	Count Total	0	0	0	0	0	Count Total	0	0	0	0	0
Peak Hour	1	0	1	0	2	Peak Hour	0	0	0	0	0	Peak Hour	0	0	0	0	0

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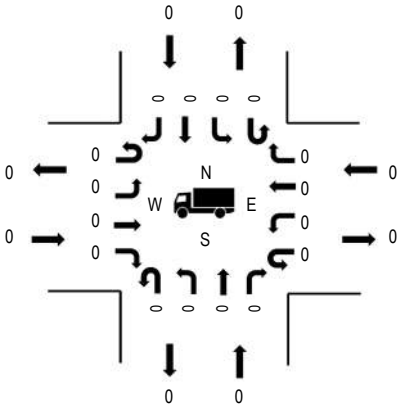
Location: 1 WINSTON DR & HOLCOMB BLVD PM
Date: Thursday, May 29, 2025
Peak Hour: 04:40 PM - 05:40 PM
Peak 15-Minutes: 04:55 PM - 05:10 PM

Peak Hour

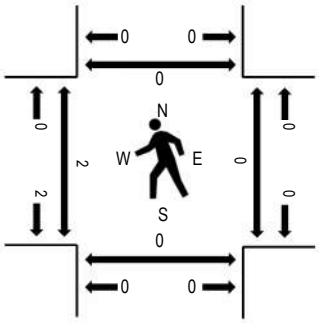
Motorized Vehicles



Heavy Vehicles



Pedestrians



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.88
WB	0.0%	0.76
NB	0.0%	0.93
SB	0.0%	0.55
All	0.0%	0.85

Traffic Counts - Motorized Vehicles

Interval Start Time	HOLCOMB BLVD Eastbound				HOLCOMB BLVD Westbound				WINSTON DR Northbound				WINSTON DR Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	0	13	3	0	1	10	0	0	2	0	0	0	0	0	0	29	404
4:05 PM	0	1	15	1	0	1	11	0	0	3	0	0	0	0	0	0	32	427
4:10 PM	0	1	16	4	0	0	12	0	0	1	0	0	0	0	0	0	34	434
4:15 PM	0	1	22	7	0	0	10	0	0	0	0	0	0	0	0	0	40	429
4:20 PM	0	2	15	2	0	0	6	0	0	6	0	0	0	0	0	1	32	429
4:25 PM	0	1	11	3	0	0	10	0	0	1	0	1	0	0	0	0	27	431
4:30 PM	0	0	14	3	0	2	16	0	0	1	0	0	0	0	0	0	36	452
4:35 PM	0	0	7	4	0	0	12	0	0	4	0	0	0	0	0	1	28	453
4:40 PM	0	2	22	4	0	0	8	0	0	2	0	0	0	0	0	0	38	464
4:45 PM	0	2	13	1	0	2	9	0	0	4	0	0	0	0	0	1	32	460
4:50 PM	0	1	20	4	0	0	4	0	0	2	0	0	0	0	0	0	31	457
4:55 PM	0	0	20	3	0	0	20	0	0	2	0	0	0	0	0	0	45	450
5:00 PM	0	3	20	4	0	3	16	0	0	4	0	0	0	0	0	2	52	437
5:05 PM	0	1	21	3	0	0	11	0	0	1	0	1	0	0	0	1	39	
5:10 PM	0	0	14	3	0	1	7	0	0	3	0	0	0	0	0	1	29	
5:15 PM	0	1	17	4	0	0	14	0	0	3	0	1	0	0	0	0	40	
5:20 PM	0	1	12	2	0	0	15	0	0	2	0	1	0	0	0	1	34	
5:25 PM	0	1	26	6	0	1	10	0	0	2	0	0	0	0	0	2	48	
5:30 PM	0	0	20	3	0	0	7	0	0	4	0	1	0	0	0	2	37	
5:35 PM	0	1	18	4	0	0	14	0	0	1	0	1	0	0	0	0	39	
5:40 PM	0	1	14	3	0	1	13	0	0	2	0	0	0	0	0	0	34	
5:45 PM	0	0	13	3	0	0	11	0	0	1	0	0	0	0	0	1	29	
5:50 PM	0	0	16	4	0	0	3	0	0	1	0	0	0	0	0	0	24	
5:55 PM	0	0	20	2	0	1	7	0	0	2	0	0	0	0	0	0	32	
Count Total	0	20	399	80	0	13	256	0	0	54	0	6	0	0	0	13	841	
Peak Hour	0	13	223	41	0	7	135	0	0	30	0	5	0	0	0	10	464	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

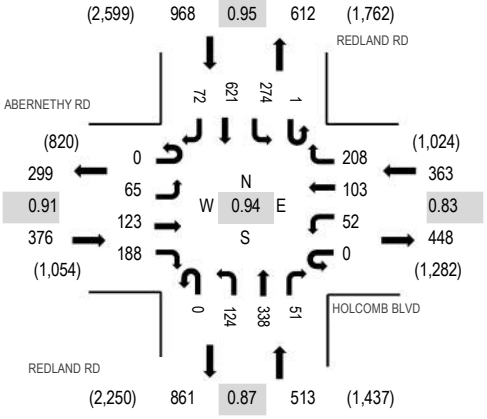
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	1	1
4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	1	1
4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:35 PM	0	0	0	0	0	4:35 PM	0	1	0	0	1	4:35 PM	0	0	0	0	0
4:40 PM	0	0	0	0	0	4:40 PM	1	0	0	0	1	4:40 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	0	0	0	0	0	4:50 PM	0	0	1	0	1	4:50 PM	1	0	0	0	1
4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	1	1	5:00 PM	0	0	0	0	0
5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0	5:05 PM	1	0	0	0	1
5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0
Count Total	0	0	0	0	0	Count Total	1	1	1	1	4	Count Total	2	0	0	2	4
Peak Hour	0	0	0	0	0	Peak Hour	1	0	1	1	3	Peak Hour	2	0	0	0	2

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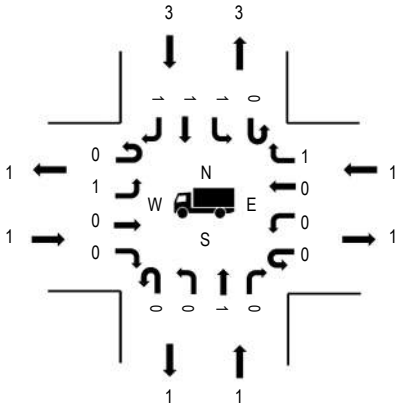
Location: 2 REDLAND RD & HOLCOMB BLVD PM
Date: Thursday, May 29, 2025
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 04:30 PM - 04:45 PM

Peak Hour

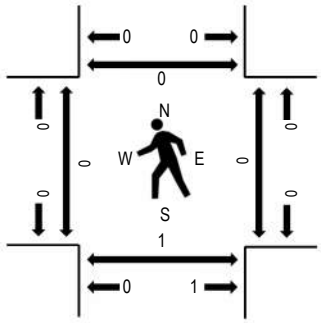
Motorized Vehicles



Heavy Vehicles



Pedestrians



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.3%	0.91
WB	0.3%	0.83
NB	0.2%	0.87
SB	0.3%	0.95
All	0.3%	0.94

Traffic Counts - Motorized Vehicles

Interval Start Time	ABERNETHY RD Eastbound				HOLCOMB BLVD Westbound				REDLAND RD Northbound				REDLAND RD Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
3:00 PM	0	1	7	8	0	2	6	10	0	8	22	8	0	19	31	1	123	1,910
3:05 PM	0	1	12	10	0	4	6	18	0	8	29	6	0	18	44	7	163	1,923
3:10 PM	0	6	6	20	0	5	7	14	0	17	38	4	0	22	39	5	183	1,921
3:15 PM	0	1	9	5	0	3	9	20	0	8	29	4	0	14	33	4	139	1,906
3:20 PM	0	3	6	10	0	3	6	15	0	7	30	1	0	15	35	6	137	1,970
3:25 PM	0	7	18	8	0	1	6	12	0	4	28	5	0	24	32	5	150	1,987
3:30 PM	0	11	10	20	0	8	8	14	0	9	21	5	0	16	30	6	158	2,006
3:35 PM	0	7	10	13	0	7	6	22	0	11	33	6	0	21	50	9	195	2,052
3:40 PM	0	4	11	13	0	10	10	17	0	4	29	1	0	26	50	5	180	2,048
3:45 PM	0	5	12	17	0	2	8	22	0	14	29	3	0	22	36	6	176	2,065
3:50 PM	0	5	16	10	0	6	6	13	0	7	24	4	0	15	34	10	150	2,053
3:55 PM	0	4	11	8	0	4	11	13	0	7	24	2	0	16	48	8	156	2,088
4:00 PM	0	6	13	12	0	1	3	9	0	4	23	0	0	16	45	4	136	2,091
4:05 PM	0	5	8	22	0	5	8	19	0	6	20	3	0	22	34	9	161	2,140
4:10 PM	0	3	10	12	0	3	9	12	0	11	24	5	0	27	43	9	168	2,163
4:15 PM	0	6	15	22	0	1	7	21	0	9	34	5	0	26	49	8	203	2,176
4:20 PM	0	4	8	8	0	4	6	8	0	8	32	2	0	28	38	8	154	2,156
4:25 PM	0	9	12	9	0	2	11	14	0	4	32	3	0	13	55	5	169	2,183
4:30 PM	0	7	8	22	0	4	12	25	0	9	36	4	0	13	55	9	204	2,220
4:35 PM	0	4	9	12	0	4	9	17	0	17	39	4	0	18	49	9	191	2,192
4:40 PM	0	6	11	19	0	3	11	8	0	6	29	3	0	31	65	5	197	2,178
4:45 PM	0	8	12	14	0	4	4	9	0	19	16	6	0	27	42	3	164	2,142
4:50 PM	0	3	15	14	0	5	9	19	0	12	19	6	0	20	60	3	185	2,165
4:55 PM	0	4	11	9	0	4	4	13	0	7	14	4	0	22	63	4	159	2,122
5:00 PM	0	8	12	19	0	9	13	21	0	2	22	4	0	25	44	6	185	2,113
5:05 PM	0	5	4	10	0	2	3	30	0	10	31	4	0	26	52	7	184	
5:10 PM	0	7	4	19	0	9	13	15	0	9	30	3	0	17	47	8	181	
5:15 PM	0	7	16	19	0	4	7	15	0	10	28	5	0	22	44	6	183	

5:20 PM	0	4	10	18	0	2	3	15	0	14	34	4	1	29	40	7	181
5:25 PM	0	2	11	13	0	2	15	21	0	9	40	4	0	24	60	5	206
5:30 PM	0	6	14	11	0	5	12	16	0	2	29	3	0	20	52	6	176
5:35 PM	0	7	8	18	0	3	8	20	0	5	25	0	0	27	49	7	177
5:40 PM	0	4	13	10	0	6	6	18	0	11	25	2	0	20	42	4	161
5:45 PM	0	4	17	10	0	4	8	23	0	6	29	3	0	25	50	8	187
5:50 PM	0	5	10	11	0	1	8	14	0	9	20	3	0	22	35	4	142
5:55 PM	0	2	9	10	0	7	9	16	0	7	25	6	0	11	41	7	150
Count Total	0	181	388	485	0	149	287	588	0	310	992	135	1	759	1,616	223	6,114
Peak Hour	0	65	123	188	0	52	103	208	0	124	338	51	1	274	621	72	2,220

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

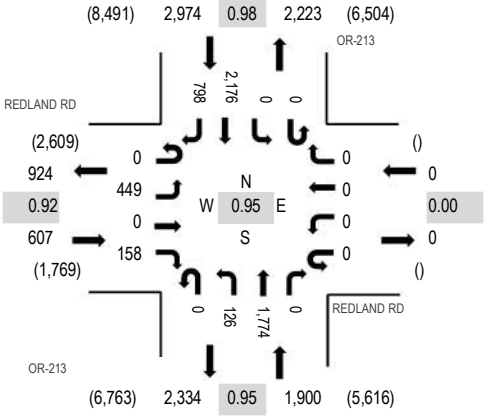
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
3:00 PM	0	0	0	0	0	3:00 PM	0	0	0	0	0	3:00 PM	0	1	0	0	1
3:05 PM	0	0	0	0	0	3:05 PM	0	0	0	0	0	3:05 PM	0	0	0	0	0
3:10 PM	1	1	0	0	2	3:10 PM	0	0	0	0	0	3:10 PM	0	0	0	0	0
3:15 PM	0	0	0	0	0	3:15 PM	0	0	0	0	0	3:15 PM	0	0	0	0	0
3:20 PM	0	0	0	1	1	3:20 PM	0	0	0	0	0	3:20 PM	0	0	0	0	0
3:25 PM	0	1	0	1	2	3:25 PM	0	0	0	0	0	3:25 PM	0	0	0	0	0
3:30 PM	2	0	0	0	2	3:30 PM	0	0	0	0	0	3:30 PM	0	0	0	0	0
3:35 PM	1	1	0	0	2	3:35 PM	0	1	0	0	1	3:35 PM	0	1	0	0	1
3:40 PM	0	0	0	0	0	3:40 PM	0	0	0	0	0	3:40 PM	0	0	0	0	0
3:45 PM	0	0	0	0	0	3:45 PM	0	0	0	0	0	3:45 PM	0	0	0	0	0
3:50 PM	0	0	0	0	0	3:50 PM	0	0	0	0	0	3:50 PM	0	0	0	0	0
3:55 PM	0	0	0	1	1	3:55 PM	0	0	0	0	0	3:55 PM	0	0	0	0	0
4:00 PM	0	0	0	2	2	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	1	0	0	0	1	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0	4:15 PM	0	1	0	0	1	4:15 PM	0	0	0	0	0
4:20 PM	0	1	0	2	3	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0	4:25 PM	0	1	0	0	1
4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:35 PM	1	0	0	1	2	4:35 PM	0	0	0	0	0	4:35 PM	0	1	0	0	1
4:40 PM	0	1	0	0	1	4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0
4:45 PM	0	0	1	0	1	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	0	0	0	0	0	4:50 PM	0	0	1	0	1	4:50 PM	0	1	0	0	1
4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:05 PM	0	0	0	1	1	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:20 PM	0	0	0	1	1	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0	5:25 PM	0	1	0	0	1
5:30 PM	0	0	0	1	1	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:35 PM	0	0	0	1	1	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	0	1	0	0	1	5:45 PM	0	1	0	0	1	5:45 PM	0	0	0	0	0
5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0	5:50 PM	1	1	0	0	2
5:55 PM	0	0	0	1	1	5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0
Count Total	6	6	1	13	26	Count Total	0	3	1	0	4	Count Total	1	7	0	0	8
Peak Hour	1	1	1	3	6	Peak Hour	0	0	1	0	1	Peak Hour	0	3	0	0	3

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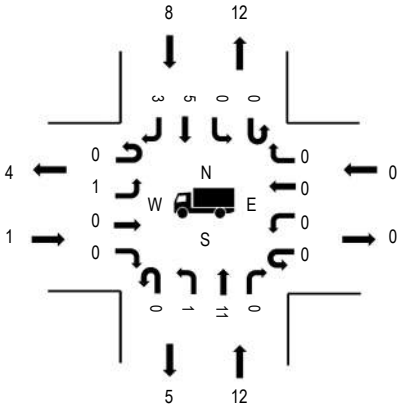
Location: 3 OR-213 & REDLAND RD PM
Date: Thursday, May 29, 2025
Peak Hour: 04:55 PM - 05:55 PM
Peak 15-Minutes: 05:10 PM - 05:25 PM

Peak Hour

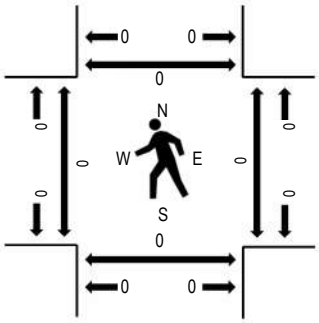
Motorized Vehicles



Heavy Vehicles



Pedestrians



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.2%	0.92
WB	0.0%	0.00
NB	0.6%	0.95
SB	0.3%	0.98
All	0.4%	0.95

Traffic Counts - Motorized Vehicles

Interval Start Time	REDLAND RD Eastbound				REDLAND RD Westbound				OR-213 Northbound				OR-213 Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
3:00 PM	0	25	0	7	0	0	0	0	0	11	140	0	0	0	176	42	401	5,218
3:05 PM	0	38	0	6	0	0	0	0	0	18	140	0	0	0	172	47	421	5,234
3:10 PM	0	40	0	13	0	0	0	0	0	12	145	0	0	0	152	54	416	5,256
3:15 PM	0	48	0	11	0	0	0	0	0	11	161	0	0	0	156	51	438	5,316
3:20 PM	0	30	0	9	0	0	0	0	0	11	143	0	0	0	179	35	407	5,334
3:25 PM	0	36	0	11	0	0	0	0	0	8	134	0	0	0	167	55	411	5,357
3:30 PM	0	36	0	17	0	0	0	0	0	19	153	0	0	0	150	40	415	5,401
3:35 PM	0	35	0	14	0	0	0	0	0	10	162	0	0	0	182	65	468	5,406
3:40 PM	0	31	0	15	0	0	0	0	0	13	163	0	0	0	193	67	482	5,369
3:45 PM	0	47	0	21	0	0	0	0	0	12	141	0	0	0	158	50	429	5,369
3:50 PM	0	36	0	10	0	0	0	0	0	9	146	0	0	0	205	54	460	5,395
3:55 PM	0	25	0	11	0	0	0	0	0	13	173	0	0	0	195	53	470	5,304
4:00 PM	0	37	0	13	0	0	0	0	0	8	128	0	0	0	174	57	417	5,295
4:05 PM	0	20	0	13	0	0	0	0	0	19	167	0	0	0	167	57	443	5,335
4:10 PM	0	34	0	11	0	0	0	0	0	16	155	0	0	0	191	69	476	5,330
4:15 PM	0	40	0	17	0	0	0	0	0	11	145	0	0	0	180	63	456	5,319
4:20 PM	0	36	0	11	0	0	0	0	0	17	136	0	0	0	167	63	430	5,365
4:25 PM	0	32	0	16	0	0	0	0	0	4	146	0	0	0	193	64	455	5,405
4:30 PM	0	40	0	11	0	0	0	0	0	12	119	0	0	0	169	69	420	5,395
4:35 PM	0	61	0	15	0	0	0	0	0	17	123	0	0	0	147	68	431	5,454
4:40 PM	0	42	0	3	0	0	0	0	0	9	145	0	0	0	194	89	482	5,453
4:45 PM	0	27	0	11	0	0	0	0	0	11	153	0	0	0	185	68	455	5,445
4:50 PM	0	37	0	16	0	0	0	0	0	13	95	0	0	0	148	60	369	5,460
4:55 PM	0	17	0	8	0	0	0	0	0	5	153	0	0	0	198	80	461	5,481
5:00 PM	0	24	0	10	0	0	0	0	0	11	147	0	0	0	197	68	457	5,363
5:05 PM	0	56	0	21	0	0	0	0	0	12	127	0	0	0	161	61	438	
5:10 PM	0	38	0	17	0	0	0	0	0	18	163	0	0	0	162	67	465	
5:15 PM	0	29	0	10	0	0	0	0	0	3	180	0	0	0	215	65	502	

5:20 PM	0	49	0	15	0	0	0	0	0	11	144	0	0	0	176	75	470
5:25 PM	0	53	0	6	0	0	0	0	0	20	152	0	0	0	156	58	445
5:30 PM	0	36	0	10	0	0	0	0	0	10	153	0	0	0	197	73	479
5:35 PM	0	35	0	15	0	0	0	0	0	11	127	0	0	0	175	67	430
5:40 PM	0	48	0	20	0	0	0	0	0	7	156	0	0	0	177	66	474
5:45 PM	0	32	0	15	0	0	0	0	0	9	149	0	0	0	198	67	470
5:50 PM	0	32	0	11	0	0	0	0	0	9	123	0	0	0	164	51	390
5:55 PM	0	30	0	17	0	0	0	0	0	14	105	0	0	0	130	47	343
Count Total	0	1,312	0	457	0	0	0	0	0	424	5,192	0	0	0	6,306	2,185	15,876
Peak Hour	0	449	0	158	0	0	0	0	0	126	1,774	0	0	0	2,176	798	5,481

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

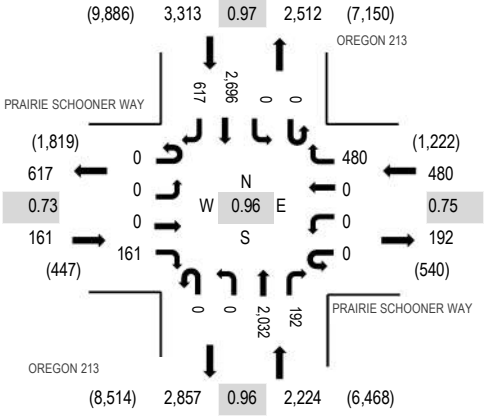
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
3:00 PM	0	1	0	3	4	3:00 PM	0	0	0	0	0	3:00 PM	0	0	0	0	0
3:05 PM	0	0	0	0	0	3:05 PM	0	0	0	0	0	3:05 PM	0	0	0	0	0
3:10 PM	0	0	0	1	1	3:10 PM	0	0	0	0	0	3:10 PM	0	0	0	0	0
3:15 PM	0	1	0	1	2	3:15 PM	0	0	0	0	0	3:15 PM	0	0	0	0	0
3:20 PM	0	3	0	3	6	3:20 PM	0	0	0	0	0	3:20 PM	0	0	0	0	0
3:25 PM	1	3	0	3	7	3:25 PM	0	0	0	0	0	3:25 PM	0	0	0	0	0
3:30 PM	2	0	0	0	2	3:30 PM	0	0	0	0	0	3:30 PM	0	0	0	0	0
3:35 PM	0	0	0	1	1	3:35 PM	0	0	0	0	0	3:35 PM	0	0	0	0	0
3:40 PM	1	0	0	0	1	3:40 PM	0	0	0	1	1	3:40 PM	0	0	0	0	0
3:45 PM	0	1	0	1	2	3:45 PM	0	0	0	1	1	3:45 PM	0	0	0	0	0
3:50 PM	0	2	0	1	3	3:50 PM	0	0	0	0	0	3:50 PM	0	0	0	0	0
3:55 PM	0	2	0	1	3	3:55 PM	0	0	0	0	0	3:55 PM	0	0	0	0	0
4:00 PM	0	1	0	3	4	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	0	0	0	1	1	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0
4:15 PM	1	0	0	0	1	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	1	0	0	2	3	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	0	0	0	1	1	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	0	0	0	5	5	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:35 PM	1	0	0	3	4	4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0
4:40 PM	0	0	0	1	1	4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0
4:45 PM	2	2	0	0	4	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0
4:55 PM	0	2	0	1	3	4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:05 PM	0	1	0	1	2	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	0	1	0	1	2	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	0	1	0	0	1	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:20 PM	0	1	0	2	3	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	0	2	0	1	3	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	0	1	0	1	2	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:35 PM	0	2	0	0	2	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	0	1	0	0	1	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	1	0	0	0	1	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
5:50 PM	0	0	0	1	1	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
5:55 PM	0	0	0	2	2	5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0
Count Total	10	28	0	41	79	Count Total	0	0	0	2	2	Count Total	0	0	0	0	0
Peak Hour	1	12	0	8	21	Peak Hour	0	0	0	0	0	Peak Hour	0	0	0	0	0

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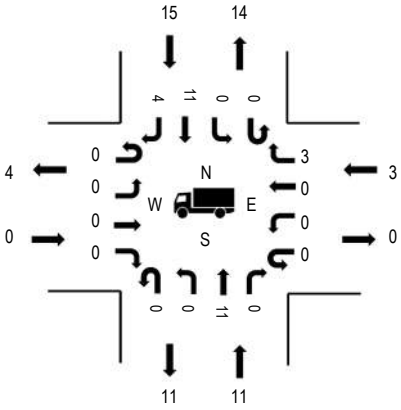
Location: 4 OREGON 213 & PRAIRIE SCHOONER WAY PM
Date: Thursday, May 29, 2025
Peak Hour: 03:30 PM - 04:30 PM
Peak 15-Minutes: 03:30 PM - 03:45 PM

Peak Hour

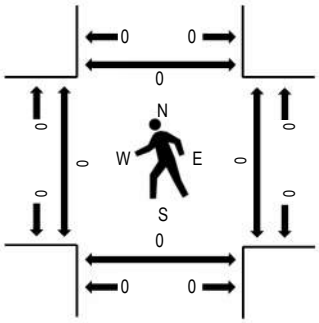
Motorized Vehicles



Heavy Vehicles



Pedestrians



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.73
WB	0.6%	0.75
NB	0.5%	0.96
SB	0.5%	0.97
All	0.5%	0.96

Traffic Counts - Motorized Vehicles

Interval Start Time	PRAIRIE SCHOONER WAY Eastbound				PRAIRIE SCHOONER WAY Westbound				OREGON 213 Northbound				OREGON 213 Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
3:00 PM	0	0	0	17	0	0	0	58	0	0	116	20	0	0	195	54	460	6,060
3:05 PM	0	0	0	25	0	0	0	31	0	0	187	13	0	0	195	57	508	6,073
3:10 PM	0	0	0	14	0	0	0	38	0	0	172	15	0	0	204	50	493	6,071
3:15 PM	0	0	0	13	0	0	0	42	0	0	168	15	0	0	214	58	510	6,086
3:20 PM	0	0	0	10	0	0	0	28	0	0	170	16	0	0	168	58	450	6,101
3:25 PM	0	0	0	8	0	0	0	21	0	0	165	15	0	0	215	53	477	6,140
3:30 PM	0	0	0	16	0	0	0	53	0	0	169	15	0	0	198	57	508	6,178
3:35 PM	0	0	0	9	0	0	0	59	0	0	184	16	0	0	230	51	549	6,177
3:40 PM	0	0	0	17	0	0	0	51	0	0	179	23	0	0	240	39	549	6,148
3:45 PM	0	0	0	12	0	0	0	39	0	0	167	20	0	0	219	48	505	6,150
3:50 PM	0	0	0	11	0	0	0	40	0	0	157	17	0	0	226	57	508	6,157
3:55 PM	0	0	0	12	0	0	0	27	0	0	190	14	0	0	237	63	543	6,087
4:00 PM	0	0	0	17	0	0	0	29	0	0	152	12	0	0	219	44	473	6,066
4:05 PM	0	0	0	14	0	0	0	40	0	0	167	8	0	0	229	48	506	6,086
4:10 PM	0	0	0	11	0	0	0	29	0	0	179	18	0	0	222	49	508	6,081
4:15 PM	0	0	0	22	0	0	0	27	0	0	182	15	0	0	226	53	525	6,098
4:20 PM	0	0	0	7	0	0	0	45	0	0	139	14	0	0	235	49	489	6,109
4:25 PM	0	0	0	13	0	0	0	41	0	0	167	20	0	0	215	59	515	6,133
4:30 PM	0	0	0	13	0	0	0	27	0	0	138	15	0	0	252	62	507	6,142
4:35 PM	0	0	0	12	0	0	0	46	0	0	152	14	0	0	243	53	520	6,125
4:40 PM	0	0	0	10	0	0	0	36	0	0	192	13	0	0	240	60	551	6,060
4:45 PM	0	0	0	17	0	0	0	22	0	0	170	5	0	0	233	65	512	6,029
4:50 PM	0	0	0	4	0	0	0	24	0	0	122	12	0	0	220	56	438	6,015
4:55 PM	0	0	0	16	0	0	0	20	0	0	159	14	0	0	259	54	522	6,003
5:00 PM	0	0	0	12	0	0	0	25	0	0	163	15	0	0	237	41	493	5,897
5:05 PM	0	0	0	14	0	0	0	39	0	0	164	14	0	0	226	44	501	
5:10 PM	0	0	0	9	0	0	0	33	0	0	178	12	0	0	241	52	525	
5:15 PM	0	0	0	10	0	0	0	24	0	0	196	24	0	0	236	46	536	

5:20 PM	0	0	0	11	0	0	0	24	0	0	165	20	0	0	237	56	513
5:25 PM	0	0	0	7	0	0	0	33	0	0	170	14	0	0	256	44	524
5:30 PM	0	0	0	16	0	0	0	18	0	0	186	16	0	0	219	35	490
5:35 PM	0	0	0	15	0	0	0	36	0	0	139	16	0	0	207	42	455
5:40 PM	0	0	0	6	0	0	0	27	0	0	171	19	0	0	253	44	520
5:45 PM	0	0	0	3	0	0	0	25	0	0	183	14	0	0	231	42	498
5:50 PM	0	0	0	10	0	0	0	27	0	0	151	8	0	0	193	37	426
5:55 PM	0	0	0	14	0	0	0	38	0	0	119	9	0	0	197	39	416
Count Total	0	0	0	447	0	0	0	1,222	0	0	5,928	540	0	0	8,067	1,819	18,023
Peak Hour	0	0	0	161	0	0	0	480	0	0	2,032	192	0	0	2,696	617	6,178

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

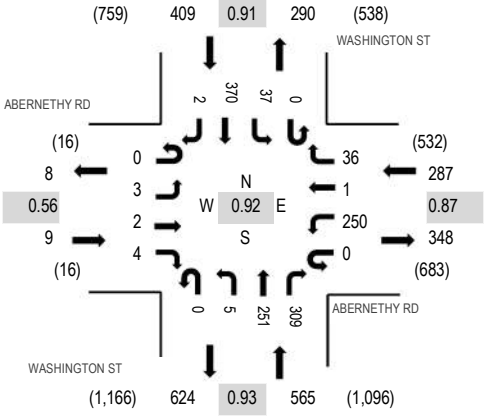
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
3:00 PM	0	1	1	3	5	3:00 PM	0	0	0	0	0	3:00 PM	0	0	0	0	0
3:05 PM	0	0	0	0	0	3:05 PM	0	0	0	0	0	3:05 PM	0	0	0	0	0
3:10 PM	1	0	0	2	3	3:10 PM	0	0	0	0	0	3:10 PM	0	0	0	0	0
3:15 PM	0	1	0	2	3	3:15 PM	0	0	0	0	0	3:15 PM	0	0	0	0	0
3:20 PM	0	2	0	4	6	3:20 PM	0	0	0	0	0	3:20 PM	0	0	0	0	0
3:25 PM	0	3	0	3	6	3:25 PM	0	0	0	0	0	3:25 PM	0	0	0	0	0
3:30 PM	0	2	0	0	2	3:30 PM	0	0	0	0	0	3:30 PM	0	0	0	0	0
3:35 PM	0	0	0	1	1	3:35 PM	0	0	0	0	0	3:35 PM	0	0	0	0	0
3:40 PM	0	1	0	0	1	3:40 PM	1	0	0	0	1	3:40 PM	0	0	0	0	0
3:45 PM	0	1	0	4	5	3:45 PM	0	0	0	1	1	3:45 PM	0	0	0	0	0
3:50 PM	0	2	1	2	5	3:50 PM	0	0	0	0	0	3:50 PM	0	0	0	0	0
3:55 PM	0	2	0	2	4	3:55 PM	0	0	0	0	0	3:55 PM	0	0	0	0	0
4:00 PM	0	1	0	2	3	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	0	0	0	1	1	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	0	0	1	0	1	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0
4:15 PM	0	1	0	0	1	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	0	1	1	3	5	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	1	0	0	5	6	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:35 PM	0	1	0	3	4	4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0
4:40 PM	0	0	0	1	1	4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0
4:45 PM	0	4	0	0	4	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	0	0	0	1	1	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0
4:55 PM	0	1	0	1	2	4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0
5:00 PM	0	1	0	0	1	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:05 PM	0	1	1	1	3	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	0	1	1	1	3	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	0	1	0	1	2	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:20 PM	0	1	0	1	2	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	0	2	0	2	4	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	0	1	0	1	2	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:35 PM	0	1	0	0	1	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	0	1	0	1	2	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
5:50 PM	0	0	0	2	2	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
5:55 PM	0	1	0	1	2	5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0
Count Total	2	35	6	51	94	Count Total	1	0	0	1	2	Count Total	0	0	0	0	0
Peak Hour	0	11	3	15	29	Peak Hour	1	0	0	1	2	Peak Hour	0	0	0	0	0

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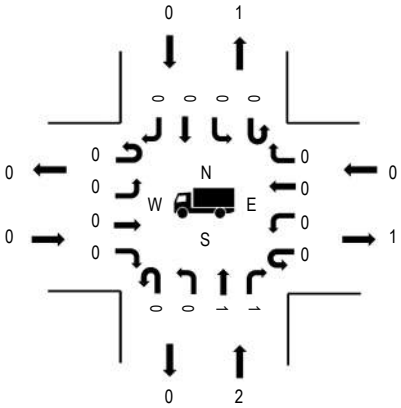
Location: 5 WASHINGTON ST & ABERNETHY RD PM
Date: Thursday, May 29, 2025
Peak Hour: 04:05 PM - 05:05 PM
Peak 15-Minutes: 04:25 PM - 04:40 PM

Peak Hour

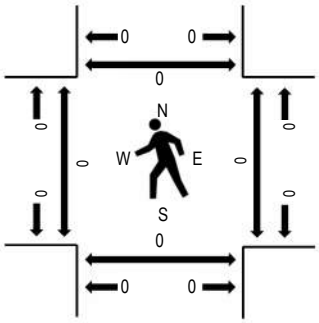
Motorized Vehicles



Heavy Vehicles



Pedestrians



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.56
WB	0.0%	0.87
NB	0.4%	0.93
SB	0.0%	0.91
All	0.2%	0.92

Traffic Counts - Motorized Vehicles

Interval Start Time	ABERNETHY RD Eastbound				ABERNETHY RD Westbound				WASHINGTON ST Northbound				WASHINGTON ST Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	0	0	1	0	10	0	5	0	0	25	30	0	2	31	0	104	1,266
4:05 PM	0	1	0	0	0	23	1	1	0	0	20	20	0	3	21	1	91	1,270
4:10 PM	0	0	1	1	0	20	0	0	0	0	24	26	0	4	37	1	114	1,264
4:15 PM	0	0	1	0	0	24	0	8	0	1	23	29	0	7	21	0	114	1,263
4:20 PM	0	0	0	0	0	17	0	2	0	0	27	23	0	1	22	0	92	1,254
4:25 PM	0	1	0	1	0	19	0	2	0	0	29	24	0	2	40	0	118	1,258
4:30 PM	0	1	0	0	0	16	0	5	0	0	16	33	0	4	35	0	110	1,254
4:35 PM	0	0	0	0	0	37	0	1	0	1	20	24	0	2	31	0	116	1,245
4:40 PM	0	0	0	0	0	15	0	3	0	2	23	22	0	4	34	0	103	1,208
4:45 PM	0	0	0	0	0	25	0	3	0	1	16	36	0	2	36	0	119	1,202
4:50 PM	0	0	0	1	0	20	0	4	0	0	17	23	0	3	24	0	92	1,164
4:55 PM	0	0	0	0	0	16	0	3	0	0	21	20	0	2	31	0	93	1,160
5:00 PM	0	0	0	1	0	18	0	4	0	0	15	29	0	3	38	0	108	1,137
5:05 PM	0	0	0	0	0	13	0	0	0	0	23	19	0	1	29	0	85	
5:10 PM	0	0	0	0	0	22	0	4	1	0	27	36	0	1	22	0	113	
5:15 PM	0	0	0	0	0	21	0	2	0	0	21	27	0	0	34	0	105	
5:20 PM	0	0	0	0	0	23	0	3	0	3	12	28	0	5	22	0	96	
5:25 PM	0	0	0	0	0	25	0	6	0	0	22	26	0	4	31	0	114	
5:30 PM	0	0	0	1	0	22	1	2	0	0	18	28	0	3	25	1	101	
5:35 PM	0	1	0	3	0	9	0	1	0	0	15	23	0	1	25	1	79	
5:40 PM	0	1	0	0	0	25	1	2	0	0	16	21	0	4	27	0	97	
5:45 PM	0	0	0	0	0	10	0	0	0	0	14	25	0	3	29	0	81	
5:50 PM	0	0	0	0	0	22	0	3	0	0	10	28	0	2	23	0	88	
5:55 PM	0	0	0	0	0	12	0	1	0	1	14	18	0	0	24	0	70	
Count Total	0	5	2	9	0	464	3	65	1	9	468	618	0	63	692	4	2,403	
Peak Hour	0	3	2	4	0	250	1	36	0	5	251	309	0	37	370	2	1,270	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

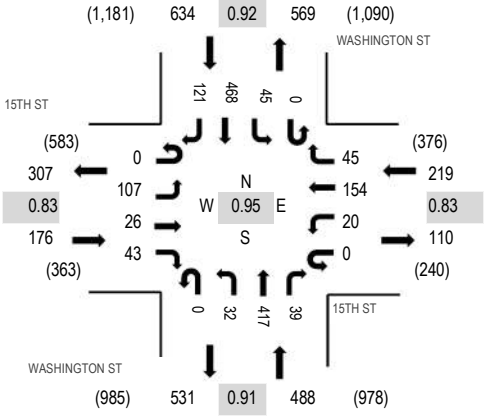
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	0	1	0	1	4:00 PM	0	0	0	0	0	4:00 PM	1	0	0	0	1
4:05 PM	0	0	0	0	0	4:05 PM	0	1	0	0	1	4:05 PM	0	0	0	0	0
4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0
4:15 PM	0	1	0	0	1	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	1	1	4:30 PM	0	0	0	0	0
4:35 PM	0	1	0	0	1	4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0
4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	1	1	4:40 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0
4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	1	1	4:55 PM	0	1	0	0	1
5:00 PM	0	0	0	0	0	5:00 PM	0	1	0	0	1	5:00 PM	0	0	0	0	0
5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0	5:15 PM	0	1	0	0	1	5:15 PM	0	0	0	0	0
5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	0	0	1	0	1	5:30 PM	0	0	0	0	0	5:30 PM	0	2	0	0	2
5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	1	1	5:45 PM	0	0	0	0	0
5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0
Count Total	0	2	2	0	4	Count Total	0	3	0	4	7	Count Total	1	3	0	0	4
Peak Hour	0	2	0	0	2	Peak Hour	0	2	0	3	5	Peak Hour	0	1	0	0	1

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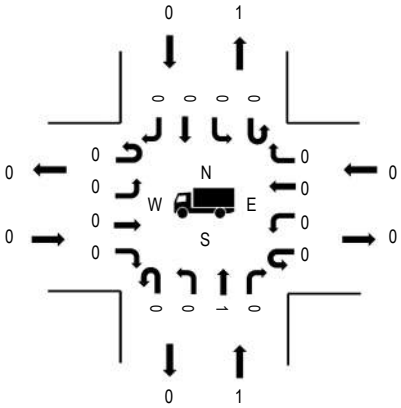
Location: 6 WASHINGTON ST & 15TH ST PM
Date: Thursday, May 29, 2025
Peak Hour: 04:20 PM - 05:20 PM
Peak 15-Minutes: 04:35 PM - 04:50 PM

Peak Hour

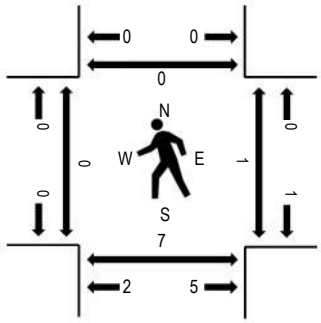
Motorized Vehicles



Heavy Vehicles



Pedestrians



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.83
WB	0.0%	0.83
NB	0.2%	0.91
SB	0.0%	0.92
All	0.1%	0.95

Traffic Counts - Motorized Vehicles

Interval Start Time	15TH ST Eastbound				15TH ST Westbound				WASHINGTON ST Northbound				WASHINGTON ST Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	7	3	4	0	3	3	3	0	1	46	6	0	6	27	9	118	1,498
4:05 PM	0	10	4	7	0	3	10	4	0	3	27	3	0	4	29	7	111	1,499
4:10 PM	0	7	1	2	0	2	18	2	0	5	37	3	0	4	44	14	139	1,516
4:15 PM	0	16	1	11	0	1	9	5	0	6	36	7	0	5	21	12	130	1,507
4:20 PM	0	8	0	2	0	1	16	4	0	1	36	6	0	8	32	9	123	1,517
4:25 PM	0	10	3	5	0	0	10	5	0	2	37	1	0	2	43	9	127	1,512
4:30 PM	0	11	1	5	0	0	7	5	0	1	34	4	0	2	47	7	124	1,514
4:35 PM	0	10	4	3	0	3	18	5	0	2	29	3	0	3	40	14	134	1,508
4:40 PM	0	6	1	5	0	1	9	1	0	2	40	4	0	3	45	12	129	1,477
4:45 PM	0	15	3	1	0	3	15	4	0	4	34	2	0	6	36	12	135	1,462
4:50 PM	0	7	1	3	0	3	10	0	0	0	31	2	0	3	41	10	111	1,433
4:55 PM	0	10	0	8	0	2	10	6	0	3	29	4	0	6	25	14	117	1,420
5:00 PM	0	4	2	5	0	2	9	4	0	5	33	3	0	2	42	8	119	1,400
5:05 PM	0	7	1	3	0	1	14	2	0	7	34	4	0	3	39	13	128	
5:10 PM	0	12	6	1	0	3	18	5	0	1	44	2	0	3	34	1	130	
5:15 PM	0	7	4	2	0	1	18	4	0	4	36	4	0	4	44	12	140	
5:20 PM	0	9	3	4	0	2	14	4	0	4	32	3	0	6	28	9	118	
5:25 PM	0	12	6	3	0	2	7	2	0	1	36	4	0	4	40	12	129	
5:30 PM	0	7	2	6	0	2	6	2	0	9	33	4	0	9	25	13	118	
5:35 PM	0	6	2	2	0	0	9	2	0	6	29	1	0	3	31	12	103	
5:40 PM	0	7	2	8	0	1	13	2	0	6	30	2	0	1	33	9	114	
5:45 PM	0	7	5	1	0	0	7	3	0	4	28	2	0	4	39	6	106	
5:50 PM	0	6	4	1	0	3	8	0	0	6	33	0	0	4	28	5	98	
5:55 PM	0	4	5	2	0	1	4	0	0	4	27	6	0	1	38	5	97	
Count Total	0	205	64	94	0	40	262	74	0	87	811	80	0	96	851	234	2,898	
Peak Hour	0	107	26	43	0	20	154	45	0	32	417	39	0	45	468	121	1,517	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

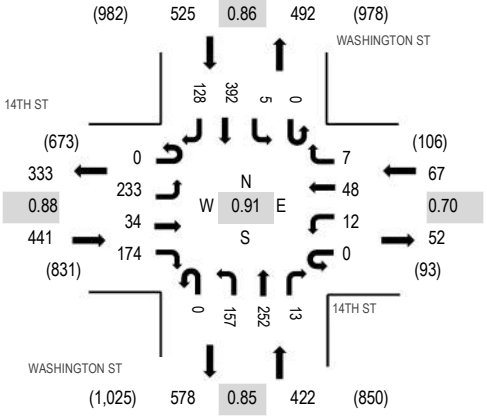
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	0	0	0	0	4:00 PM	0	1	0	0	1	4:00 PM	2	0	0	0	2
4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0	4:05 PM	0	1	0	0	1
4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0	4:10 PM	0	1	1	0	2
4:15 PM	0	1	0	0	1	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	0	0	0	0	0	4:25 PM	1	0	0	0	1	4:25 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0	4:30 PM	0	1	0	0	1
4:35 PM	0	1	0	0	1	4:35 PM	0	0	0	1	1	4:35 PM	0	0	0	0	0
4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0	4:50 PM	0	1	0	0	1
4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	1	1	4:55 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0	5:00 PM	0	0	1	0	1	5:00 PM	0	0	0	0	0
5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0	5:05 PM	0	1	0	0	1
5:10 PM	0	0	0	0	0	5:10 PM	0	1	0	0	1	5:10 PM	0	4	1	0	5
5:15 PM	0	0	0	0	0	5:15 PM	1	0	0	0	1	5:15 PM	0	0	1	0	1
5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0	5:20 PM	0	4	2	0	6
5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0	5:25 PM	2	0	2	0	4
5:30 PM	0	0	0	0	0	5:30 PM	1	0	0	0	1	5:30 PM	1	2	0	0	3
5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0	5:35 PM	3	0	0	2	5
5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	1	1	5:45 PM	0	0	0	0	0
5:50 PM	0	0	0	0	0	5:50 PM	0	0	1	0	1	5:50 PM	0	0	1	0	1
5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0	5:55 PM	1	3	2	1	7
Count Total	0	2	0	0	2	Count Total	3	2	2	3	10	Count Total	9	18	10	3	40
Peak Hour	0	1	0	0	1	Peak Hour	2	1	1	2	6	Peak Hour	0	7	2	0	9

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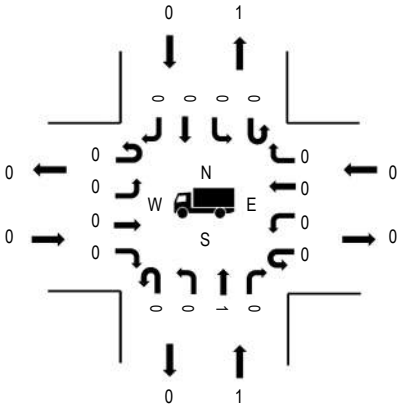
Location: 7 WASHINGTON ST & 14TH ST PM
Date: Thursday, May 29, 2025
Peak Hour: 04:25 PM - 05:25 PM
Peak 15-Minutes: 05:05 PM - 05:20 PM

Peak Hour

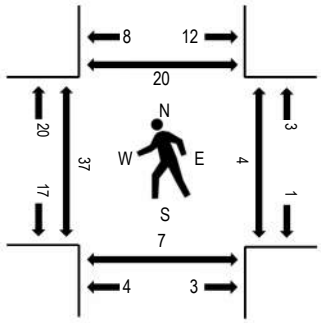
Motorized Vehicles



Heavy Vehicles



Pedestrians



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.88
WB	0.0%	0.70
NB	0.2%	0.85
SB	0.0%	0.86
All	0.1%	0.91

Traffic Counts - Motorized Vehicles

Interval Start Time	14TH ST Eastbound				14TH ST Westbound				WASHINGTON ST Northbound				WASHINGTON ST Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	24	0	10	0	0	4	1	0	23	23	0	0	1	33	5	124	1,397
4:05 PM	0	21	1	11	0	0	3	1	0	10	16	0	0	0	35	5	103	1,391
4:10 PM	0	14	4	14	0	0	1	1	0	12	30	1	0	0	35	13	125	1,420
4:15 PM	0	26	2	14	0	1	2	1	0	22	20	1	0	2	21	7	119	1,432
4:20 PM	0	25	2	10	0	1	2	0	0	18	19	1	0	0	24	11	113	1,445
4:25 PM	0	23	6	13	0	2	4	0	0	9	22	3	0	1	31	11	125	1,455
4:30 PM	0	17	2	13	0	0	3	1	0	15	17	0	0	1	37	19	125	1,436
4:35 PM	0	22	3	10	0	1	4	0	0	12	15	0	0	0	23	15	105	1,422
4:40 PM	0	11	1	16	0	1	2	1	0	15	29	0	0	0	45	13	134	1,415
4:45 PM	0	26	4	15	0	1	1	0	0	9	22	2	0	1	26	9	116	1,388
4:50 PM	0	12	2	14	0	0	5	0	0	4	15	0	0	0	36	13	101	1,381
4:55 PM	0	18	3	14	0	1	4	1	0	15	18	3	0	0	23	7	107	1,381
5:00 PM	0	21	2	13	0	1	3	0	0	8	23	0	0	1	43	3	118	1,372
5:05 PM	0	18	4	12	0	0	7	0	0	18	25	4	0	0	33	11	132	
5:10 PM	0	19	1	19	0	1	6	0	0	19	28	0	0	0	32	12	137	
5:15 PM	0	23	6	19	0	0	3	1	0	17	18	0	0	1	36	8	132	
5:20 PM	0	23	0	16	0	4	6	3	0	16	20	1	0	0	27	7	123	
5:25 PM	0	19	2	8	0	1	1	0	0	17	16	1	0	0	27	14	106	
5:30 PM	0	20	6	11	0	0	3	0	0	16	26	0	0	0	15	14	111	
5:35 PM	0	12	1	6	0	0	1	2	0	11	21	1	0	1	31	11	98	
5:40 PM	0	22	5	9	0	0	4	0	0	10	18	0	0	0	25	14	107	
5:45 PM	0	15	4	15	0	0	1	0	0	15	17	1	0	0	24	17	109	
5:50 PM	0	26	1	9	0	2	4	0	0	11	17	1	0	0	18	12	101	
5:55 PM	0	13	2	6	0	0	1	1	0	14	19	0	0	0	31	11	98	
Count Total	0	470	64	297	0	17	75	14	0	336	494	20	0	9	711	262	2,769	
Peak Hour	0	233	34	174	0	12	48	7	0	157	252	13	0	5	392	128	1,455	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

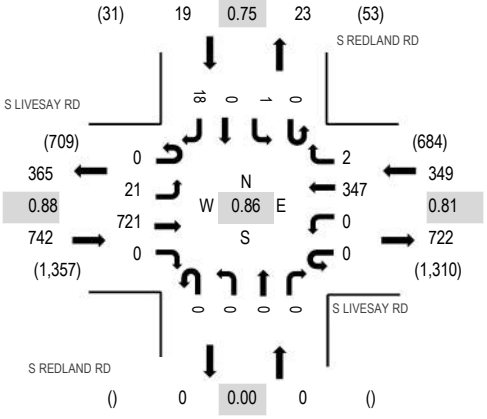
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0	4:00 PM	3	0	1	0	4
4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0	4:05 PM	0	3	0	1	4
4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0	4:10 PM	2	0	0	0	2
4:15 PM	1	0	0	0	1	4:15 PM	0	0	0	0	0	4:15 PM	1	0	0	1	2
4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0	4:20 PM	3	2	2	0	7
4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0	4:25 PM	4	1	0	4	9
4:30 PM	0	1	0	0	1	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	2	2
4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0	4:40 PM	6	1	0	2	9
4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0	4:45 PM	3	0	0	0	3
4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	3	3
4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0	5:00 PM	4	3	2	1	10
5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0	5:05 PM	10	0	0	0	10
5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0	5:10 PM	3	1	1	7	12
5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0	5:15 PM	6	0	0	1	7
5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0	5:20 PM	2	1	1	1	5
5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0	5:25 PM	2	1	0	1	4
5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0	5:30 PM	0	2	1	0	3
5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0	5:35 PM	9	0	0	0	9
5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0	5:40 PM	0	2	0	0	2
5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0	5:45 PM	3	5	0	0	8
5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	1	1	5:50 PM	2	4	0	0	6
5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0	5:55 PM	3	0	2	0	5
Count Total	1	1	0	0	2	Count Total	0	0	0	1	1	Count Total	66	26	10	24	126
Peak Hour	0	1	0	0	1	Peak Hour	0	0	0	0	0	Peak Hour	38	7	4	21	70

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

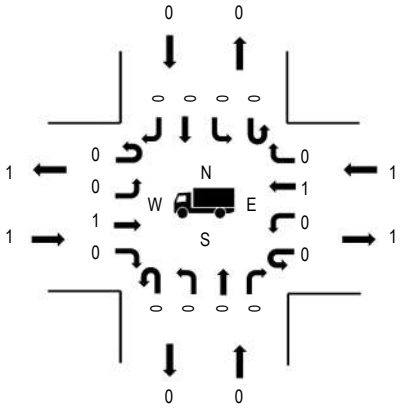
Location: 8 S REDLAND RD & S LIVESAY RD PM
Date: Thursday, May 29, 2025
Peak Hour: 04:25 PM - 05:25 PM
Peak 15-Minutes: 04:30 PM - 04:45 PM

Peak Hour

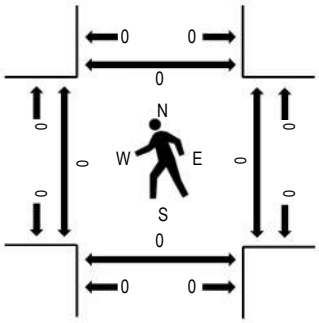
Motorized Vehicles



Heavy Vehicles



Pedestrians



Note: Total study counts contained in parentheses.

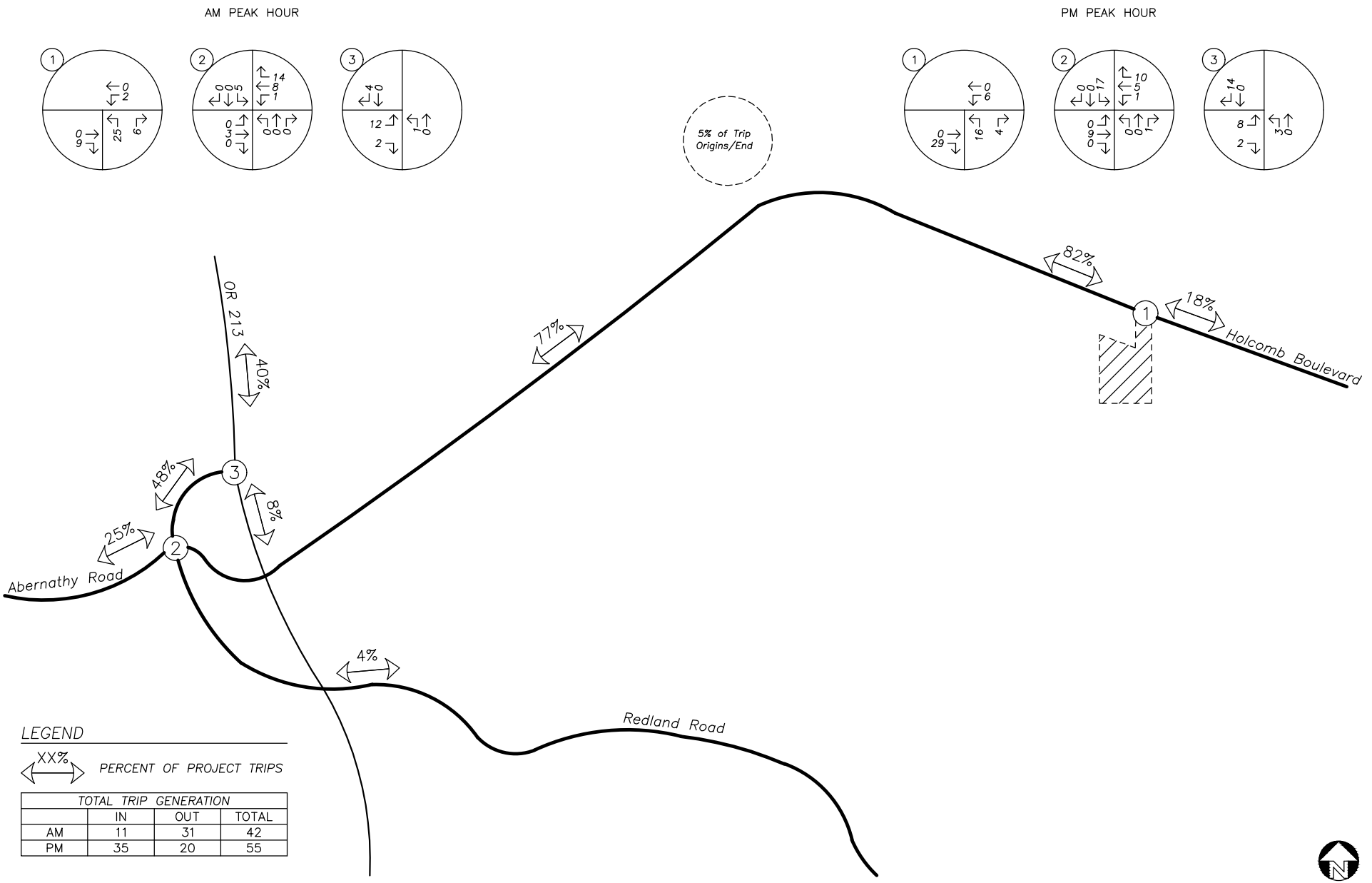
	HV%	PHF
EB	0.1%	0.88
WB	0.3%	0.81
NB	0.0%	0.00
SB	0.0%	0.75
All	0.2%	0.86

Traffic Counts - Motorized Vehicles

Interval Start Time	S LIVESAY RD Eastbound				S LIVESAY RD Westbound				S REDLAND RD Northbound				S REDLAND RD Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	2	50	0	0	0	18	0	0	0	0	0	0	0	0	0	70	1,085
4:05 PM	0	2	56	0	0	0	25	0	0	0	0	0	0	0	0	3	86	1,098
4:10 PM	0	2	50	0	0	0	31	2	0	0	0	0	0	0	0	1	86	1,083
4:15 PM	0	1	55	0	0	0	28	0	0	0	0	0	0	0	0	2	86	1,091
4:20 PM	0	2	35	0	0	0	40	0	0	0	0	0	0	0	0	1	78	1,100
4:25 PM	0	2	56	0	0	0	33	0	0	0	0	0	0	1	0	0	92	1,110
4:30 PM	0	1	65	0	0	0	38	0	0	0	0	0	0	0	0	2	106	1,105
4:35 PM	0	3	63	0	0	0	37	1	0	0	0	0	0	0	0	3	107	1,070
4:40 PM	0	2	78	0	0	0	28	0	0	0	0	0	0	0	0	1	109	1,059
4:45 PM	0	1	58	0	0	0	27	0	0	0	0	0	0	0	0	1	87	1,036
4:50 PM	0	5	57	0	0	0	30	0	0	0	0	0	0	0	0	2	94	1,034
4:55 PM	0	0	65	0	0	0	18	0	0	0	0	0	0	0	0	1	84	1,005
5:00 PM	0	0	60	0	0	0	23	0	0	0	0	0	0	0	0	0	83	987
5:05 PM	0	3	45	0	0	0	20	1	0	0	0	0	0	0	0	2	71	
5:10 PM	0	3	64	0	0	0	22	0	0	0	0	0	0	0	0	5	94	
5:15 PM	0	1	60	0	0	0	33	0	0	0	0	0	0	0	0	1	95	
5:20 PM	0	0	50	0	0	0	38	0	0	0	0	0	0	0	0	0	88	
5:25 PM	0	1	53	0	0	0	32	0	0	0	0	0	0	0	0	1	87	
5:30 PM	0	1	45	0	0	0	25	0	0	0	0	0	0	0	0	0	71	
5:35 PM	0	3	65	0	0	0	26	1	0	0	0	0	0	0	0	1	96	
5:40 PM	0	4	55	0	0	0	25	1	0	0	0	0	0	0	0	1	86	
5:45 PM	1	3	52	0	0	0	29	0	0	0	0	0	0	0	0	0	85	
5:50 PM	0	2	38	0	0	0	24	0	0	0	0	0	0	0	0	1	65	
5:55 PM	0	3	34	0	0	0	28	0	0	0	0	0	0	0	0	1	66	
Count Total	1	47	1,309	0	0	0	678	6	0	0	0	0	0	1	0	30	2,072	
Peak Hour	0	21	721	0	0	0	347	2	0	0	0	0	0	1	0	18	1,110	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	1	0	0	0	1	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0
4:15 PM	0	0	1	0	1	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	1	0	0	0	1	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:35 PM	1	0	0	0	1	4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0
4:40 PM	0	0	1	0	1	4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0
4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:05 PM	0	0	0	0	0	5:05 PM	1	0	0	0	1	5:05 PM	0	0	0	0	0
5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0
Count Total	3	0	2	0	5	Count Total	1	0	0	0	1	Count Total	0	0	0	0	0
Peak Hour	1	0	1	0	2	Peak Hour	1	0	0	0	1	Peak Hour	0	0	0	0	0



TOTAL TRIP GENERATION			
	IN	OUT	TOTAL
AM	11	31	42
PM	35	20	55

lancaster mobley

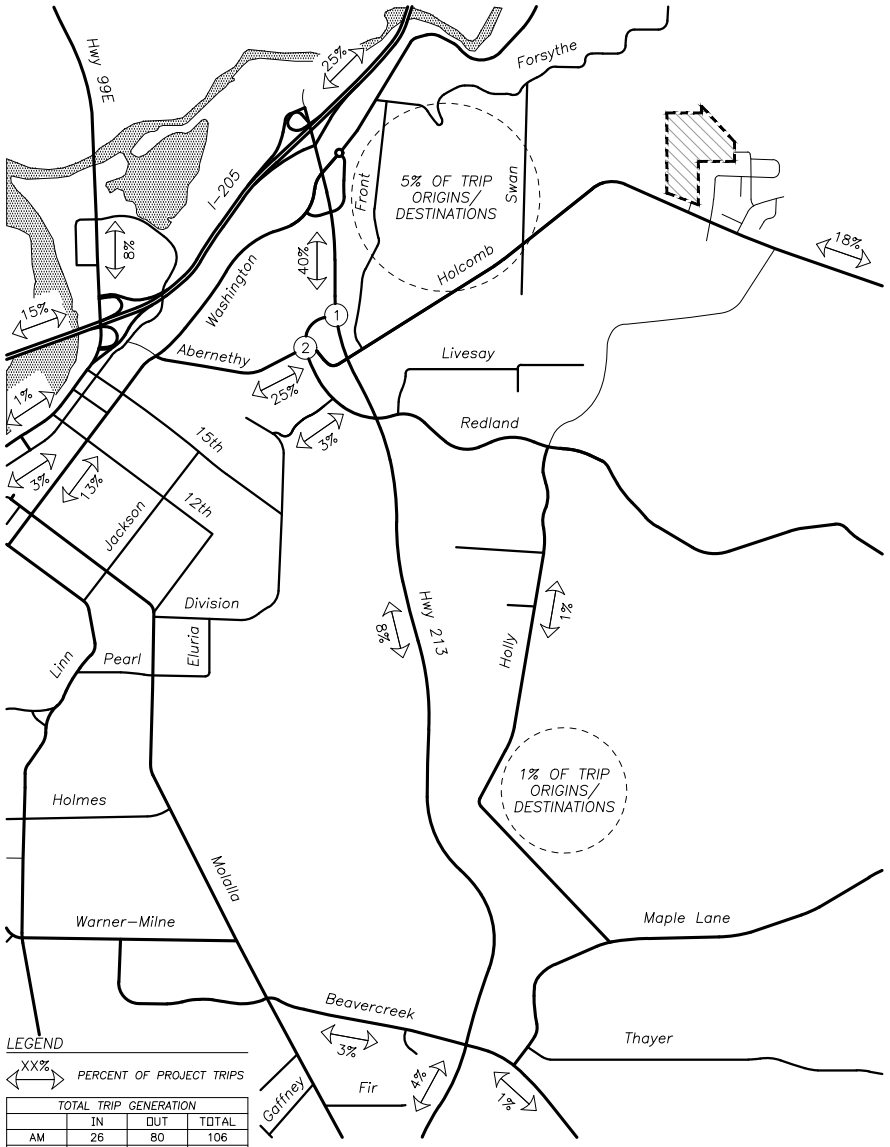
SITE TRIP DISTRIBUTION & ASSIGNMENT

AM & PM Peak Hours

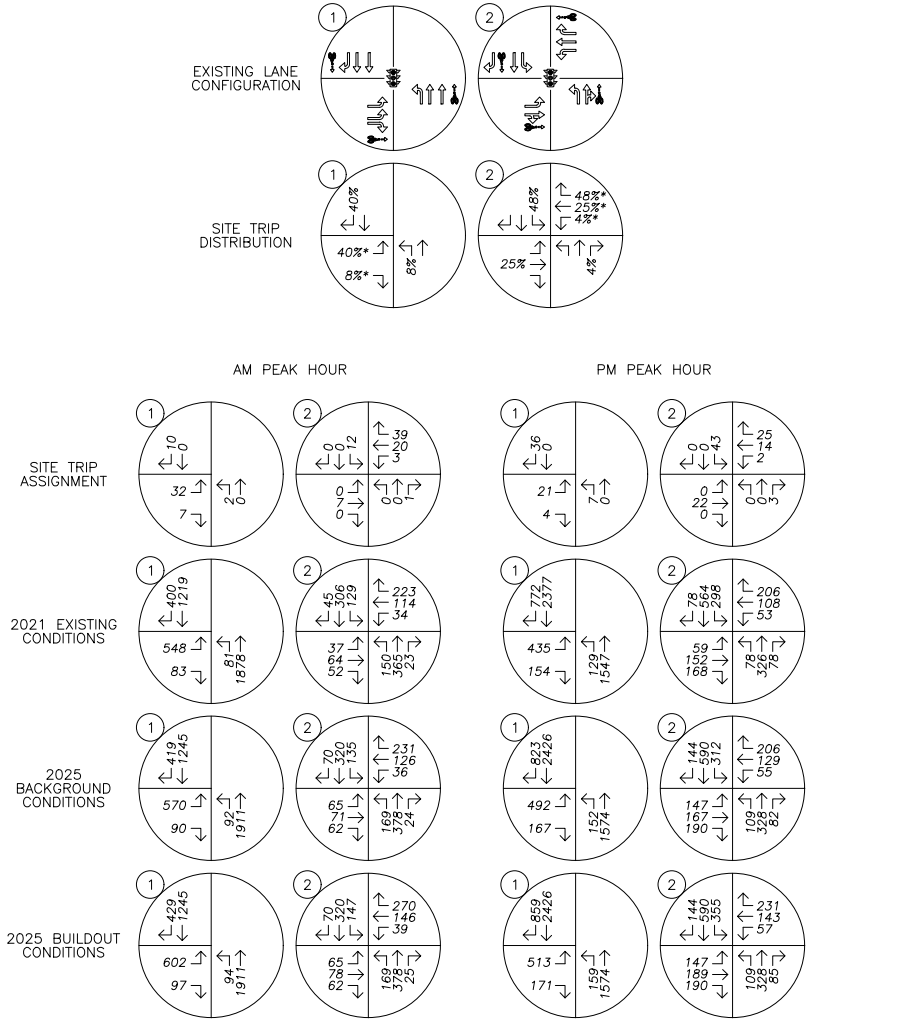
Figure 3

Park Place Crossing Phase 1

1/23/2020



TOTAL TRIP GENERATION			
	IN	OUT	TOTAL
AM	26	80	106
PM	89	53	142



TRAFFIC VOLUMES

Year 2021 Existing, 2025 Background, and 2025 Buildout Conditions

AM & PM Peak Hours

Figure 1

Serres Farm Master Plan

9/15/2021

lancaster mobley

Table 3: Trip Generation Summary

	ITE Code	Variable	Morning Peak Hour			Evening Peak Hour			Weekday Total
			Enter	Exit	Total	Enter	Exit	Total	
Single-Family Houses	210	142 units	26	80	106	89	53	142	1,436

Trip Distribution

The directional distribution of site trips to and from the proposed development was referenced and generally based on the distribution utilized in the *Park Place Annexation TIS* and succeeding addendum. The trip distribution in the TIS was estimated based on locations of likely trip destinations, locations of major transportation facilities in the site vicinity, and existing travel patterns at studied intersections. The following trip distribution is projected:

- Approximately 25 percent of site trips will travel to/from the northeast along I-205;
- Approximately 18 percent of site trips will travel to/from the east along S Holcomb Boulevard;
- Approximately 15 percent of site trips will travel to/from the southwest along I-205;
- Approximately 13 percent of site trips will travel to/from the southwest along Washington Street;
- Approximately 8 percent of site trips will travel to/from the north along OR-99E;
- Approximately 4 percent of site trips will travel to/from the south along OR-213;
- Approximately 3 percent of site trips will travel to/from the southwest along Main Street;
- Approximately 3 percent of site trips will travel to/from the southwest along S Anchor Way;
- Approximately 3 percent of site trips will travel to/from the west along Beavercreek Road;
- Approximately 1 percent of site trips will travel to/from the southwest along OR-99E;
- Approximately 1 percent of site trips will travel to/from the south along S Holly Lane;
- Approximately 1 percent of site trips will travel to/from the east along Beavercreek Road; and
- Approximately 5 percent of site trips will travel to/from locales within the immediate vicinity, including surrounding residential areas, Holcomb Elementary School, and other land-uses.

The trip distribution and trip assignment for the morning and evening peak hours at the intersections of Redland Road at OR-213 and Redland Road at Holcomb Boulevard/Abernethy Road are shown in Figure 1.

Estimated Trip Generation

The trip generation associated with the proposed neighborhood redevelopment is shown in Table 2. The trip generation estimates were prepared based on rates included in the *Trip Generation Manual, 11th Edition* (Institute of Transportation Engineers, ITE, 2021). As noted above, the neighborhood currently includes an office and maintenance facilities that house approximately 50 employees Housing Authority today that will be relocated to another site within the County. We also note that the Housing Authority offices that will be relocated are also visited daily by clients who do not live on-site but travel to this location for local services. To estimate the trips associated with these services, we applied the trip generation rate associated with the number of employees, rather than the size of the office.

As shown, the redevelopment results in a decrease in weekday AM peak hour trip-making but is estimated to increase the trips during the weekday PM peak hour by 25 (the City requires a TIA for developments than increase trips by more than 24 peak hour trips or 250 daily trips); accordingly, and as discussed above, the TIA only focuses on the PM peak hour.

Table 2. Estimated Trip Generation

Land Use	ITE Code	Size	Average Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total	In	Out	Total	In	Out
Existing Housing Authority Site									
Affordable Housing - Income Limits	223	100 homes	481	50	15	35	46	27	19
Office (based on employees)	710	50 employees	303	84	74	10	44	7	37
Total Existing			784	134	89	45	90	34	56
Proposed Housing Authority Site									
Affordable Housing - Income Limits	223	250 homes	1,203	125	36	89	115	68	47
Proposing - Existing			419	-9	-53	44	25	34	-9

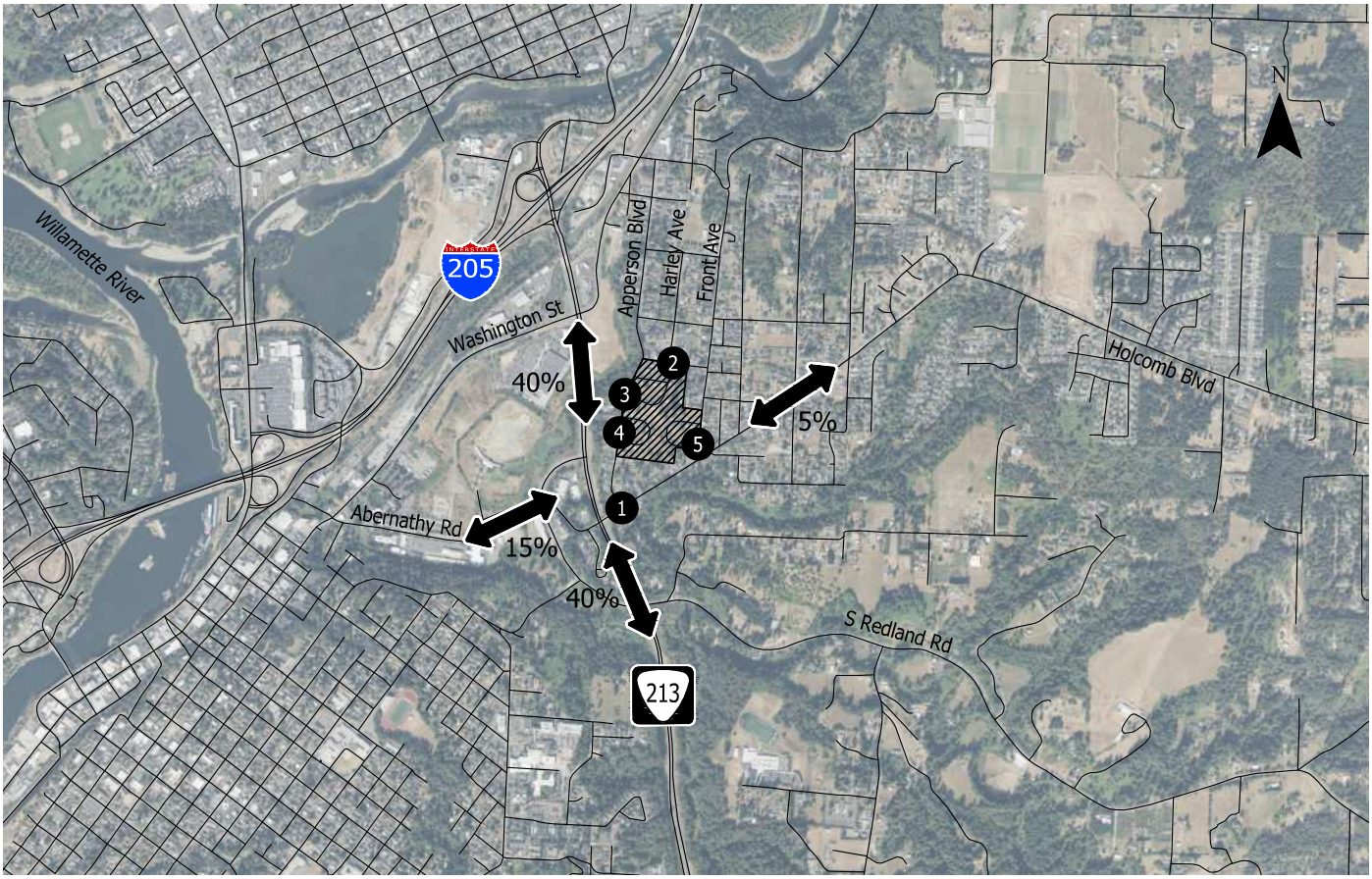
Trip Distribution and Assignment

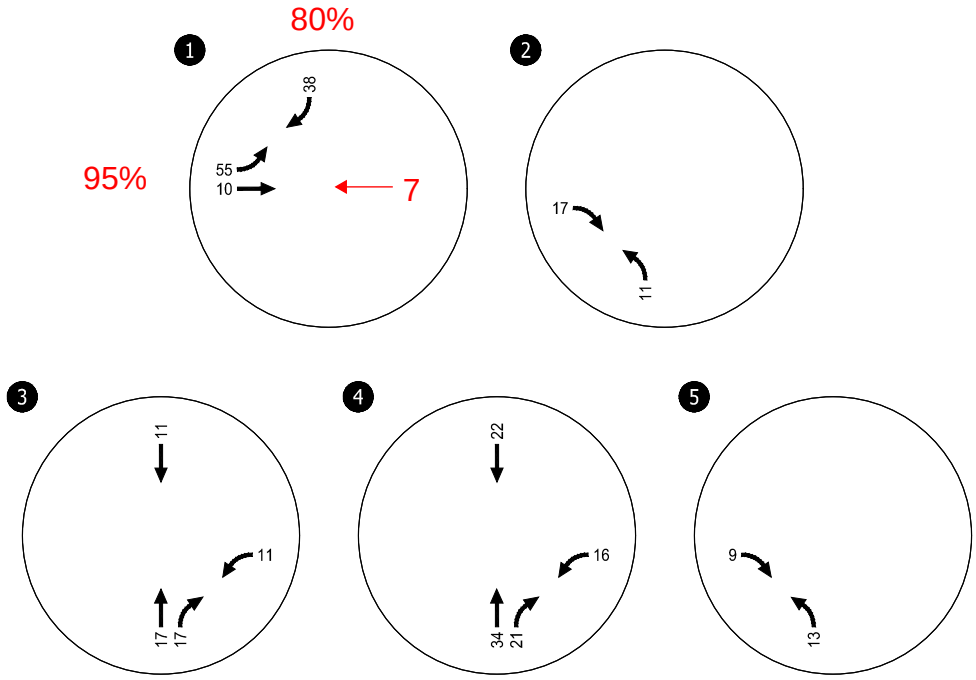
The distribution of site-generated trips was estimated based on a review of the regional employment, retail and service destinations. The estimated distribution is shown in Figure 8.

No trip credit was assumed for the existing site trips shown in Table 2 recognizing that the proposed local streets within the site will replace the existing A, B, C and D Streets. To provide a conservative analysis, all 68 inbound trips and 47 outbound trips shown in Table 2 for the new homes were assigned as net new trips to all study intersections as shown in Figure 8.

Year 2025 Total Traffic Conditions

The total traffic conditions analysis forecasts how the study intersections will operate with the traffic associated with the proposed redevelopment. The site-generated trips shown in Figure 8 were added to the 2025 background traffic volumes reflected in Figure 7 to arrive at the 2025 total traffic volumes shown in Figure 9. Through volumes shown at the proposed local street connections (Intersections 3-5) were based on existing traffic counts in the area of the proposed access points with no reductions made for existing site trips. As shown, all the study intersections (including the new local street intersections) are projected to operate acceptably at a LOS "C" or better and with 95th percentile queue lengths that do not exceed one vehicle in length.





XX% - Trip Distribution

Trip Distr. Pattern & Site-Generated Trip Assignment
PM Peak Hour
Oregon City, Oregon

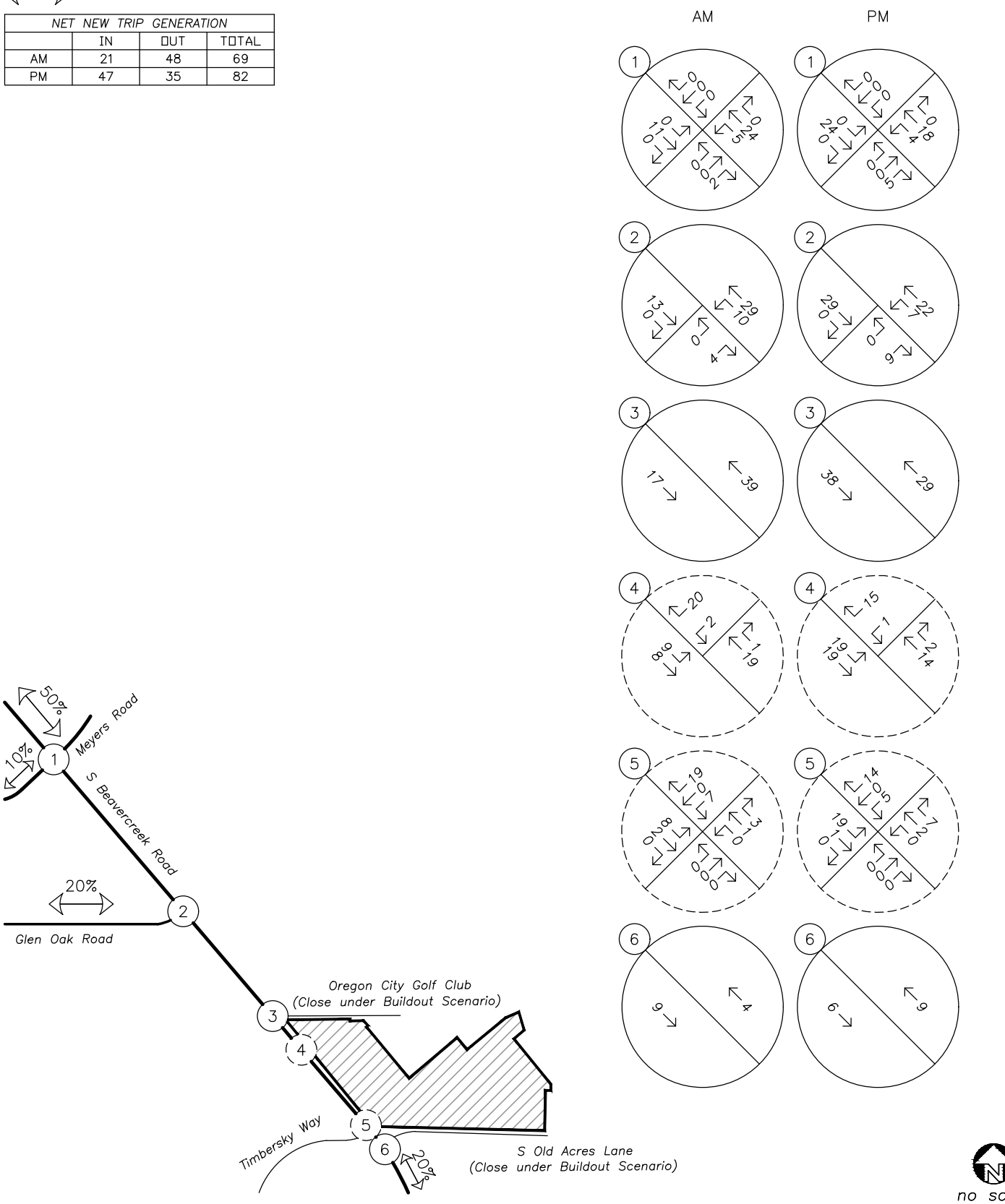
Figure
8

C:\Users\mheller\appdata\local\temp\AcPublish_12480\29240_TIA_FIGURES_001.dwg Jan 14, 2025 - 3:08pm - mheller Layout Tab: Trip Assign NEW

KITTELSON & ASSOCIATES

XX% PERCENT OF PROJECT TRIPS

NET NEW TRIP GENERATION			
	IN	OUT	TOTAL
AM	21	48	69
PM	47	35	82



Site Trips

Trip Generation

To estimate trips that will be generated by the development, trip equations from the *Trip Generation Manual*[1] were used based the number of dwelling units (DU) and land use code 215: Single-Family Attached Housing. To account for the trips generated by the existing golf course, trip rates for land use code 430: Golf Course were used based on the number of holes.

The trip generation calculations show that the proposed development is estimated to generate 69 site trips during the morning peak hour, 82 site trips during the evening peak hour, and 1,030 daily trips. With credit for the existing golf course use, the site is estimated to generate a net increase of 37 site trips during the morning peak hour, 30 site trips during the evening peak hour trips, and 484 daily trips.

The resulting trip generation estimates are summarized in Table 3. Detailed trip generation calculations are included in Appendix A.

Table 3: Trip Generation Summary

ITE Code	Intensity	Morning Peak Hour			Evening Peak Hour			Daily Trips
		In	Out	Total	In	Out	Total	
430: Golf Course	18 Holes	25	7	32	28	24	52	546
215: Single-Family Attached Housing	143 DU	21	48	69	47	35	82	1,030
Net Increase		-4	41	37	19	11	30	484

Trip Distribution

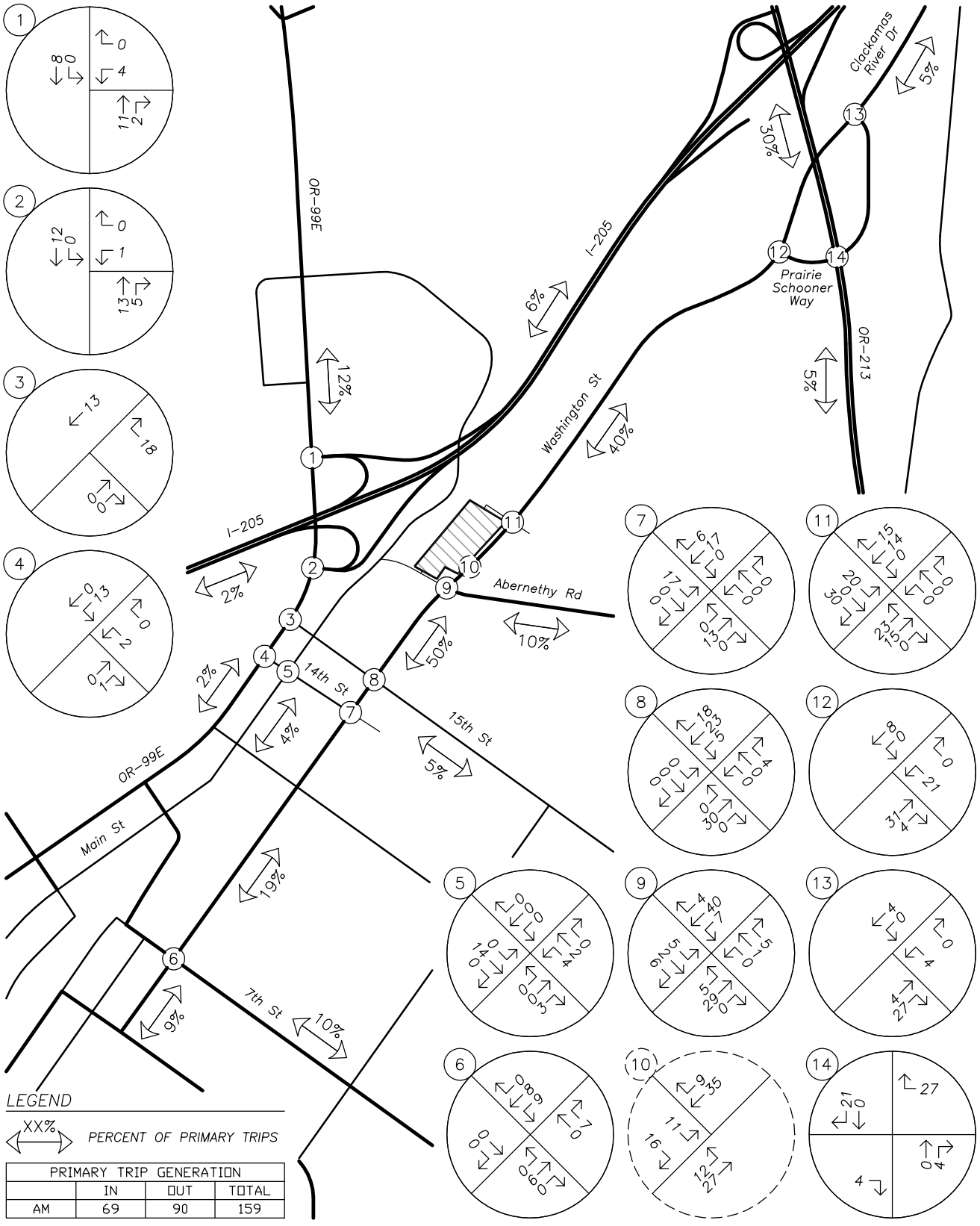
The directional distribution of site trips to and from the proposed site was estimated based on other approved developments (particularly Timberview to the north), locations of likely destinations, and locations of major transportation facilities in the site vicinity. The following trip distribution was estimated and used for analysis:

- 80 percent to/from the north on S Beavercreek Road
    - 30 percent to/from the north on OR 213
    - 20 percent to/from the north on Molalla Avenue via Glen Oak Road
    - 10 percent to/from the north on Molalla Avenue via S Beavercreek Road
    - 10 percent to/from the west via Meyers Road
    - 5 percent to/from the east on S Maplelane Road
    - 5 percent to/from schools, colleges, shopping centers

[1] Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 11th Edition, 2021.

- 20 percent to/from the south on S Beavercreek Road
    - 8 percent to/from the south on OR 213 via S Henrici Road
    - 8 percent to/from the east on S Henrici Road
    - 4 percent to/from the south on S Beavercreek Road

The trip distribution and assignment for the total site trips generated during the morning and evening peak hours is shown in Figure 3. All trips from the proposed development are illustrated; the trips from the Oregon City Golf Club will be deducted under the buildout scenario.

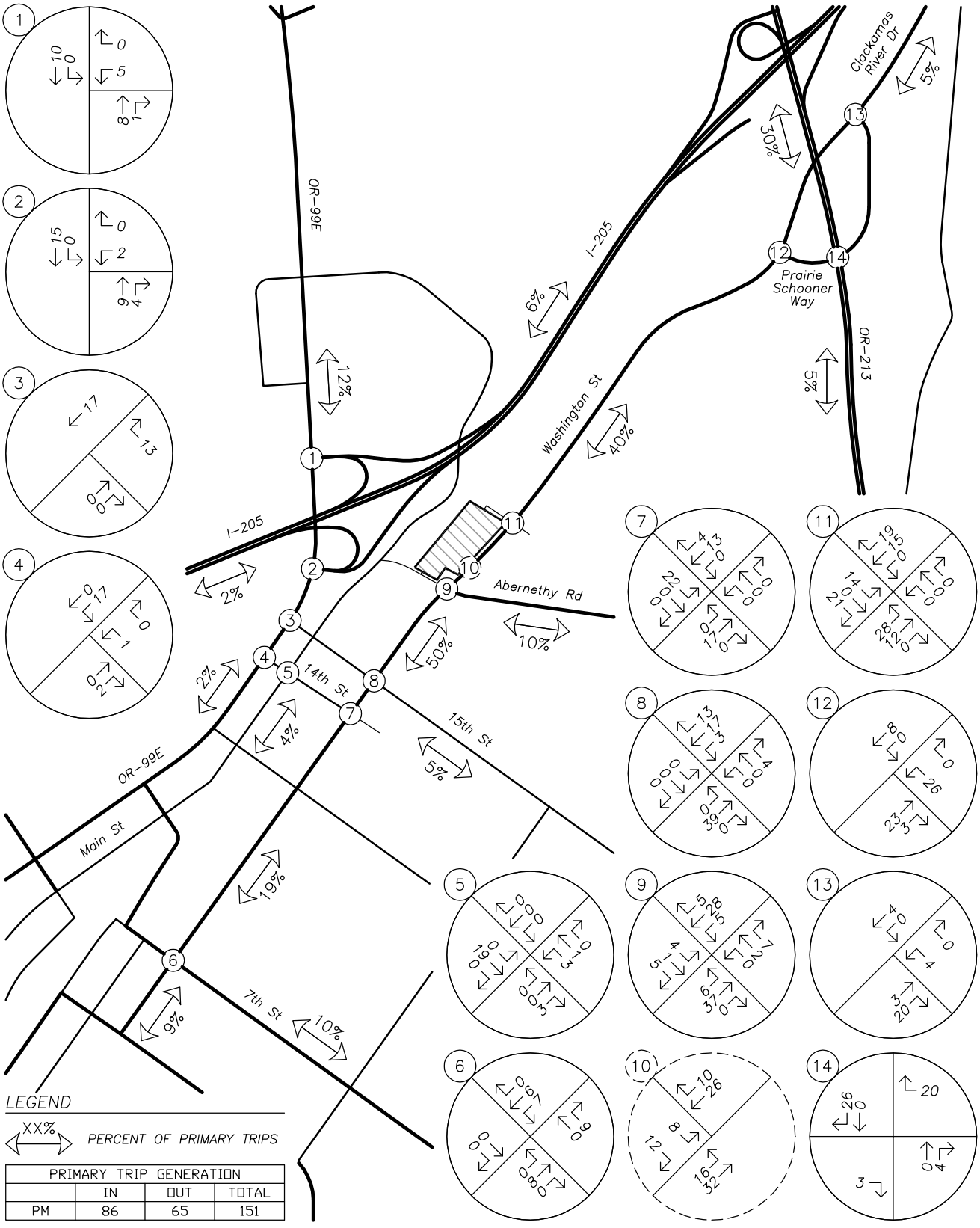


PRIMARY TRIP GENERATION			
	IN	OUT	TOTAL
AM	69	90	159

SITE TRIP DISTRIBUTION & ASSIGNMENT
Proposed Development Plan – Primary Site Trips
AM Peak Hour

no scale

FIGURE 5



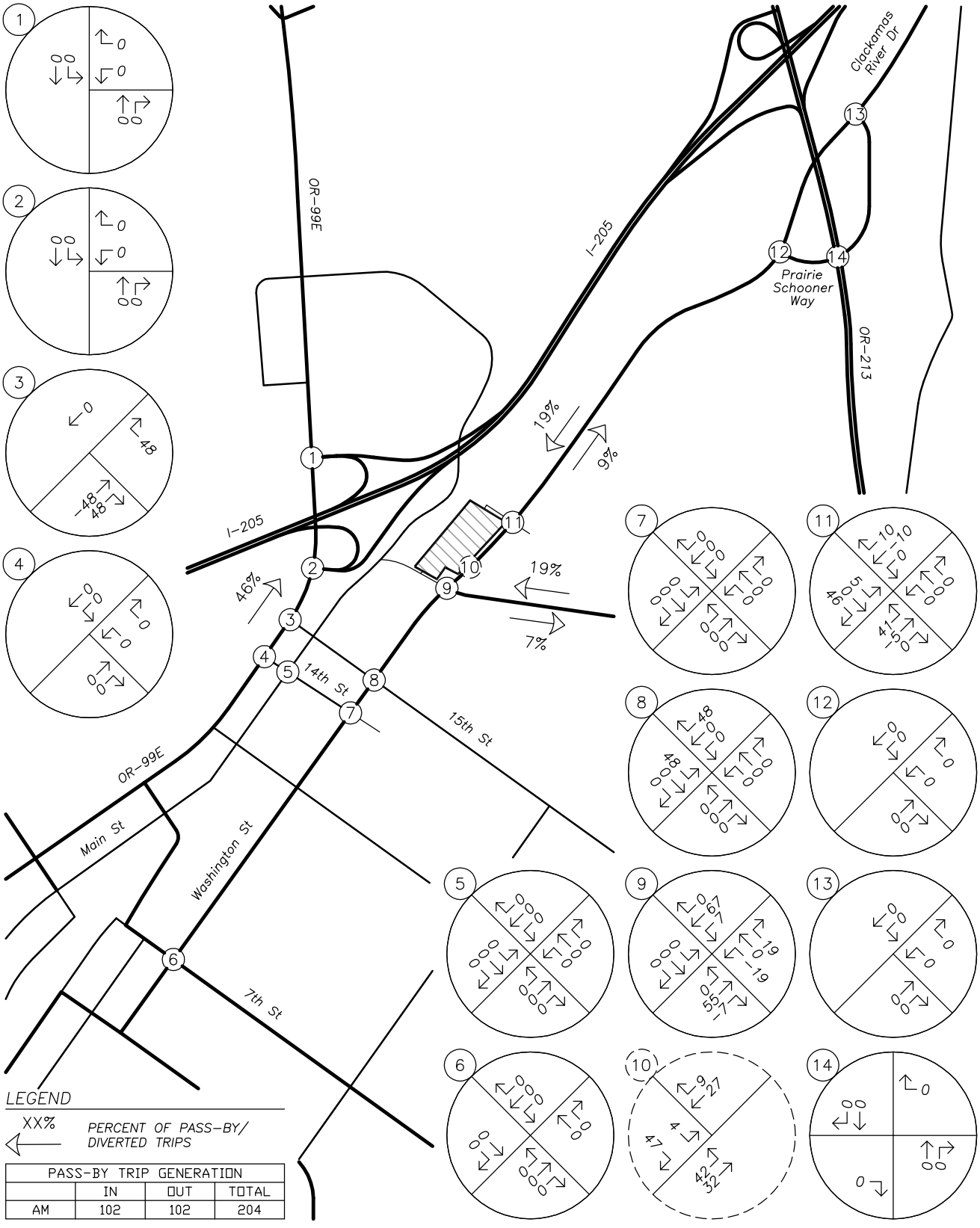
PRIMARY TRIP GENERATION			
	IN	OUT	TOTAL
PM	86	65	151

SITE TRIP DISTRIBUTION & ASSIGNMENT
Proposed Development Plan – Primary Site Trips
PM Peak Hour

no scale

FIGURE 6

PAGE 20



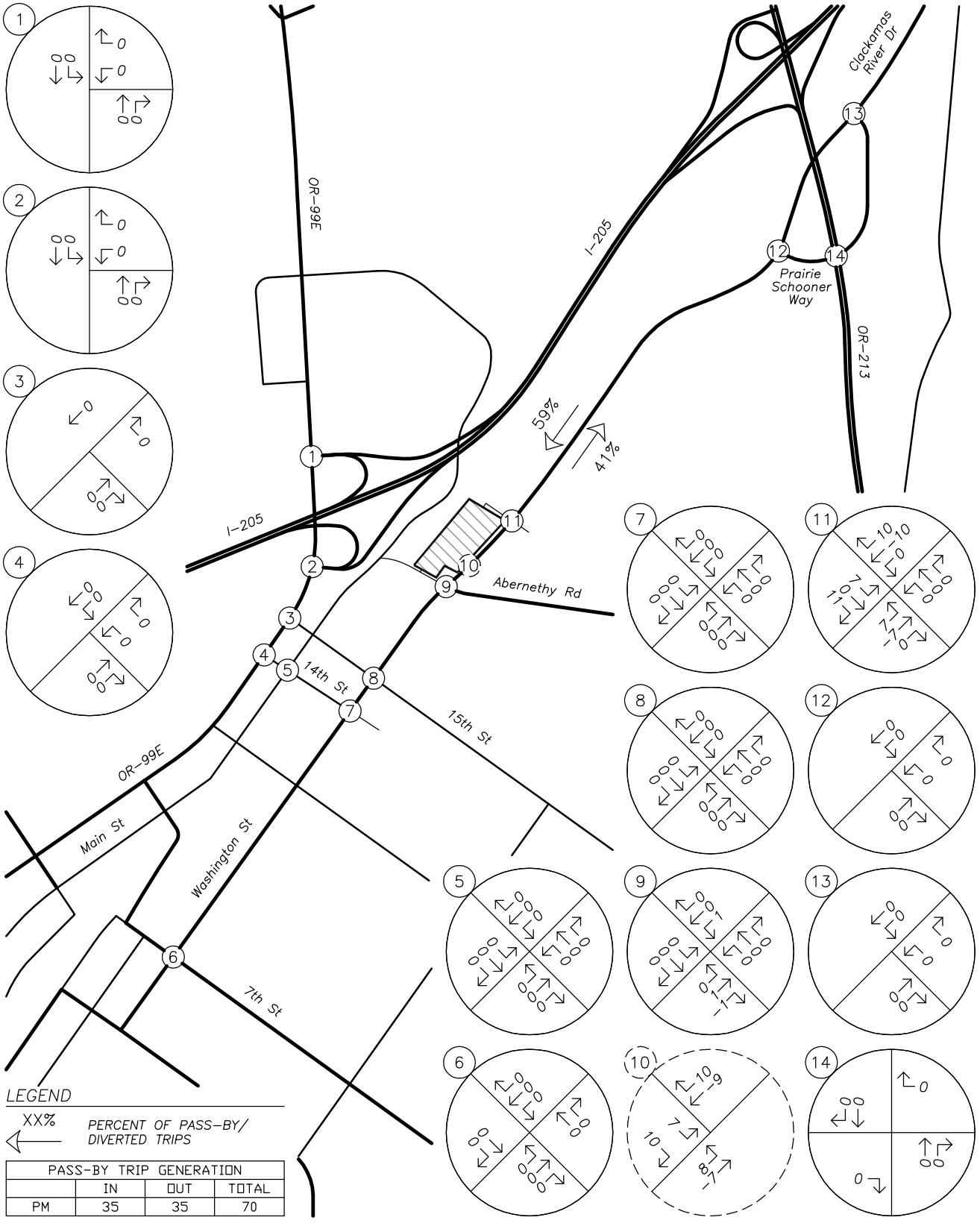
PASS-BY TRIP GENERATION			
	IN	OUT	TOTAL
AM	102	102	204

SITE TRIP DISTRIBUTION & ASSIGNMENT
Proposed Development Plan – Pass-by Site Trips
AM Peak Hour

no scale

FIGURE 7

PAGE 21

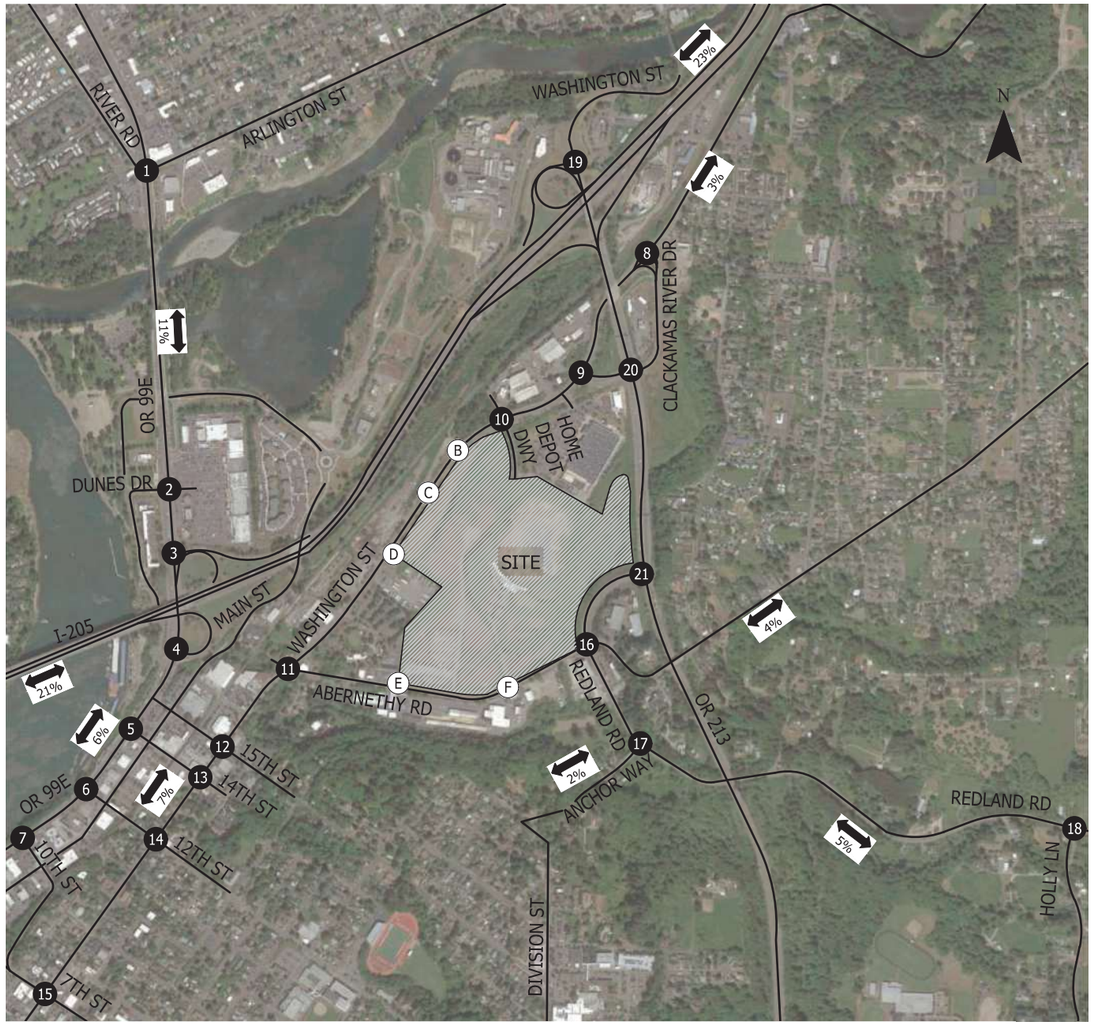


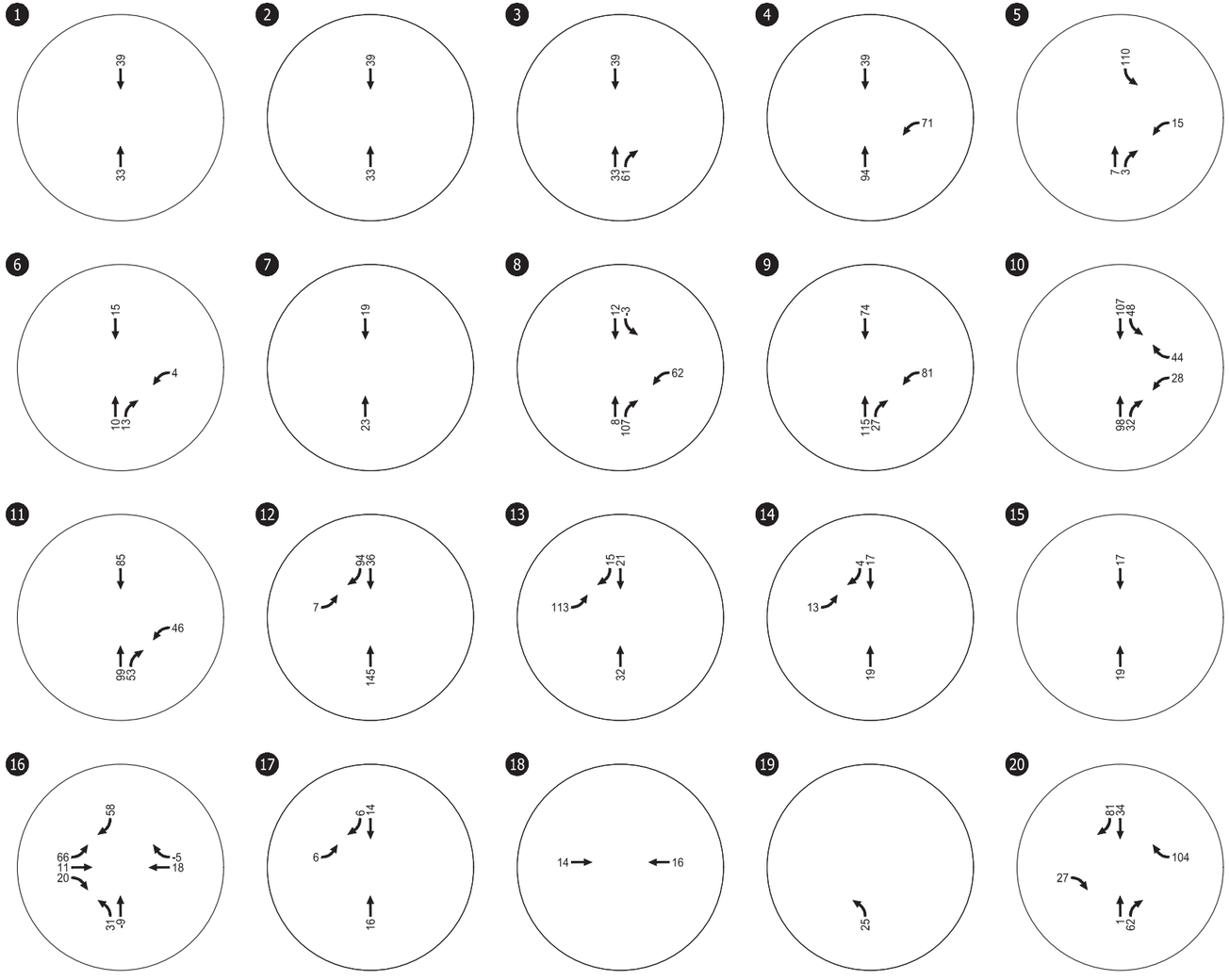
SITE TRIP DISTRIBUTION & ASSIGNMENT
Proposed Development Plan – Pass-by Site Trips
PM Peak Hour

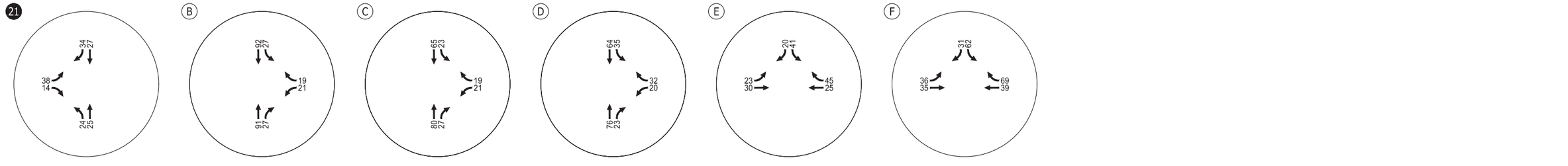
no scale

FIGURE 8

PAGE 22



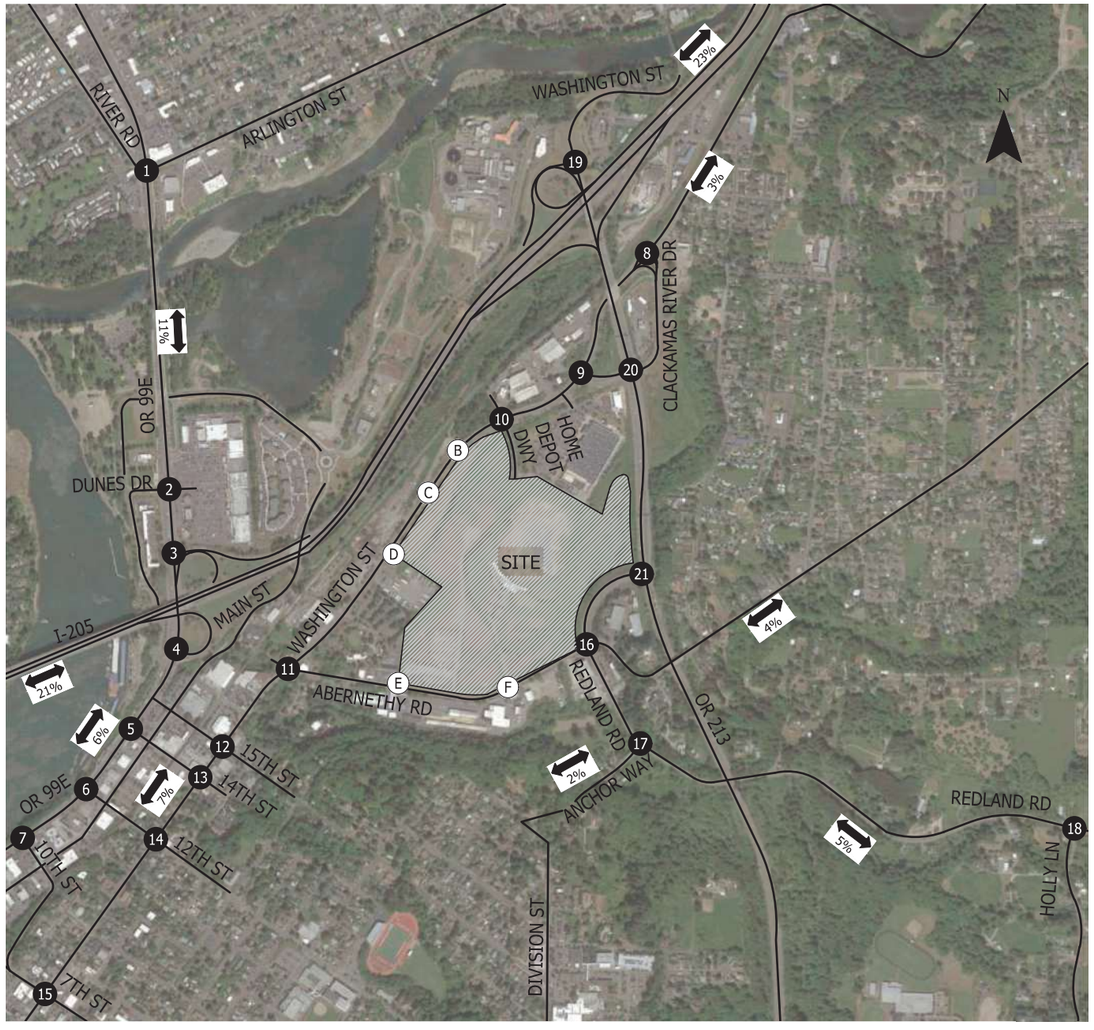


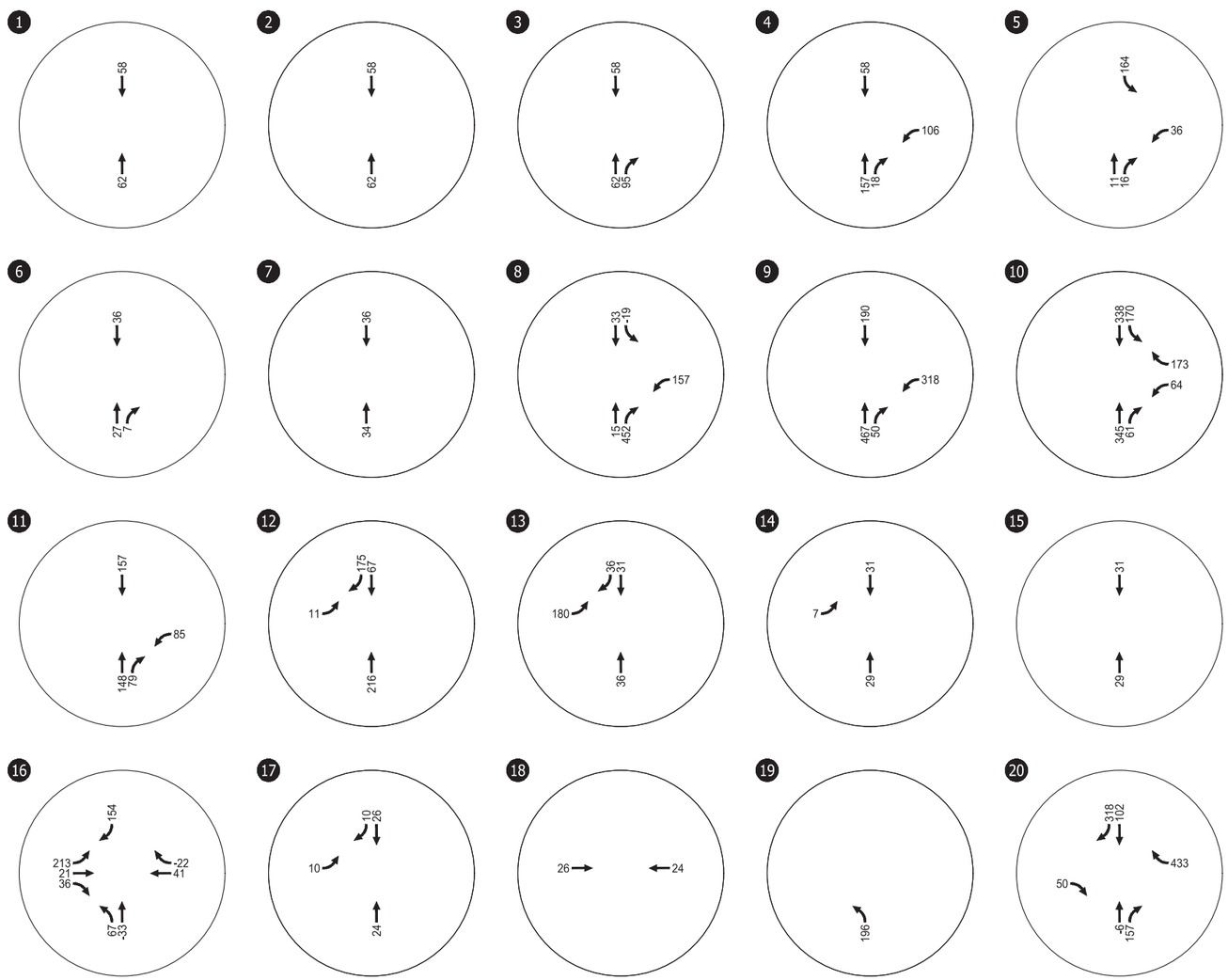


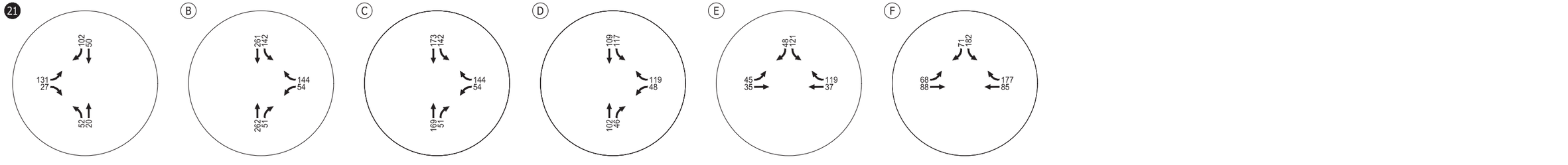
Total External Site Trip Assignment
Weekday AM Peak Hour
Oregon City, Oregon

Figure
20

H:\24\24824 - Rivers Edge Development\report\figs\24824 Fig.dwg Mar 17, 2021 - 10:12am - mruiz4eon Layout Tab: TA_AM1







Total External Site Trip Assignment
Weekday PM Peak Hour
Oregon City, Oregon

Figure
22

H:\24\24824 - Rivers Edge Development\report\figs\24824 Fig.dwg Mar 17, 2021 - 10:12am - mruiz-leon Layout Tab: TA_PM1

Appendix C - Safety

Crash History Data

Left-Turn Lane Warrant Analysis

Preliminary Signal Warrant Analysis

CITY OF OREGON CITY, CLACKAMAS COUNTY **HOLCOMB BLVD at REDLAND RD, City of Oregon City, Clackamas County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023**

1 - 4 of 9 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R U G	J N S	S H V	W O R L	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC / INJ / SVRTY	A G E	S E X	LICNS / RES / LOC	PED / ERROR	ACT EVENT	CAUSE
00570	N	N	N	N			02/12/2020	16	REDLAND RD	INTER	CROSS	N	N	CLR	S-STRGHT	01	NONE 9	STRGHT								13
NONE							WE		HOLCOMB BLVD	N		TRF SIGNAL	N	DRY	SS-O		N/A	N -S							000	00
N							1P			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK	000	000	00
N							45 21 53.4	-122 35 13.64	0160AB100S00															UNK			
																02	NONE 9	STOP								
																	N/A	N -S							011	00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK	000	000	00
																								UNK			
01663	N	N	N	N			06/25/2020	16	HOLCOMB BLVD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 9	STRGHT								29
NO RPT							TH	0	REDLAND RD	NE		TRF SIGNAL	N	DRY	REAR		N/A	NE-SW							000	00
N							1P			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK	000	000	00
N							45 21 52.36	-122 35 13.48																UNK			
																02	NONE 9	STOP								
																	N/A	NE-SW							011	00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK	000	000	00
																								UNK			
00422	N	N	N	N	N	N	02/09/2023	16	HOLCOMB BLVD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT								29
NONE							TH		REDLAND RD	SE		TRF SIGNAL	N	DRY	REAR		PRVTE	SE-NW							000	00
N							9A			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	36	F	OTH-Y	026	000	29
N							45 21 52.36	-122 35 13.48	0160AB100S00															OR<25			
																02	NONE 0	STOP								
																	PRVTE	SE-NW							011	00
																	PSNGR CAR		01	DRVR	INJB	33	F	OR-Y	000	000	00
																								OR<25			
03935	N	N	N	N	N	N	11/13/2023	16	HOLCOMB BLVD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT								27,29
NONE							MO		REDLAND RD	SE		TRF SIGNAL	N	DRY	REAR		PRVTE	SE-NW							000	00
N							2P			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	39	M	OR-Y	016,026	038	27,29
N							45 21 52.36	-122 35 13.48	0160AB100S00															OR<25			
																02	NONE 0	STOP								
																	PRVTE	SE-NW							011	00
																	PSNGR CAR		01	DRVR	INJC	68	M	OTH-Y	000	000	00
																								N-RES			
																02	NONE 0	STOP								
																	PRVTE	SE-NW							011	00
																	PSNGR CAR		02	PSNG	INJC	76	F		000	000	00
01804	N	N	N	N			07/01/2021	16	HOLCOMB BLVD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 9	STRGHT								07
NONE							TH	0	REDLAND RD	SE		TRF SIGNAL	N	DRY	REAR		N/A	SE-NW							000	00
N							7A			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK	000	000	00
N							45 21 52.38	-122 35 13.53																UNK			

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CITY OF OREGON CITY, CLACKAMAS COUNTY **HOLCOMB BLVD at REDLAND RD, City of Oregon City, Clackamas County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023**

5 - 9 of 9 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R U G S	J N S	S H V	W O R L	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC / TYPE	INJ / SVRTY	A G E	S E X	LICNS / RES	PED LOC	ERROR	ACT	EVENT	CAUSE
																02	NONE 9 N/A PSNGR CAR	STOP SE-NW	01	DRVR	NONE	00	Unk	UNK UNK		000	011 000		00 00
02290	N	Y	N	N	N	N	08/22/2020 SA 9P 45 21 52.37	16 -122 35 13.47	HOLCOMB BLVD REDLAND RD 0160AB100S00	INTER NW 06	CROSS 0	N TRF SIGNAL	N N	CLR DRY DUSK	S-1STOP REAR INJ	01	NONE 0 PRVTE PSNGR CAR	STRGHT NW-SE	01	DRVR	INJB	27	M	OTH-Y OR<25		043,026	000		07,26 00 07,26
																02	NONE 0 PRVTE PSNGR CAR	STOP NW-SE	01	DRVR	NONE	31	F	OR-Y OR<25		000	011 000		00 00
01356	N	N	N	N			05/26/2020 TU 7A 45 21 52.33	16 -122 35 13.44	HOLCOMB BLVD REDLAND RD 0160AB100S00	INTER NW 06	CROSS 0	N TRF SIGNAL	N N	CLR WET DAY	S-1STOP REAR PDO	01	NONE 9 N/A PSNGR CAR	STRGHT NW-SE	01	DRVR	NONE	00	Unk	UNK UNK		000	000 000		29 00 00
																02	NONE 9 N/A PSNGR CAR	STOP NW-SE	01	DRVR	NONE	00	Unk	UNK UNK		000	012 000		00 00
01840	N	N	N	N	N	N	06/06/2023 NO RPT 5P 45 21 52.36	16 -122 35 13.48	HOLCOMB BLVD REDLAND RD 0160AB100S00	INTER NW 06	CROSS 0	N TRF SIGNAL	N N	CLR DRY DAY	S-1STOP REAR PDO	01	NONE 9 N/A PSNGR CAR	STRGHT NW-SE	01	DRVR	NONE	00	Unk	UNK UNK		000	000 000		29 00 00
																02	NONE 9 N/A PSNGR CAR	STOP NW-SE	01	DRVR	NONE	00	Unk	UNK UNK		000	012 000		00 00
02792	N	N	N	N			09/21/2021 CITY TU 6A 45 21 52.36	16 0 -122 35 13.48	HOLCOMB BLVD REDLAND RD 0160AB100S00	INTER CN 04	CROSS 0	N TRF SIGNAL	N N	UNK UNK DAWN	ANGL-OTH ANGL INJ	01	NONE 0 PRVTE PSNGR CAR	STRGHT SE-NW	01	DRVR	INJC	60	M	OR-Y OR<25		020,097	000 000		04 00 04
																02	NONE 0 PRVTE PSNGR CAR	STRGHT SW-NE	01	DRVR	NONE	49	F	OR-Y OR<25		020,097	000 000		00 04

Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

CITY OF OREGON CITY, CLACKAMAS COUNTY **WINSTON DR at HOLCOMB BLVD, City of Oregon City, Clackamas County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023**

1 - 1 of 1 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R U G S	J N S	I H V	C L L	S W O R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS / RES	PED LOC	ERROR	ACT EVENT	CAUSE
02096	Y	N	N	N	N	N	N	06/24/2023	16	WINSTON DR	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										30,27,02
CITY			SA						0	HOLCOMB BLVD	CN		STOP SIGN	N	DRY	ANGL		PRVTE	E -W								000		00
N			11P								01	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJB	35	F	OR-Y		050,016	038	30,27
N			45 22 15.41						-122 33 37.5																OR<25				
																	01	NONE 0	STRGHT										
																		PRVTE	E -W								000		00
																		PSNGR CAR		02	PSNG	INJB	11	M			000	000	00
																	01	NONE 0	STRGHT										
																		PRVTE	E -W								000		00
																		PSNGR CAR		03	PSNG	INJB	06	M			000	000	00
																	02	NONE 0	STRGHT										
																		PRVTE	N -S								000		00
																		PSNGR CAR		01	DRVR	INJA	18	F	OR-Y		028	000	02
																									OR<25				

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CITY OF OREGON CITY, CLACKAMAS COUNTY **PRAIRIE SCHOONER WY at CASCADE HY SOUTH, City of Oregon City, Clackamas County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023**

1 - 3 of 11 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R U G S	J N V	S H L	W O R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
00372	N	N	N N				01/31/2019	14	PRAIRIE SCHOONER WY	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
CITY							TH		CASCADE HY SOUTH	N		TRF SIGNAL	N	DRY	REAR		PRVTE	N -S									000		00
N							3P			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	18	M	OR-Y		026	000		29
N							45 22 15.33	-122 35 8.4	016000100S00															OR<25					
																02	NONE 0	STOP											
																	PRVTE	N -S									011		00
																	PSNGR CAR		01	DRVR	INJC	29	F	OR-Y		000	000		00
																								OR<25					
02914	N	N	N N				08/23/2019	14	PRAIRIE SCHOONER WY	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											27,29
CITY							FR		CASCADE HY SOUTH	N		TRF SIGNAL	N	DRY	REAR		PRVTE	N -S									000		00
N							12P			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	46	M	OR-Y		026	038		27,29
N							45 22 15.34	-122 35 8.39	016000100S00															OR<25					
																01	NONE 0	STRGHT											
																	PRVTE	N -S									000		00
																	PSNGR CAR		02	PSNG	INJC	71	F			000	000		00
																02	NONE 1	STOP											
																	PRVTE	N -S									011		00
																	SEMI TOW		01	DRVR	INJC	71	M	OR-Y		000	000		00
																								OR<25					
03177	N	N	N N				09/14/2019	14	PRAIRIE SCHOONER WY	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NONE							SA		CASCADE HY SOUTH	N		TRF SIGNAL	N	DRY	REAR		PRVTE	N -S									000		00
N							12P			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	30	M	OR-Y		026	000		29
N							45 22 15.34	-122 35 8.4	016000100S00															OR<25					
																02	NONE 0	STOP											
																	PRVTE	N -S									011	013	00
																	PSNGR CAR		01	DRVR	NONE	22	F	OR-Y		000	000		00
																								OR<25					
																03	NONE 0	STOP											
																	PRVTE	N -S									022		00
																	PSNGR CAR		01	DRVR	INJC	51	F	OR-Y		000	000		00
																								OR<25					
00814	N	N	N N				03/02/2020	14	PRAIRIE SCHOONER WY	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NO RPT							MO		CASCADE HY SOUTH	N		TRF SIGNAL	N	DRY	REAR		PRVTE	N -S									000		00
N							8A			06	4		N	DAWN	INJ		PSNGR CAR		01	DRVR	INJC	56	M	OR-Y		026	000		29
N							45 22 15.34	-122 35 8.4	016000100S00															OR<25					
																01	NONE 0	STRGHT											
																	PRVTE	N -S									000		00
																	PSNGR CAR		02	PSNG	INJB	28	M			000	000		00

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CITY OF OREGON CITY, CLACKAMAS COUNTY **PRAIRIE SCHOONER WY at CASCADE HY SOUTH, City of Oregon City, Clackamas County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023**

4 - 8 of 11 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R U G S	J N V	S H L	W O R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
																02	NONE 0 PRVTE PSNGR CAR	STOP N -S									011 000		00 00
01816	N	N	N	N			07/02/2021 FR 3P 45 22 15.33	14 -122 35 8.39	PRAIRIE SCHOONER WY CASCADE HY SOUTH 016000100S00	INTER N 09	3-LEG 4	N TRF SIGNAL	N N N	CLR DRY DAY	S-1STOP REAR PDO	01	NONE 9 N/A PSNGR CAR	STRGHT N -S	01	DRVR	NONE	00	Unk	UNK UNK		000	000	129	00
																02	NONE 9 N/A MTRCYCLE	STOP N -S	01	DRVR	NONE	00	Unk	UNK UNK		000	011 000		00 00
00139	N	N	N	N	N	N	01/14/2023 NONE N N	14 SA 10A 45 22 15.33 -122 35 8.39	PRAIRIE SCHOONER WY CASCADE HY SOUTH 016000100S00	INTER N 06	3-LEG 0	N TRF SIGNAL N	N N N	RAIN SNO DAY	S-1STOP REAR INJ	01	NONE 0 PRVTE PSNGR CAR	STRGHT N -S	01	DRVR	INJB	59	M	OR-Y OR<25		042	000		29 00 29
																02	NONE 0 PRVTE PSNGR CAR	STRGHT N -S	01	DRVR	INJC	48	M	OR-Y OR>25		000	006 000		00 00
01440	N	N	N	N	N	N	05/09/2023 NONE N N	14 TU 4P 45 22 15.33 -122 35 8.39	PRAIRIE SCHOONER WY CASCADE HY SOUTH 016000100S00	INTER N 06	3-LEG 0	N TRF SIGNAL N	N N N	CLR DRY DAY	S-1STOP REAR PDO	01	NONE 9 N/A PSNGR CAR	STRGHT N -S	01	DRVR	NONE	00	Unk	UNK UNK		000	000		29 00 00
																02	NONE 9 N/A PSNGR CAR	STOP N -S	01	DRVR	NONE	00	Unk	UNK UNK		000	011 000		00 00
03989	N	N	N	N	N	N	11/17/2023 CITY N N	14 FR 4P 45 22 15.33 -122 35 8.39	PRAIRIE SCHOONER WY CASCADE HY SOUTH 016000100S00	INTER N 06	3-LEG 0	N TRF SIGNAL N	N N N	CLR DRY DAY	S-1STOP REAR INJ	01	NONE 0 PRVTE PSNGR CAR	STRGHT N -S	01	DRVR	NONE	17	M	OR-Y OR<25		016,026	000 038	116,013 116	27,29 00 27,29
																02	NONE 0 PRVTE PSNGR CAR	STOP N -S	01	DRVR	INJB	22	F	OR-Y OR<25		000	011 000	013	00 00
																03	NONE 0 PRVTE PSNGR CAR	STOP N -S	01	DRVR	NONE	32	M	OR-Y OR<25		000	022 000		00 00

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CITY OF OREGON CITY, CLACKAMAS COUNTY **PRAIRIE SCHOONER WY at CASCADE HY SOUTH, City of Oregon City, Clackamas County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023**

9 - 11 of 11 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R G S	J N V	S H L	W O R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC / TYPE	INJ / SVRTY	A G E	S E X	LICNS / RES	PED LOC	ERROR	ACT	EVENT	CAUSE
03545	N	N	N	N			11/19/2021	14	PRAIRIE SCHOONER WY	INTER	3-LEG	N	N	CLR	S-STRGHT	01	NONE	STRGHT											29,27
NONE							FR		CASCADE HY SOUTH	CN		TRF SIGNAL	N	DRY	REAR		UNKN	N -S									000		00
N							2P			01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	22	M	OR-Y		042,016	038		29,27
N							45 22 15.33	-122 35 8.39	016000100S00															OR<25					
																02	NONE 0	STRGHT											
																	PRVTE	N -S									000		00
																	PSNGR CAR		01	DRVR	INJC	33	M	OR-Y		000	000		00
																								OR<25					
																02	NONE 0	STRGHT											
																	PRVTE	N -S									000		00
																	PSNGR CAR		02	PSNG	INJC	32	M			000	000		00
00860	N	N	N	N			03/21/2022	14	PRAIRIE SCHOONER WY	INTER	CROSS	N	N	RAIN	ANGL-OTH	01	NONE	STRGHT											04
NONE							MO		CASCADE HY SOUTH	CN		TRF SIGNAL	N	WET	ANGL		PRVTE	W -E									000		00
N							9P			03	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	00	M	UNK		020	000		04
N							45 22 15.33	-122 35 8.39	016000100S00															UNK					
																02	NONE	STRGHT											
																	PRVTE	N -S									000		00
																	PSNGR CAR		01	DRVR	INJC	62	F	OR-Y		000	000		00
																								OR<25					
00893	N	N	N	N	N	N	03/26/2022	14	PRAIRIE SCHOONER WY	INTER	CROSS	N	N	CLR	S-1TURN	01	NONE 9	STRGHT											08
NONE							SA		CASCADE HY SOUTH	CN		TRF SIGNAL	N	DRY	TURN		N/A	N -S									000		00
N							11A			01	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N							45 22 15.33	-122 35 8.39	016000100S00															UNK					
																02	NONE 9	TURN-R											
																	N/A	N -W									000		00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																								UNK					

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CITY OF OREGON CITY, CLACKAMAS COUNTY **REDLAND RD at CASCADE HY SOUTH, City of Oregon City, Clackamas County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023**

1 - 5 of 42 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R U G	J N V	S H L	W O R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
00128	N	N	N	N	N	N	01/12/2022	14	CASCADE HY SOUTH	INTER	3-LEG	N	N	UNK	S-1STOP	01	NONE 9	STRGHT											29
NONE			WE						REDLAND RD	UN		TRF SIGNAL	N	UNK	REAR		N/A	UN-UN										000	00
N			5P							06	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
N			45 21 58.24					-122 35 6.3	016000100S00															UNK				
																02	NONE 9	STOP										
																	N/A	UN-UN									011	00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																								UNK				
00231	N	Y	N	N	N	N	01/21/2023	14	CASCADE HY SOUTH	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
CITY			SA						REDLAND RD	UN		TRF SIGNAL	N	DRY	REAR		PRVTE	UN-UN									000	00
N			8P							06	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJA	32	M	SUSP		026	000	29
N			45 21 58.24					-122 35 6.3	016000100S00															OR<25				
																02	NONE 0	STOP										
																	PRVTE	UN-UN									011	00
																	PSNGR CAR		01	DRVR	NONE	41	F	OR-Y		000	000	00
																								OR<25				
00400	N	N	N	N	N	N	02/02/2019	14	CASCADE HY SOUTH	INTER	3-LEG	N	N	CLD	S-1STOP	01	NONE 0	STRGHT											27,29
STATE			SA						REDLAND RD	N		TRF SIGNAL	N	DRY	REAR		PRVTE	N -S									000	00
N			9P							06	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJC	36	M	OR-Y		042	000	27,29
N			45 21 58.25					-122 35 6.3	016000100S00															OR<25				
																02	NONE 0	STRGHT										
																	PRVTE	N -S									000	00
																	PSNGR CAR		01	DRVR	INJC	23	M	OTH-Y		000	000	00
																								N-RES				
00649	N	N	N	N			02/23/2019	14	CASCADE HY SOUTH	INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT											29
UNK			SA						REDLAND RD	N		TRF SIGNAL	N	WET	REAR		PRVTE	N -S									000	00
N			2P							06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	50	F	OR-Y		026	000	29
N			45 21 58.25					-122 35 6.32	016000100S00															OR<25				
																02	NONE 0	STOP										
																	PRVTE	N -S									011	00
																	PSNGR CAR		01	DRVR	INJC	36	F	OR-Y		000	000	00
																								OR<25				
01363	N	N	N	N			04/29/2019	14	CASCADE HY SOUTH	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NONE			MO						REDLAND RD	N		TRF SIGNAL	N	DRY	REAR		PRVTE	N -S									000	00
N			11A							06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	19	F	OTH-Y		026	000	29
N			45 21 58.25					-122 35 6.32	016000100S00															OR<25				
																02	NONE 0	STOP										
																	PRVTE	N -S									011	00
																	PSNGR CAR		01	DRVR	INJC	40	F	OR-Y		000	000	00
																								OR<25				

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CITY OF OREGON CITY, CLACKAMAS COUNTY **REDLAND RD at CASCADE HY SOUTH, City of Oregon City, Clackamas County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023**

6 - 9 of 42 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R G S	J N V	S H L	W O R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
04668	N	N	N N				12/23/2019	14	CASCADE HY SOUTH	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NONE							MO		REDLAND RD	N		TRF SIGNAL	N	DRY	REAR		PRVTE	N -S									000		00
N							6P			06	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	24	M	OR-Y		026	000		29
N							45 21 58.24	-122 35 6.3	016000100S00															OR<25					
																02	NONE 0	STOP											
																	PRVTE	N -S									011		00
																	PSNGR CAR		01	DRVR	NONE	18	F	OR-Y		000	000		00
																								OR<25					
																02	NONE 0	STOP											
																	PRVTE	N -S									011		00
																	PSNGR CAR		02	PSNG	INJC	66	F			000	000		00
04041	N	N	N N				11/14/2019	14	CASCADE HY SOUTH	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
STATE							TH		REDLAND RD	N		TRF SIGNAL	N	DRY	REAR		PRVTE	N -S									000		00
N							2P			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	36	F	OR-Y		026	000		29
N							45 21 58.24	-122 35 6.29	016000100S00															OR<25					
																02	NONE 0	STOP											
																	PRVTE	N -S									011		00
																	PSNGR CAR		01	DRVR	NONE	33	M	OR-Y		000	000		00
																								OR<25					
																02	NONE 0	STOP											
																	PRVTE	N -S									011		00
																	PSNGR CAR		02	PSNG	INJC	54	F			000	000		00
04111	N	N	N N				11/19/2019	14	CASCADE HY SOUTH	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 9	STRGHT											29
NO RPT							TU		REDLAND RD	N		TRF SIGNAL	N	DRY	REAR		N/A	N -S									000		00
N							12P			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N							45 21 58.25	-122 35 6.31	016000100S00															UNK					
																02	NONE 9	STOP											
																	N/A	N -S									011		00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																								UNK					
00078	N	N	N N				01/08/2020	14	CASCADE HY SOUTH	INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT											29
NONE							WE		REDLAND RD	N		TRF SIGNAL	N	WET	REAR		PRVTE	S -N									000		00
N							5P			06	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	47	M	OTH-Y		026	000		29
N							45 21 58.26	-122 35 6.3	016000100S00															N-RES					
																02	NONE 0	STOP											
																	PRVTE	S -N									011		00
																	PSNGR CAR		01	DRVR	INJC	36	M	OR-Y		000	000		00
																								OR<25					

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CITY OF OREGON CITY, CLACKAMAS COUNTY **REDLAND RD at CASCADE HY SOUTH, City of Oregon City, Clackamas County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023**

10 - 12 of 42 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R U G S	J N V	S H L	W O R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT EVENT	CAUSE
01812	N	N	N	N			07/16/2020	14	CASCADE HY SOUTH	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										29
NONE							TH		REDLAND RD	N		TRF SIGNAL	N	DRY	REAR		PRVTE	N -S									000	00
N							11A			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	29	F	OR-Y		026	000	29
N							45 21 58.25	-122 35 6.31	016000100S00															OR<25				
																02	NONE 0	STOP										
																	PRVTE	N -S									011	00
																	PSNGR CAR		01	DRVR	INJC	33	M	OR-Y		000	000	00
																								OR<25				
00674	N	N	N	N			02/20/2020	14	CASCADE HY SOUTH	INTER	3-LEG	N	N	UNK	S-1STOP	01	NONE 9	STRGHT										29
NONE							TH		REDLAND RD	N		TRF SIGNAL	N	UNK	REAR		N/A	N -S									000	00
N							3P			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
N							45 21 58.24	-122 35 6.33	016000100S00															UNK				
																02	NONE 9	STOP										
																	N/A	N -S									011	00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																								UNK				
03509	N	N	N	N	N	N	11/02/2022	14	CASCADE HY SOUTH	INTER	3-LEG	N	N	CLD	S-1STOP	01	NONE 9	STRGHT										29
NONE							WE		REDLAND RD	N		TRF SIGNAL	N	WET	REAR		N/A	N -S									000	00
N							1P			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
N							45 21 58.24	-122 35 6.3	016000100S00															UNK				
																02	NONE 9	STOP										
																	N/A	N -S									011	00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																								UNK				
01011	N	N	N	N	N	N	04/03/2023	14	CASCADE HY SOUTH	INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT										29
NO RPT							MO		REDLAND RD	N		TRF SIGNAL	N	WET	REAR		PRVTE	N -S									000	00
N							4P			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	81	F	OR-Y		026	000	29
N							45 21 58.24	-122 35 6.3	016000100S00															OR<25				
																02	NONE 1	STOP										
																	PRVTE	N -S									011	00
																	PSNGR CAR		01	DRVR	INJC	32	M	OR-Y		000	000	00
																								OR<25				
																02	NONE 1	STOP										
																	PRVTE	N -S									011	00
																	PSNGR CAR		02	PSNG	INJC	52	M			000	000	00
																02	NONE 1	STOP										
																	PRVTE	N -S									011	00
																	PSNGR CAR		03	PSNG	INJC	01	M			000	000	00

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CITY OF OREGON CITY, CLACKAMAS COUNTY **REDLAND RD at CASCADE HY SOUTH, City of Oregon City, Clackamas County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023**

13 - 17 of 42 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R U G S	J I N V	S C H L	W O R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
																02	NONE 1	STOP										
																	PRVTE	N -S									011	00
																	PSNGR CAR		04	PSNG	INJC	21	M			000	000	00
00383	N	N	N	N	N	N	02/07/2023	14	CASCADE HY SOUTH	INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT											29
NONE							TU		REDLAND RD	N		TRF SIGNAL	N	WET	REAR		PRVTE	N -S									000	00
N							4P			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	27	M	OR-Y		026	000	29
N							45 21 58.24	-122 35 6.3	016000100S00															OR<25				
																02	NONE 0	STOP										
																	PRVTE	N -S									011	00
																	PSNGR CAR		01	DRVR	INJC	60	F	OR-Y		000	000	00
																								OR<25				
																02	NONE 0	STOP										
																	PRVTE	N -S									011	00
																	PSNGR CAR		02	PSNG	INJC	48	F			000	000	00
01340	N	N	N	N	N	N	04/20/2023	14	CASCADE HY SOUTH	INTER	3-LEG	N	N	CLD	S-STRGHT	01	NONE 0	STRGHT											27
STATE							TH		REDLAND RD	N		UNKNOWN	N	WET	REAR		PRVTE	S -N									000	00
N							3P			05	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	22	F	OR-Y		016	038	27
N							45 21 58.24	-122 35 6.3	016000100S00															OR<25				
																02	NONE 0	STRGHT										
																	PRVTE	S -N									000	00
																	PSNGR CAR		01	DRVR	INJC	63	F	OR-Y		000	000	00
																								OR<25				
01409	N	N	N	N	N	N	05/06/2023	14	CASCADE HY SOUTH	INTER	3-LEG	N	N	CLR	S-STRGHT	01	NONE 9	STRGHT											13
NO RPT							SA		REDLAND RD	N		TRF SIGNAL	N	DRY	REAR		N/A	N -S									000	00
N							2P			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
N							45 21 58.24	-122 35 6.3	016000100S00															UNK				
																02	NONE 9	STRGHT										
																	N/A	N -S									006	00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																								UNK				
01890	N	N	N	N	N	N	06/08/2023	14	CASCADE HY SOUTH	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 9	STRGHT											27,29
CITY							TH		REDLAND RD	N		TRF SIGNAL	N	DRY	REAR		N/A	N -S									000	00
N							8P			06	0		N	DUSK	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
N							45 21 58.24	-122 35 6.3	016000100S00															UNK				
																02	NONE 9	STOP										
																	N/A	N -S									011	00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																								UNK				

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CITY OF OREGON CITY, CLACKAMAS COUNTY **REDLAND RD at CASCADE HY SOUTH, City of Oregon City, Clackamas County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023**

18 - 20 of 42 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R U G S	J N S	S H V	W O R L	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC / TYPE	INJ / SVRTY	A G E	S E X	LICNS / RES	PED LOC	ERROR	ACT	EVENT	CAUSE
04404	N	N	N	N	N	N	12/17/2023	14	CASCADE HY SOUTH	INTER	3-LEG	N	N	UNK	S-1STOP	01	NONE 9	STRGHT											29
NONE			SU						REDLAND RD	N		TRF SIGNAL	N	DRY	REAR		N/A	N -S									000		00
N			1P							06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N			45 21 58.24		-122 35 6.3				016000100S00															UNK					
																02	NONE 9	STOP											
																	N/A	N -S									011		00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																								UNK					
01590	N	N	N	N			05/15/2019	14	CASCADE HY SOUTH	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										013	17,29
CITY			WE						REDLAND RD	S		TRF SIGNAL	N	DRY	REAR		PRVTE	S -N									000		00
N			9A							06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJA	67	M	OR-Y		026	028		17,29
N			45 21 58.24		-122 35 6.32				016000100S00															OR<25					
																02	NONE 0	STOP											
																	PRVTE	S -N									011	013	00
																	PSNGR CAR		01	DRVR	NONE	20	M	OR-Y		000	000		00
																								OR<25					
																03	NONE 0	STOP											
																	PRVTE	S -N									022		00
																	PSNGR CAR		01	DRVR	NONE	72	F	OR-Y		000	000		00
																								OR<25					
00149	N	N	N	N			01/15/2019	14	CASCADE HY SOUTH	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										013	29
NONE			TU						REDLAND RD	S		TRF SIGNAL	N	DRY	REAR		UNKN	S -N									000		00
N			5P							06	0		N	DLIT	INJ		UNKNOWN		01	DRVR	NONE	00	Unk	UNK		026	000		29
N			45 21 58.22		-122 35 6.3				016000100S00															UNK					
																02	NONE 0	STOP											
																	UNKN	S -N									011	013	00
																	PSNGR CAR		01	DRVR	NONE	00	M	UNK		000	000		00
																								UNK					
																03	NONE 0	STOP											
																	PRVTE	S -N									022		00
																	PSNGR CAR		01	DRVR	INJC	63	F	OR-Y		000	000		00
																								OR<25					
																03	NONE 0	STOP											
																	PRVTE	S -N									022		00
																	PSNGR CAR		02	PSNG	INJC	16	F			000	000		00
00544	N	N	N	N			02/15/2019	14	CASCADE HY SOUTH	INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 9	STRGHT											29
NONE			FR						REDLAND RD	S		TRF SIGNAL	N	WET	REAR		N/A	S -N									000		00
N			6P							06	0		N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N			45 21 58.25		-122 35 6.31				016000100S00															UNK					

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CITY OF OREGON CITY, CLACKAMAS COUNTY **REDLAND RD at CASCADE HY SOUTH, City of Oregon City, Clackamas County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023**

21 - 24 of 42 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R U G S	J N S	S I H V	W C R L	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
																02	NONE 9	STOP										
																	N/A	S -N									011	00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																								UNK				
02359	Y	N	N	N	N	N	08/29/2020	14	CASCADE HY SOUTH	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										01,29,32
CITY			SA						REDLAND RD	S		TRF SIGNAL	N	DRY	REAR		PRVTE	S -N									000	00
N			3P							06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	21	M	OR-Y		047,026,052	000	01,29,32
N			45 21 58.26		-122 35 6.29				016000100S00															OR<25				
																02	NONE 0	STOP										
																	PRVTE	S -N									011	00
																	PSNGR CAR		01	DRVR	INJC	72	F	OR-Y		000	000	00
																								OR<25				
																02	NONE 0	STOP										
																	PRVTE	S -N									011	00
																	PSNGR CAR		02	PSNG	INJC	73	M			000	000	00
03164	N	N	N	N			11/22/2020	14	CASCADE HY SOUTH	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										29
NONE			SU						REDLAND RD	S		TRF SIGNAL	N	DRY	REAR		PRVTE	S -N									000	00
N			3P							06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	30	F	OR-Y		026	000	29
N			45 21 58.24		-122 35 6.3				016000100S00															OR<25				
																02	NONE 0	STOP										
																	PRVTE	S -N									011	00
																	PSNGR CAR		01	DRVR	INJC	53	M	OR-Y		000	000	00
																								OR<25				
01573	N	N	N	N	N	N	05/18/2023	14	CASCADE HY SOUTH	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										27
CITY			TH						REDLAND RD	S		TRF SIGNAL	N	DRY	REAR		PRVTE	S -N									000	00
N			12P							06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	73	M	OR-Y		016	038	27
N			45 21 58.24		-122 35 6.3				016000100S00															OR<25				
																02	NONE 0	STOP										
																	PRVTE	S -N									011	00
																	PSNGR CAR		01	DRVR	INJC	20	F	OR-Y		000	000	00
																								OR<25				
																02	NONE 0	STOP										
																	PRVTE	S -N									011	00
																	PSNGR CAR		02	PSNG	INJC	20	F			000	000	00
02349	Y	Y	N	N	N	N	07/14/2023	14	CASCADE HY SOUTH	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										01,29
CITY			FR						REDLAND RD	S		TRF SIGNAL	N	DRY	REAR		PRVTE	S -N									000	00
N			8P							06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	43	F	OR-Y		047,026	000	01,29
N			45 21 58.24		-122 35 6.3				016000100S00															OR<25				

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CITY OF OREGON CITY, CLACKAMAS COUNTY **REDLAND RD at CASCADE HY SOUTH, City of Oregon City, Clackamas County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023**

25 - 28 of 42 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R U G S	J N V	S H L	W O R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
																02	NONE 0	STOP										
																	PRVTE	S -N								012		00
																	PSNGR CAR		01	DRVR	INJB	33	F	OR-Y		000	000		00
																								OR<25					
																02	NONE 0	STOP										
																	PRVTE	S -N								012		00
																	PSNGR CAR		02	PSNG	INJB	44	M			000	000		00
04218	N	N	N	N	N	N	12/04/2023	14	CASCADE HY SOUTH	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										003	29
NONE							MO		REDLAND RD	S		TRF SIGNAL	N	WET	REAR		PRVTE	S -N								000		00
N							8A			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	33	F	OR-Y		026	000	003	29
N							45 21 58.24	-122 35 6.3	016000100S00															OR<25					
																02	NONE 0	STOP										
																	PRVTE	S -N								011		00
																	PSNGR CAR		01	DRVR	INJC	43	M	OR-Y		000	000		00
																								OR<25					
03096	N	N	N	N			10/16/2021	16	CASCADE HY SOUTH	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NO RPT							SA		REDLAND RD	W		TRF SIGNAL	N	DRY	REAR		PRVTE	W -E								000		00
N							3P			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	59	F	OR-Y		026	000		29
N							45 21 58.24	-122 35 6.3	0160AB100S00															OR>25					
																02	NONE 0	STOP										
																	PRVTE	W -E								011		00
																	PSNGR CAR		01	DRVR	INJB	39	F	OTH-Y		000	000		00
																								OR<25					
03375	Y	N	N	N			11/06/2021	16	CASCADE HY SOUTH	INTER	3-LEG	N	N	CLD	ANGL-OTH	01	NONE 1	TURN-R										013,129	01,07,22
CITY							SA		REDLAND RD	W		TRF SIGNAL	N	WET	TURN		PRVTE	N -W								006		22,24
N							2P			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	21	M	OR-Y		047,007,085	000		01,07,08
N							45 21 58.24	-122 35 6.3	0160AB100S00															OR<25					
																02	NONE 0	STOP										
																	PRVTE	W -E								012	013	00
																	PSNGR CAR		01	DRVR	INJB	23	F	OR-Y		000	000		00
																								OR<25					
																03	NONE 0	STOP										
																	PRVTE	W -E								022		00
																	PSNGR CAR		01	DRVR	NONE	50	M	OR-Y		000	000		00
																								OR<25					
03374	N	N	N	N			11/06/2021	14	CASCADE HY SOUTH	INTER	3-LEG	N	N	CLR	ANGL-STP	01	NONE 9	TURN-R										092	08
NO RPT							SA		REDLAND RD	W		TRF SIGNAL	N	DRY	TURN		N/A	N -W								007		00
N							2P			06	0		N	DAY	PDO		TRUCK		01	DRVR	NONE	00	Unk	UNK		000	000		00
N							45 21 58.27	-122 35 6.31	016000100S00															UNK					

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CITY OF OREGON CITY, CLACKAMAS COUNTY **REDLAND RD at CASCADE HY SOUTH, City of Oregon City, Clackamas County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023**

29 - 32 of 42 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R U G S	J N S	S H V	W O R L	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF-CONTL	OFFRD RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
																02	NONE 9 N/A PSNGR CAR	STOP W -E	01	DRVR	NONE	00	Unk	UNK UNK		000	012 000		00 00
00443	N	N	N	N	N	N	02/10/2022	16	CASCADE HY SOUTH	INTER	3-LEG	N	N	CLD	S-1STOP	01	NONE 9	STRGHT											29
CITY			TH						REDLAND RD	W		TRF SIGNAL	N	DRY	REAR		N/A	W -E									000		00
N N			12P 45 21 58.24				-122 35 6.3		0160AB100S00	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK UNK		000	000		00
																02	NONE 9 N/A PSNGR CAR	STOP W -E	01	DRVR	NONE	00	Unk	UNK UNK		000	011 000		00 00
00922	N	Y	N	N	N	N	03/25/2023	16	CASCADE HY SOUTH	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
CITY			SA						REDLAND RD	W		TRF SIGNAL	N	DRY	REAR		PRVTE	W -E									000		00
N N			8P 45 21 58.24				-122 35 6.3		0160AB100S00	06	0		N	DUSK	INJ		PSNGR CAR		01	DRVR	NONE	51	M	OR-Y OR<25		026	000		29
																02	NONE 0 PRVTE PSNGR CAR	STOP W -E	01	DRVR	INJB	25	M	OR-Y OR<25		000	012 000		00 00
01818	Y	N	N	N	N	N	06/04/2023	14	CASCADE HY SOUTH	INTER	3-LEG	N	N	CLR	ANGL-STP	01	NONE 1	TURN-R										013		32,01,08
CITY			SU						REDLAND RD	W		TRF SIGNAL	N	DRY	TURN		PRVTE	N -W									000		00
N N			6P 45 21 58.24				-122 35 6.3		016000100S00	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	61	M	OR-Y OR<25		052,047,001	017		32,01,08
																02	NONE 0 PRVTE PSNGR CAR	STOP W -E	01	DRVR	INJB	30	F	OR-Y OR>25		000	012 000	013	00 00
																02	NONE 0 PRVTE PSNGR CAR	STOP W -E	02	PSNG	INJC	01	F			000	012 000	013	00 00
																03	NONE 0 PRVTE PSNGR CAR	STOP W -E	01	DRVR	NONE	37	M	OR-Y OR<25		000	012 000		00 00
																04	NONE 0 PRVTE PSNGR CAR	STOP W -E	01	DRVR	NONE	62	F	OR-Y OR<25		000	022 000		00 00

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CITY OF OREGON CITY, CLACKAMAS COUNTY **REDLAND RD at CASCADE HY SOUTH, City of Oregon City, Clackamas County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023**

33 - 36 of 42 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R U G	J N S	S H V	W O R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
01694	N	N	N	N	N	N	05/24/2019	14	CASCADE HY SOUTH	INTER	3-LEG	N	N	RAIN	ANGL-OTH	01	NONE 0	STRGHT											04
CITY			FR						REDLAND RD	CN		TRF SIGNAL	N	WET	TURN		PRVTE	N -S									000		00
N			5A							03	0		N	DAWN	INJ		PSNGR CAR		01	DRVR	NONE	21	M	OR-Y		020	000		04
N			45 21 58.25		-122 35 6.3				016000100S00															OR<25					
																02	NONE 0	TURN-L											
																	PRVTE	W -N									000		00
																	PSNGR CAR		01	DRVR	INJC	52	M	OR-Y		000	000		00
																								OR<25					
02413	N	N	N	N	N	N	09/03/2020	14	CASCADE HY SOUTH	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										115	27,04
STATE			TH						REDLAND RD	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	N -S									000		00
N			6A							03	0		N	DAWN	INJ		PSNGR CAR		01	DRVR	NONE	19	M	OTH-Y		020	038	115	27,04
N			45 21 58.24		-122 35 6.3				016000100S00															N-RES					
																02	NONE 0	TURN-L											
																	PRVTE	W -N									000		00
																	PSNGR CAR		01	DRVR	INJA	19	M	OR-Y		000	000		00
																								OR<25					
02357	N	N	N	N	N	N	08/29/2020	14	CASCADE HY SOUTH	INTER	3-LEG	N	N	CLD	ANGL-OTH	01	NONE 0	TURN-L										093	27,04,32
STATE			SA						REDLAND RD	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	W -N									000		00
N			7A							03	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	44	F	OR-Y		000	000		00
N			45 21 58.26		-122 35 6.33				016000100S00															OR<25					
																02	NONE 0	STRGHT											
																	PRVTE	N -S									000		00
																	PSNGR CAR		01	DRVR	NONE	17	M	OTH-Y		020,052	038	093	27,04,32
																								N-RES					
03046	N	N	N	N	N	N	10/13/2021	14	CASCADE HY SOUTH	INTER	3-LEG	N	N	CLD	ANGL-OTH	01	NONE 0	STRGHT											04
STATE			WE						REDLAND RD	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	N -S									000		00
N			9A							03	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	69	M	OR-Y		020	000		04
N			45 21 58.24		-122 35 6.3				016000100S00															OR<25					
																02	NONE 0	TURN-L											
																	PRVTE	W -N									000		00
																	PSNGR CAR		01	DRVR	INJB	32	M	OR-Y		000	000		00
																								OR<25					
02943	N	N	N	N	N	N	09/20/2022	14	CASCADE HY SOUTH	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										013	27,04
STATE			TU						REDLAND RD	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	N -S									000		00
N			7P							03	0		N	DUSK	INJ		PSNGR CAR		01	DRVR	NONE	58	M	OR-Y		016,020	038		27,04
N			45 21 58.24		-122 35 6.3				016000100S00															OR<25					
																02	NONE 0	TURN-L											
																	PRVTE	W -N									000	013	00
																	PSNGR CAR		01	DRVR	INJA	74	F	OR-Y		000	000		00
																								OR<25					

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CITY OF OREGON CITY, CLACKAMAS COUNTY **REDLAND RD at CASCADE HY SOUTH, City of Oregon City, Clackamas County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023**

37 - 39 of 42 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R U G S	J N S	S H V	W O R L	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC / TYPE	INJ / SVRTY	A G E	S E X	LICNS / RES	PED LOC	ERROR	ACT	EVENT	CAUSE
																02	NONE 0	TURN-L										
																	PRVTE	W -N									000	013	00
																	PSNGR CAR		02	PSNG	INJA	71	F			000	000		00
																03	NONE 0	TURN-L										
																	PRVTE	W -N									022		00
																	PSNGR CAR		01	DRVR	NONE	65	M	OR-Y OR<25		000	000		00
02552	Y	Y	N	N	N	N	08/21/2022	14	CASCADE HY SOUTH	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										010	04,01,27
CITY				SU					REDLAND RD	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	S -N								000		00
N				8P						04	0		N	DUSK	INJ		PSNGR CAR		01	DRVR	NONE	25	F	NONE		020,047,016	038		04,01,27
N				45	21	58.24	-122 35 6.3		016000100S00															OR<25					
																02	NONE 0	TURN-L										
																	PRVTE	W -N									000	010	00
																	PSNGR CAR		01	DRVR	INJB	41	M	OR-Y OR<25		000	000		00
																02	NONE 0	TURN-L										
																	PRVTE	W -N									000	010	00
																	PSNGR CAR		02	PSNG	INJB	38	F			000	000		00
																02	NONE 0	TURN-L										
																	PRVTE	W -N									000	010	00
																	PSNGR CAR		03	PSNG	INJB	51	F			000	000		00
																02	NONE 0	TURN-L										
																	PRVTE	W -N									000	010	00
																	PSNGR CAR		04	PSNG	INJB	08	M			000	000		00
04224	N	N	N	N	N	N	12/25/2022	14	CASCADE HY SOUTH	INTER	3-LEG	N	N	RAIN	ANGL-OTH	01	NONE 0	STRGHT										132	27,40
CITY				SU					REDLAND RD	CN		TRF SIGNAL	N	WET	TURN		PRVTE	N -S								000		00
N				9P						03	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	47	M	OR-Y		016	038	132	27,40
N				45	21	58.24	-122 35 6.3		016000100S00															OR<25					
																02	NONE 0	TURN-L										
																	PRVTE	W -N									000		00
																	PSNGR CAR		01	DRVR	INJC	76	M	OR-Y OR<25		000	000		00
																02	NONE 0	TURN-L										
																	PRVTE	W -N									000		00
																	PSNGR CAR		02	PSNG	INJB	75	F			000	000		00
04013	N	N	N	N	N	N	12/10/2022	14	CASCADE HY SOUTH	INTER	3-LEG	N	N	RAIN	ANGL-OTH	01	NONE 0	STRGHT											27,04
CITY				SA					REDLAND RD	CN		TRF SIGNAL	N	WET	TURN		PRVTE	N -S								000		00
N				9A						03	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	47	M	OR-Y		016,020	038		27,04
N				45	21	58.24	-122 35 6.3		016000100S00															OR<25					

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CITY OF OREGON CITY, CLACKAMAS COUNTY **REDLAND RD at CASCADE HY SOUTH, City of Oregon City, Clackamas County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023**

40 - 42 of 42 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R U G S	J N V	S I H L	C O R K	W DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF-CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC / TYPE	INJ / SVRTY	A G E	S E X	LICNS / RES	PED LOC	ERROR	ACT	EVENT	CAUSE
																02	NONE 0 PRVTE PSNGR CAR	TURN-L W -N	01	DRVR	INJB	41	M	OR-Y OR<25		000	000		00 00
02062	N	N	N	N	N	N	06/22/2023 TH 5A 45 21 58.24	14 -122 35 6.3	CASCADE HY SOUTH REDLAND RD 016000100S00	INTER CN 03	3-LEG 0	N TRF SIGNAL	N N N	CLR DRY DAWN	ANGL-OTH TURN PDO	01	NONE 9 N/A PSNGR CAR	STRGHT N -S	01	DRVR	NONE	00	Unk	UNK UNK		000	000		04 00 00
																02	NONE 9 N/A PSNGR CAR	TURN-L W -N	01	DRVR	NONE	00	Unk	UNK UNK		000	000		00 00
02833	N	N	N	N	N	N	06/22/2023 TH 5A 45 21 58.24	14 -122 35 6.3	CASCADE HY SOUTH REDLAND RD 016000100S00	INTER CN 04	3-LEG 0	N TRF SIGNAL	N N N	CLR DRY DAWN	ANGL-OTH TURN PDO	01	NONE 9 N/A PSNGR CAR	STRGHT S -N	01	DRVR	NONE	00	Unk	UNK UNK		000	000		04 00 00
																02	NONE 9 N/A PSNGR CAR	TURN-L W -N	01	DRVR	NONE	00	Unk	UNK UNK		000	000		00 00

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CITY OF OREGON CITY, CLACKAMAS COUNTY **WASHINGTON ST at 14TH ST, City of Oregon City, Clackamas County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023**

1 - 5 of 10 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R U G	J S V	I C H	S O R K	W	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR / OWNER / TYPE	QTY	MOVE / FROM / TO	P#	PRTC / TYPE	INJ / SVRTY	A G E	S E X	LICNS / RES	PED LOC	ERROR	ACT	EVENT	CAUSE
00765	N	N	N	N	N	N		03/12/2022	16	WASHINGTON ST	INTER	CROSS	N	N	UNK	ANGL-OTH	01	NONE	9	STRGHT											02
NONE				SA				0	14TH ST	UN		TRF SIGNAL	N	UNK	TURN			N/A		UN-UN									000		00
N				2A							00	0		N	UNK	PDO		PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N				45 21 41.11				-122 35 59.91																		UNK					
																	02	NONE	9	TURN-L											
																		N/A		UN-UN									000		00
																		PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																										UNK					
03916	Y	Y	N	N	N	N		12/04/2022	16	WASHINGTON ST	INTER	CROSS	N	Y	CLD	FIX OBJ	01	NONE	0	TURN-L										055	08,01
CITY				SU				0	14TH ST	NE		TRF SIGNAL	N	WET	FIX			PRVTE		SW-NW									000	055	00
N				6P							05	0		N	DLIT	INJ		PSNGR	CAR		01	DRVR	INJB	23	F	OR-Y		001,047	000		08,01
N				45 21 41.11				-122 35 59.91																		OR<25					
01507	N	N	N	N	N	N		05/13/2023	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	9	STRGHT											27
NONE				SA				0	14TH ST	NE		TRF SIGNAL	N	DRY	REAR			N/A		NE-SW									000		00
N				5P							06	0		N	DAY	PDO		PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N				45 21 41.11				-122 35 59.91																		UNK					
																	02	NONE	9	STOP											
																		N/A		NE-SW									011		00
																		PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																										UNK					
00381	N	N	N	N				01/29/2020	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	9	STRGHT											29
NO RPT				WE				0	14TH ST	SE		STOP SIGN	N	DRY	REAR			N/A		SE-NW									000		00
N				6P							06	0		N	DLIT	PDO		PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N				45 21 41.12				-122 35 59.92																		UNK					
																	02	NONE	9	STOP											
																		N/A		SE-NW									011		00
																		PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																										UNK					
02776	N	N	N	N				08/13/2019	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	ANGL-STP	01	NONE	9	TURN-R											08
CITY				TU				0	14TH ST	NW		TRF SIGNAL	N	DRY	TURN			N/A		NE-NW									000		00
N				7A							06	0		N	DAY	PDO		PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N				45 21 41.11				-122 35 59.91																		UNK					
																	02	NONE	9	STOP											
																		N/A		NW-SE									011		00
																		PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																										UNK					

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CITY OF OREGON CITY, CLACKAMAS COUNTY **WASHINGTON ST at 14TH ST, City of Oregon City, Clackamas County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023**

6 - 9 of 10 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R G S	J N V	S H L	W O R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC / TYPE	INJ / SVRTY	A G E	S E X	LICNS / RES	PED / LOC	ERROR	ACT EVENT	CAUSE
01000	N	N	N	N	N	N	03/28/2019	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 9	STRGHT										04
CITY			TH				0	14TH ST	CN		TRF SIGNAL	N	DRY	ANGL		N/A	NW-SE									000	00
N			2P						04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
N			45 21 41.11				-122 35 59.91																	UNK				
																02	NONE 9	STRGHT										
																	N/A	SW-NE									000	00
																	SEMI TOW		01	DRVR	NONE	00	Unk	UNK		000	000	00
																								UNK				
03376	N	N	N	N			12/01/2020	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 9	STRGHT										02,08
NONE			TU				0	14TH ST	CN		TRF SIGNAL	N	DRY	TURN		N/A	SE-NW									000	00
N			5P						02	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
N			45 21 41.11				-122 35 59.91																	UNK				
																02	NONE 9	TURN-L										
																	N/A	NW-NE									000	00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																								UNK				
02433	N	N	N	N			08/21/2021	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT										02,08,27
CITY			SA				0	14TH ST	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	E -W									000	00
N			9P						02	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJC	64	M	OR-Y		000	000	00
N			45 21 41.11				-122 35 59.91																	OR<25				
																01	NONE 0	STRGHT										
																	PRVTE	E -W									000	00
																	PSNGR CAR		02	PSNG	INJB	60	F			000	000	00
																02	NONE 0	TURN-L										
																	PRVTE	W -N									000	00
																	PSNGR CAR		01	DRVR	NONE	19	F	OR-Y		028,004,016	038	02,08,27
																								OR<25				
01992	N	N	N	N			07/16/2021	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT										02
CITY			FR				0	14TH ST	CN		TRF SIGNAL	N	UNK	TURN		PRVTE	SE-NW									000	00
N			6A						02	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	25	M	OR-Y		000	000	00
N			45 21 41.11				-122 35 59.91																	OR<25				
																02	NONE 0	TURN-L										
																	PRVTE	NW-NE									000	00
																	PSNGR CAR		01	DRVR	INJC	50	F	OR-Y		028,004	000	02
																								N-RES				
01660	N	N	N	N	N	N	05/23/2023	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	S-1TURN	01	NONE 9	STRGHT										06
CITY			TU				0	14TH ST	CN		TRF SIGNAL	N	DRY	TURN		N/A	NE-SW									000	00
N			3P						01	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
N			45 21 41.11				-122 35 59.91																	UNK				

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CITY OF OREGON CITY, CLACKAMAS COUNTY **WASHINGTON ST at 14TH ST, City of Oregon City, Clackamas County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023**

10 - 10 of 10 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D R U G S	M J I N V	S C H L	W O R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL TRLR	USE QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
																02	NONE	9	TURN-R										
																	N/A		NE-NW									000		00
																	SEMI	TOW		01	DRVR	NONE	00	Unk	UNK		000	000		00
																									UNK					

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CITY OF OREGON CITY, CLACKAMAS COUNTY **WASHINGTON ST at 15TH ST, City of Oregon City, Clackamas County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023**

1 - 5 of 8 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R G	J N V	S H L	W O R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT EVENT	CAUSE
00361	N	N	N	N	N	N	02/03/2022	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 9	STRGHT										11
NO RPT							TH	0	15TH ST	SW		TRF SIGNAL	N	DRY	REAR		N/A	SW-NE									000	00
N							7A			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
N							45 21 43.81	-122 35 57.17																UNK				
																02	NONE 9	STOP										
																	N/A	SW-NE									011	00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																								UNK				
01520	N	N	N	N	N	N	05/24/2022	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 9	STRGHT										29
NONE							TU	0	15TH ST	SW		TRF SIGNAL	N	DRY	REAR		N/A	SW-NE									000	00
N							9A			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
N							45 21 43.81	-122 35 57.17																UNK				
																02	NONE 9	STOP										
																	N/A	SW-NE									011	00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																								UNK				
00060	N	N	N	N			01/06/2020	16	WASHINGTON ST	INTER	CROSS	N	N	RAIN	ANGL-OTH	01	NONE 9	STRGHT										04
NONE							MO	0	15TH ST	CN		TRF SIGNAL	N	WET	ANGL		N/A	NE-SW									000	00
N							7A			01	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
N							45 21 43.81	-122 35 57.17																UNK				
																02	NONE 9	STRGHT										
																	N/A	SE-NW									000	00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																								UNK				
00292	N	N	N	N			02/01/2021	16	WASHINGTON ST	INTER	CROSS	N	N	RAIN	O-1 L-TURN	01	NONE 0	STRGHT										02,08
NONE							MO	0	15TH ST	CN		TRF SIGNAL	N	WET	TURN		PRVTE	NE-SW									000	00
N							12P			01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	00	M	UNK		000	000	00
N							45 21 43.81	-122 35 57.17																UNK				
																02	NONE 0	TURN-L										
																	PRVTE	SW-NW									000	00
																	PSNGR CAR		01	DRVR	INJC	68	F	OR-Y		028,004	000	02,08
																								OR<25				
04131	N	N	N	N			12/29/2021	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										04
NO RPT							WE	0	15TH ST	CN		TRF SIGNAL	N	DRY	ANGL		PRVTE	SE-NW									000	00
N							2P			01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	67	M	OTH-Y		097	000	00
N							45 21 43.81	-122 35 57.17																N-RES				
																02	NONE 0	STRGHT										
																	PRVTE	NE-SW									000	00
																	PSNGR CAR		01	DRVR	INJC	88	M	OR-Y		097	000	00
																								OR<25				

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CITY OF OREGON CITY, CLACKAMAS COUNTY **WASHINGTON ST at 15TH ST, City of Oregon City, Clackamas County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023**

6 - 8 of 8 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R G S	J N V	S H L	W O R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC / TYPE	INJ / SVRTY	A G E	S E X	LICNS / RES	PED LOC	ERROR	ACT EVENT	CAUSE
03911	N	N	N	N	N	N	12/15/2021	16	WASHINGTON ST	INTER	CROSS	N	N	RAIN	ANGL-OTH	01	NONE 9	STRGHT										04
CITY							WE	0	15TH ST	CN		TRF SIGNAL	N	WET	ANGL		N/A	NE-SW									000	00
N							6P			01	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
N							45 21 43.81	-122 35 57.17																UNK				
																02	NONE 9	STRGHT										
																	N/A	SE-NW									000	00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																								UNK				
03416	N	N	N	N			11/10/2021	16	WASHINGTON ST	INTER	CROSS	N	N	CLD	ANGL-OTH	01	NONE 9	STRGHT										04
NONE							WE	0	15TH ST	CN		TRF SIGNAL	N	WET	ANGL		N/A	SE-NW									000	00
N							10P			01	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
N							45 21 43.81	-122 35 57.17																UNK				
																02	NONE 9	STRGHT										
																	N/A	NE-SW									000	00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																								UNK				
02340	N	N	N	N	N	N	08/03/2022	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT										04
CITY							WE	0	15TH ST	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	SW-NE									088	00
N							3P			01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	48	F	OR-Y	003		088	04
N							45 21 43.81	-122 35 57.17																N-RES				
																02	NONE 0	TURN-L										
																	PRVTE	NE-SE									000	00
																	PSNGR CAR		01	DRVR	INJB	58	F	OR-Y	000		000	00
																								OR>25				

Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

CITY OF OREGON CITY, CLACKAMAS COUNTY **WASHINGTON ST at ABERNATHY RD, City of Oregon City, Clackamas County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023**

1 - 3 of 3 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R U G S	J N V	S H L	W O R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
03542	N	N	N N	N	N	N	12/27/2020	16	ABERNATHY RD	INTER	CROSS	N	Y	UNK	FIX OBJ	01	NONE 9	STRGHT										053	16
CITY			SU				0	WASHINGTON ST	UN		TRF SIGNAL	N	WET	FIX		N/A	UN-UN									000		00
N			11A						06	0		N	DAY	PDO			PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N			45 21 50.32				-122 35 49.06																	UNK					
02099	N	N	N N				06/24/2019	16	ABERNATHY RD	INTER	CROSS	N	Y	CLR	FIX OBJ	01	NONE 9	TURN-R										091	08
CITY			MO				0	WASHINGTON ST	E		TRF SIGNAL	N	DRY	FIX		N/A	UN-UN									011		00
N			3P						06	0		N	DAY	PDO			PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N			45 21 50.32				-122 35 49.06																	UNK					
02683	N	N	N N	N	N	N	08/06/2023	16	ABERNATHY RD	INTER	CROSS	N	Y	CLD	FIX OBJ	01	NONE 0	STRGHT										046	22
CITY			SU				0	WASHINGTON ST	SW		TRF SIGNAL	N	DRY	FIX		PRVTE	NE-SW									000	046	22
N			11A						05	0		N	DAY	INJ			PSNGR CAR		01	DRVR	INJB	78	M	OR-Y		080,081	000		00
N			45 21 50.32				-122 35 49.06																	OR<25					

Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

Left-Turn Lane Warrant Analysis

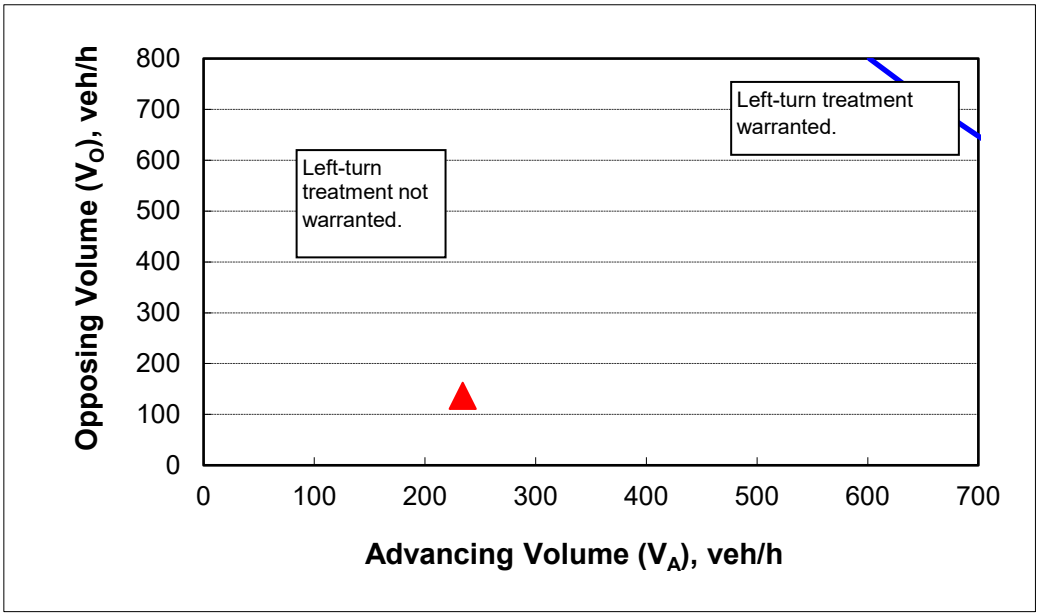
Project: Park Place Crossing Phase II
Intersection: Holcomb Boulevard & Street A (Site Access)
Date: 7/3/2025
Scenario: Buildout - AM

2-lane roadway (English)
INPUT

Variable	Value
85th percentile speed, mph:	35
Left-turns in advancing volume (V_A), veh/hr:	4
Advancing volume (V_A), veh/h:	234
Opposing volume (V_O), veh/h:	137

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	1208
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS (2-Lane Roadway)

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Left-Turn Lane Warrant Analysis

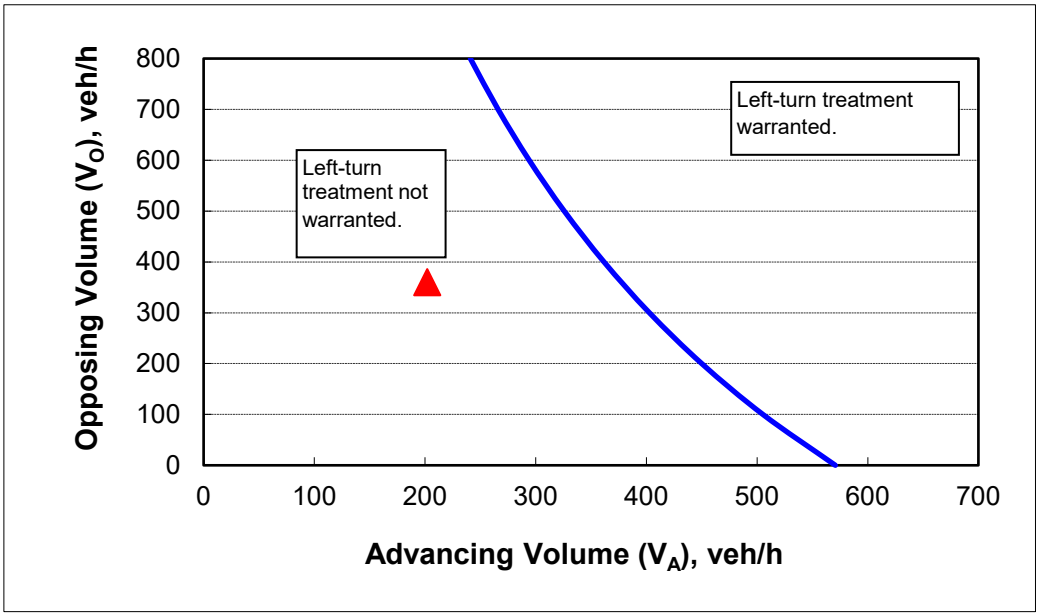
Project: Park Place Crossing Phase II
Intersection: Holcomb Boulevard & Street A (Site Access)
Date: 7/3/2025
Scenario: Buildout - PM

2-lane roadway (English)
INPUT

Variable	Value
85th percentile speed, mph:	35
Left-turns in advancing volume (V_A), veh/hr:	24
Advancing volume (V_A), veh/h:	202
Opposing volume (V_O), veh/h:	360

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	377
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS (2-Lane Roadway)

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Left-Turn Lane Warrant Analysis

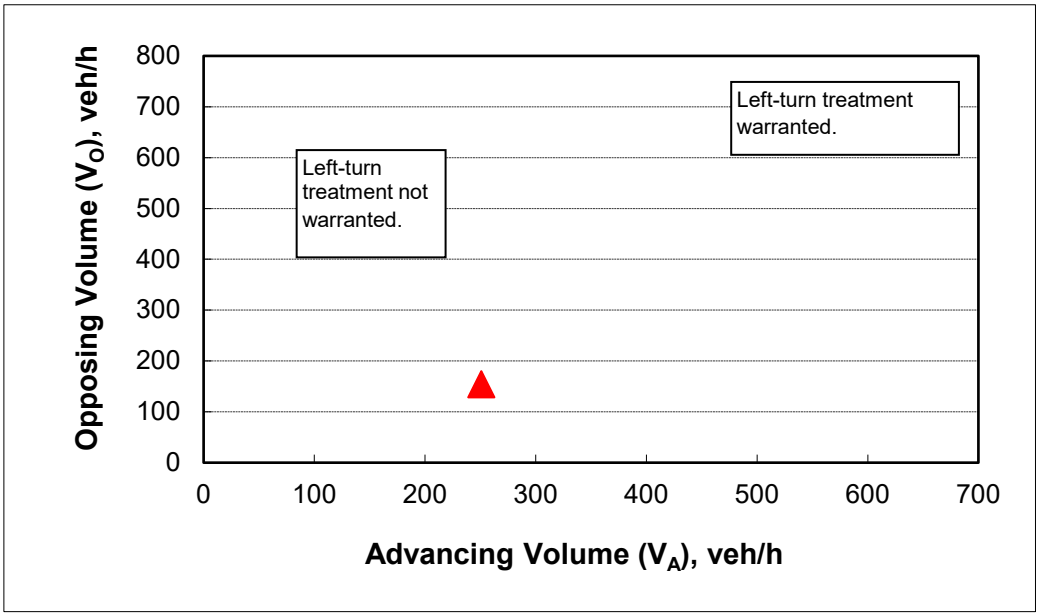
Project: Park Place Crossing Phase II
Intersection: Holcomb Boulevard & Weston Drive (Site Access)
Date: 7/3/2025
Scenario: Buildout - AM WB

2-lane roadway (English)
INPUT

Variable	Value
85th percentile speed, mph:	35
Left-turns in advancing volume (V_A), veh/hr:	3
Advancing volume (V_A), veh/h:	251
Opposing volume (V_O), veh/h:	154

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	1412
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS (2-Lane Roadway)

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Left-Turn Lane Warrant Analysis

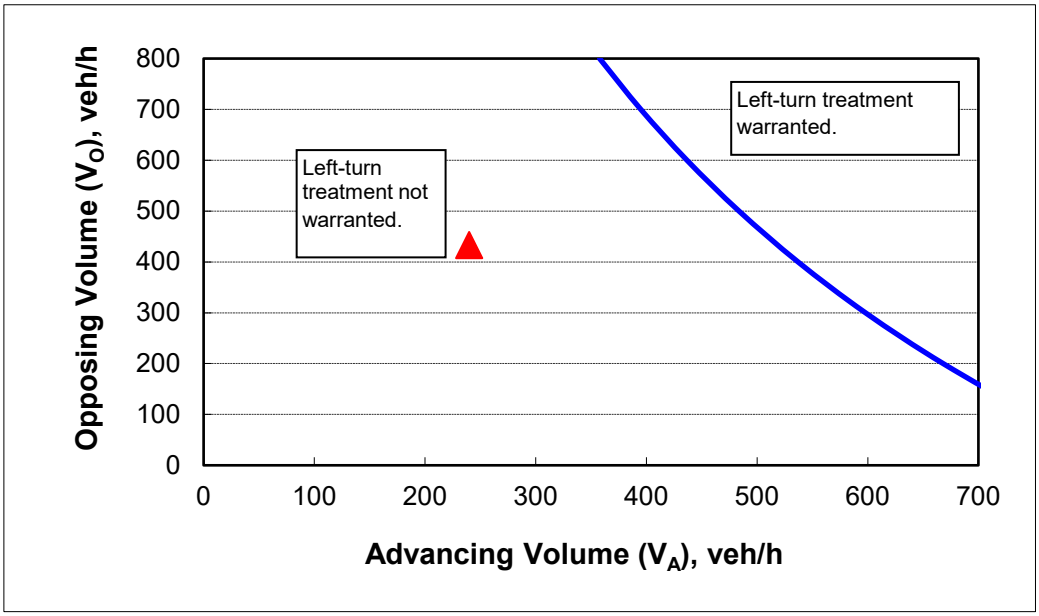
Project: Park Place Crossing Phase II
Intersection: Holcomb Boulevard & Weston Drive (Site Access)
Date: 7/3/2025
Scenario: Buildout - PM WB

2-lane roadway (English)
INPUT

Variable	Value
85th percentile speed, mph:	35
Left-turns in advancing volume (V_A), veh/hr:	12
Advancing volume (V_A), veh/h:	240
Opposing volume (V_O), veh/h:	433

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	519
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS (2-Lane Roadway)

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Left-Turn Lane Warrant Analysis

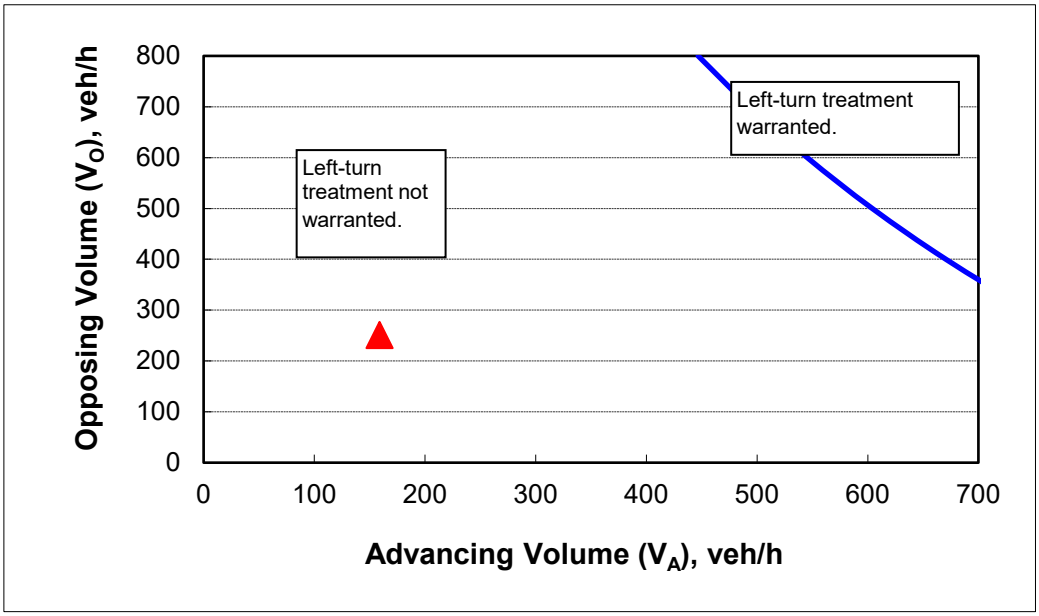
Project: Park Place Crossing Phase II
Intersection: Holcomb Boulevard & Weston Drive (Site Access)
Date: 7/3/2025
Scenario: Buildout - AM EB

2-lane roadway (English)
INPUT

Variable	Value
85th percentile speed, mph:	35
Left-turns in advancing volume (V_A), veh/hr:	5
Advancing volume (V_A), veh/h:	159
Opposing volume (V_O), veh/h:	251

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	788
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS (2-Lane Roadway)

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Left-Turn Lane Warrant Analysis

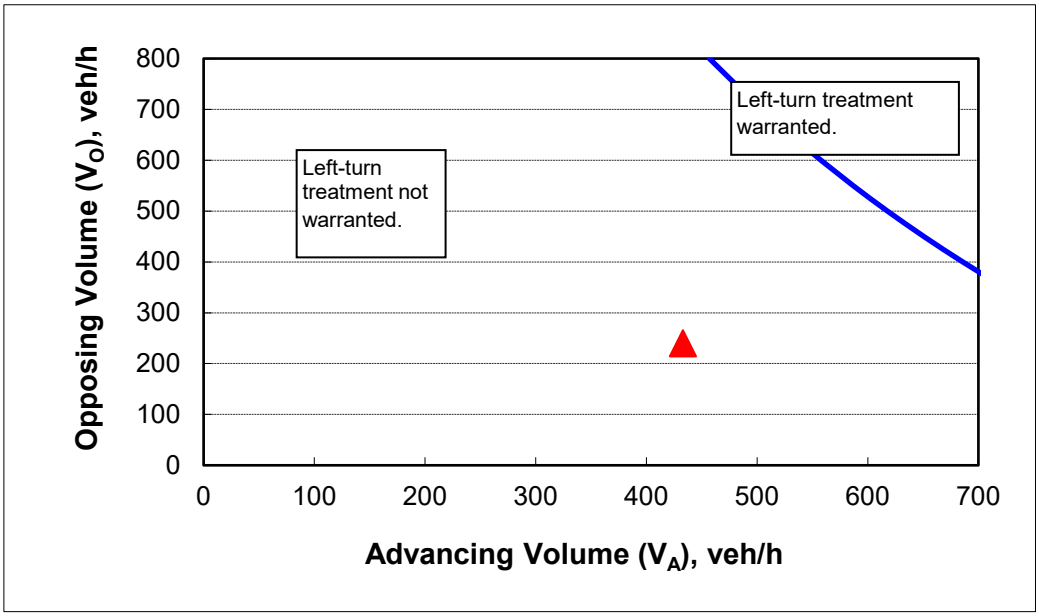
Project: Park Place Crossing Phase II
Intersection: Holcomb Boulevard & Weston Drive (Site Access)
Date: 7/3/2025
Scenario: Buildout - PM EB

2-lane roadway (English)
INPUT

Variable	Value
85th percentile speed, mph:	35
Left-turns in advancing volume (V_A), veh/hr:	13
Advancing volume (V_A), veh/h:	433
Opposing volume (V_O), veh/h:	240

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	816
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS (2-Lane Roadway)

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Preliminary Traffic Signal Warrant Analysis

Project: Park Place Crossing Phase II
Date: 7/3/2025
Scenario: Buildout Year 2028: PM Peak Hour

Major Street:	Holcomb Boulevard		Minor Street:	Street A (Site Access)	
Number of Lanes:	1		Number of Lanes:	1	
PM Peak Hour Volumes:	562		PM Peak Hour Volumes:	76 14 50%	Total Rights RT Discount

Warrant Used:

X — 100 percent of standard warrants used

_____ — 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	5,620	8,850	
Minor Street*	690	2,650	**No**
Condition B: Interruption of Continuous Traffic			
Major Street	5,620	13,300	
Minor Street*	690	1,350	**No**
Combination Warrant			
Major Street	5,620	10,640	
Minor Street*	690	2,120	**No**

* Minor street right-turning traffic volumes reduced by 50%.

Preliminary Traffic Signal Warrant Analysis

Project: Park Place Crossing Phase II
Date: 7/3/2025
Scenario: Buildout Year 2028: PM Peak Hour

Major Street:	Holcomb Boulevard		Minor Street:	Winston Drive (Site Access)	
Number of Lanes:	1		Number of Lanes:	1	
PM Peak Hour Volumes:	673		PM Peak Hour Volumes:	54 8 50%	Total Rights RT Discount

Warrant Used:

X — 100 percent of standard warrants used

_____ — 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	6,730	8,850	
Minor Street*	500	2,650	**No**
Condition B: Interruption of Continuous Traffic			
Major Street	6,730	13,300	
Minor Street*	500	1,350	**No**
Combination Warrant			
Major Street	6,730	10,640	
Minor Street*	500	2,120	**No**

* Minor street right-turning traffic volumes reduced by 50%.

Appendix D - Operations

Definitions

Synchro Reports

Queuing Reports

Level of Service Definitions

Level of service is used to describe the quality of traffic flow. Levels of service A to C are considered good, and rural roads are usually designed for level of service C. Urban streets and signalized intersections are typically designed for level of service D. Level of service E is considered to be the limit of acceptable delay. For unsignalized intersections, level of service E is generally considered acceptable. Here is a more complete description of levels of service:

- *Level of service A:* Very low delay at intersections, with all traffic signal cycles clearing and no vehicles waiting through more than one signal cycle. On highways, low volume and high speeds, with speeds not restricted by other vehicles.
- *Level of service B:* Operating speeds beginning to be affected by other traffic; short traffic delays at intersections. Higher average intersection delay than for level of service A resulting from more vehicles stopping.
- *Level of service C:* Operating speeds and maneuverability closely controlled by other traffic; higher delays at intersections than for level of service B due to a significant number of vehicles stopping. Not all signal cycles clear the waiting vehicles. This is the recommended design standard for rural highways.
- *Level of service D:* Tolerable operating speeds; long traffic delays occur at intersections. The influence of congestion is noticeable. At traffic signals many vehicles stop, and the proportion of vehicles not stopping declines. The number of signal cycle failures, for which vehicles must wait through more than one signal cycle, are noticeable. This is typically the design level for urban signalized intersections.
- *Level of service E:* Restricted speeds, very long traffic delays at traffic signals, and traffic volumes near capacity. Flow is unstable so that any interruption, no matter how minor, will cause queues to form and service to deteriorate to level of service F. Traffic signal cycle failures are frequent occurrences. For unsignalized intersections, level of service E or better is generally considered acceptable.
- *Level of service F:* Extreme delays, resulting in long queues which may interfere with other traffic movements. There may be stoppages of long duration, and speeds may drop to zero. There may be frequent signal cycle failures. Level of service F will typically result when vehicle arrival rates are greater than capacity. It is considered unacceptable by most drivers.

Level of Service Criteria
For Signalized Intersections

Level of Service (LOS)	Control Delay per Vehicle (Seconds)
A	<10
B	10-20
C	20-35
D	35-55
E	55-80
F	>80

Level of Service Criteria
For Unsignalized Intersections

Level of Service (LOS)	Control Delay per Vehicle (Seconds)
A	<10
B	10-15
C	15-25
D	25-35
E	35-50
F	>50

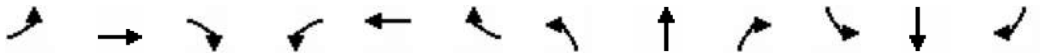
Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	77	14	3	206	1	47	0	3	1	0	12
Future Vol, veh/h	5	77	14	3	206	1	47	0	3	1	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	6	90	16	3	240	1	55	0	3	1	0	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	241	0	0	106	0	0	356	357	99	349	365	240
Stage 1	-	-	-	-	-	-	109	109	-	247	247	-
Stage 2	-	-	-	-	-	-	247	248	-	102	117	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1338	-	-	1498	-	-	603	572	963	609	567	804
Stage 1	-	-	-	-	-	-	901	809	-	761	706	-
Stage 2	-	-	-	-	-	-	762	705	-	909	802	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1338	-	-	1498	-	-	588	568	962	602	563	804
Mov Cap-2 Maneuver	-	-	-	-	-	-	588	568	-	602	563	-
Stage 1	-	-	-	-	-	-	897	805	-	759	704	-
Stage 2	-	-	-	-	-	-	747	703	-	900	799	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.4	0.11	11.61	9.68
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	602	91	-	-	26	-	-	784
HCM Lane V/C Ratio	0.097	0.004	-	-	0.002	-	-	0.019
HCM Ctrl Dly (s/v)	11.6	7.7	0	-	7.4	0	-	9.7
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	102	44	78	181	312	184	392	70	131	301	45
Future Volume (veh/h)	30	102	44	78	181	312	184	392	70	131	301	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)	1.00		0.99	1.00		1.00	1.00		0.98	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	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	33	111	33	85	197	49	200	426	72	142	327	17
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	102	200	59	156	328	277	476	653	110	213	510	430
Arrive On Green	0.06	0.14	0.13	0.09	0.17	0.17	0.26	0.41	0.40	0.12	0.27	0.27
Sat Flow, veh/h	1810	1404	417	1810	1900	1605	1810	1577	267	1810	1900	1601
Grp Volume(v), veh/h	33	0	144	85	197	49	200	0	498	142	327	17
Grp Sat Flow(s),veh/h/ln	1810	0	1821	1810	1900	1605	1810	0	1844	1810	1900	1601
Q Serve(g_s), s	1.2	0.0	4.9	3.0	6.4	1.7	6.1	0.0	14.5	5.0	10.1	0.4
Cycle Q Clear(g_c), s	1.2	0.0	4.9	3.0	6.4	1.7	6.1	0.0	14.5	5.0	10.1	0.4
Prop In Lane	1.00		0.23	1.00		1.00	1.00		0.14	1.00		1.00
Lane Grp Cap(c), veh/h	102	0	259	156	328	277	476	0	763	213	510	430
V/C Ratio(X)	0.32	0.00	0.56	0.54	0.60	0.18	0.42	0.00	0.65	0.67	0.64	0.04
Avail Cap(c_a), veh/h	190	0	601	326	770	650	652	0	1466	462	1311	1105
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	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.2	0.0	26.7	29.2	25.5	23.5	20.4	0.0	15.8	28.2	21.5	9.3
Incr Delay (d2), s/veh	1.8	0.0	1.9	2.9	1.8	0.3	0.6	0.0	1.0	3.6	1.4	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(50%),veh/ln	0.5	0.0	2.1	1.4	2.9	0.7	2.3	0.0	5.2	2.3	4.3	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	32.1	0.0	28.6	32.1	27.2	23.8	20.9	0.0	16.7	31.8	22.9	9.3
LnGrp LOS	C		C	C	C	C	C		B	C	C	A
Approach Vol, veh/h		177			331			698			486	
Approach Delay, s/veh		29.2			28.0			17.9			25.0	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.8	31.6	9.8	13.5	21.5	21.9	7.7	15.5
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	16.0	52.0	11.0	21.0	23.0	45.0	6.0	26.0
Max Q Clear Time (g_c+I1), s	7.0	16.5	5.0	6.9	8.1	12.1	3.2	8.4
Green Ext Time (p_c), s	0.4	9.9	0.1	0.5	0.7	4.4	0.0	1.1

Intersection Summary	
HCM 7th Control Delay, s/veh	23.1
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.



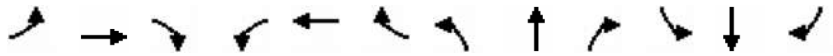
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	556	160	95	1799	1468	400
Future Volume (veh/h)	556	160	95	1799	1468	400
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	579	156	99	1874	1529	341
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	732	459	139	2616	2219	1326
Arrive On Green	0.21	0.21	0.08	0.72	1.00	1.00
Sat Flow, veh/h	3510	1610	1810	3705	3705	1610
Grp Volume(v), veh/h	579	156	99	1874	1529	341
Grp Sat Flow(s),veh/h/ln	1755	1610	1810	1805	1805	1610
Q Serve(g_s), s	18.8	9.2	6.4	35.7	0.0	0.0
Cycle Q Clear(g_c), s	18.8	9.2	6.4	35.7	0.0	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	732	459	139	2616	2219	1326
V/C Ratio(X)	0.79	0.34	0.71	0.72	0.69	0.26
Avail Cap(c_a), veh/h	965	566	211	2616	2219	1326
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	0.69	0.69	1.00	1.00	0.88	0.88
Uniform Delay (d), s/veh	45.0	33.9	54.1	9.5	0.0	0.0
Incr Delay (d2), s/veh	2.3	0.3	6.6	1.7	1.6	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.3	9.0	3.1	10.7	0.5	0.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	47.3	34.2	60.7	11.2	1.6	0.4
LnGrp LOS	D	C	E	B	A	A
Approach Vol, veh/h	735			1973	1870	
Approach Delay, s/veh	44.5			13.7	1.4	
Approach LOS	D			B	A	

Timer - Assigned Phs	2		4	5	6
Phs Duration (G+Y+Rc), s	91.0		29.0	13.2	77.8
Change Period (Y+Rc), s	5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s	78.0		32.0	13.0	60.0
Max Q Clear Time (g_c+I1), s	37.7		20.8	8.4	2.0
Green Ext Time (p_c), s	39.1		3.3	0.1	52.9

Intersection Summary	
HCM 7th Control Delay, s/veh	13.6
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.



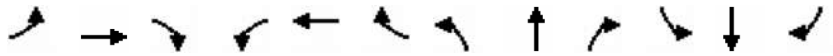
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	146	0	0	466	0	2132	167	0	1749	428
Future Volume (veh/h)	0	0	146	0	0	466	0	2132	167	0	1749	428
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	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	0	1900	1900	0	1900	1900	0	1900	1870	0	1900	1900
Adj Flow Rate, veh/h	0	0	119	0	0	466	0	2198	0	0	1803	0
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	0	0	0	0	0	2	0	0	0
Cap, veh/h	0	398	593	0	398	593	0	3755		0	3755	
Arrive On Green	0.00	0.00	0.21	0.00	0.00	0.21	0.00	1.00	0.00	0.00	0.72	0.00
Sat Flow, veh/h	0	1900	2834	0	1900	2834	0	5358	1585	0	5358	1610
Grp Volume(v), veh/h	0	0	119	0	0	466	0	2198	0	0	1803	0
Grp Sat Flow(s),veh/h/ln	0	1900	1417	0	1900	1417	0	1729	1585	0	1729	1610
Q Serve(g_s), s	0.0	0.0	4.2	0.0	0.0	18.7	0.0	0.0	0.0	0.0	17.6	0.0
Cycle Q Clear(g_c), s	0.0	0.0	4.2	0.0	0.0	18.7	0.0	0.0	0.0	0.0	17.6	0.0
Prop In Lane	0.00		1.00	0.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	0	398	593	0	398	593	0	3755		0	3755	
V/C Ratio(X)	0.00	0.00	0.20	0.00	0.00	0.79	0.00	0.59		0.00	0.48	
Avail Cap(c_a), veh/h	0	570	850	0	570	850	0	3755		0	3755	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.60	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	39.2	0.0	0.0	44.9	0.0	0.0	0.0	0.0	7.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.2	0.0	0.0	4.0	0.0	0.4	0.0	0.0	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(50%),veh/ln	0.0	0.0	1.5	0.0	0.0	6.9	0.0	0.1	0.0	0.0	5.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	39.4	0.0	0.0	48.9	0.0	0.4	0.0	0.0	7.4	0.0
LnGrp LOS			D			D		A			A	
Approach Vol, veh/h		119			466			2198			1803	
Approach Delay, s/veh		39.4			48.9			0.4			7.4	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	90.9	29.1	90.9	29.1
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	75.0	35.0	75.0	35.0
Max Q Clear Time (g_c+I1), s	19.6	20.7	2.0	6.2
Green Ext Time (p_c), s	50.6	3.4	72.0	1.0

Intersection Summary	
HCM 7th Control Delay, s/veh	9.1
HCM 7th LOS	A

Notes

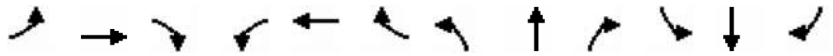
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	355	0	31	3	175	159	18	469	2
Future Volume (veh/h)	0	0	0	355	0	31	3	175	159	18	469	2
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		0.98	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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	0	0	0	386	0	9	3	190	91	20	510	2
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	0	486	0	543	0	412	582	1224	1015	860	1218	5
Arrive On Green	0.00	0.00	0.00	0.26	0.00	0.26	1.00	1.00	1.00	0.64	0.64	0.64
Sat Flow, veh/h	0	1900	0	1810	0	1610	980	1900	1576	1211	1891	7
Grp Volume(v), veh/h	0	0	0	386	0	9	3	190	91	20	0	512
Grp Sat Flow(s),veh/h/ln	0	1900	0	1810	0	1610	980	1900	1576	1211	0	1898
Q Serve(g_s), s	0.0	0.0	0.0	18.2	0.0	0.4	0.1	0.0	0.0	0.5	0.0	11.8
Cycle Q Clear(g_c), s	0.0	0.0	0.0	18.2	0.0	0.4	11.9	0.0	0.0	0.5	0.0	11.8
Prop In Lane	0.00		0.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	486	0	543	0	412	582	1224	1015	860	0	1223
V/C Ratio(X)	0.00	0.00	0.00	0.71	0.00	0.02	0.01	0.16	0.09	0.02	0.00	0.42
Avail Cap(c_a), veh/h	0	876	0	914	0	742	582	1224	1015	860	0	1223
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	0.96	0.96	0.96	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	31.7	0.0	25.1	1.2	0.0	0.0	5.8	0.0	7.8
Incr Delay (d2), s/veh	0.0	0.0	0.0	2.5	0.0	0.0	0.0	0.3	0.2	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	0.0	0.0	0.0	8.0	0.0	0.1	0.0	0.1	0.0	0.1	0.0	4.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	0.0	34.1	0.0	25.1	1.2	0.3	0.2	5.8	0.0	8.9
LnGrp LOS				C		C	A	A	A	A		A
Approach Vol, veh/h		0			395			284			532	
Approach Delay, s/veh		0.0			33.9			0.2			8.7	
Approach LOS					C			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	62.5	27.5	62.5	27.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	39.5	41.5	39.5	41.5
Max Q Clear Time (g_c+I1), s	13.8	20.2	13.9	0.0
Green Ext Time (p_c), s	6.8	2.9	3.2	0.0

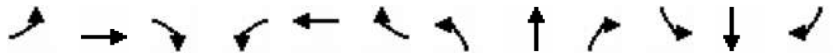
Intersection Summary	
HCM 7th Control Delay, s/veh	15.0
HCM 7th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	61	22	12	65	32	22	256	65	69	553	199
Future Volume (veh/h)	55	61	22	12	65	32	22	256	65	69	553	199
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		0.96	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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	60	66	15	13	71	15	24	278	61	75	601	204
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	135	115	23	61	177	34	506	969	213	997	930	316
Arrive On Green	0.12	0.13	0.12	0.12	0.13	0.12	0.11	1.00	1.00	0.10	0.69	0.68
Sat Flow, veh/h	621	922	184	126	1417	275	1810	1509	331	1810	1356	460
Grp Volume(v), veh/h	141	0	0	99	0	0	24	0	339	75	0	805
Grp Sat Flow(s),veh/h/ln	1727	0	0	1818	0	0	1810	0	1840	1810	0	1816
Q Serve(g_s), s	2.3	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.9	0.0	22.6
Cycle Q Clear(g_c), s	6.8	0.0	0.0	4.5	0.0	0.0	0.3	0.0	0.0	0.9	0.0	22.6
Prop In Lane	0.43		0.11	0.13		0.15	1.00		0.18	1.00		0.25
Lane Grp Cap(c), veh/h	263	0	0	262	0	0	506	0	1181	997	0	1246
V/C Ratio(X)	0.54	0.00	0.00	0.38	0.00	0.00	0.05	0.00	0.29	0.08	0.00	0.65
Avail Cap(c_a), veh/h	397	0	0	407	0	0	618	0	1181	1030	0	1246
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.91	0.00	0.91	0.75	0.00	0.75
Uniform Delay (d), s/veh	37.5	0.0	0.0	36.5	0.0	0.0	5.8	0.0	0.0	2.7	0.0	8.0
Incr Delay (d2), s/veh	2.4	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.6	0.0	0.0	2.0
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	3.1	0.0	0.0	2.1	0.0	0.0	0.1	0.0	0.2	0.2	0.0	7.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	39.9	0.0	0.0	37.8	0.0	0.0	5.8	0.0	0.6	2.7	0.0	10.0
LnGrp LOS	D			D			A		A	A		A
Approach Vol, veh/h		141			99			363			880	
Approach Delay, s/veh		39.9			37.8			0.9			9.4	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2	4	5	6	8
Phs Duration (G+Y+Rc), s	9.0	65.7	15.3	13.0	61.8	15.3
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	10.5	48.3	18.1	10.1	48.3	18.1
Max Q Clear Time (g_c+I1), s	2.3	24.6	6.5	2.9	2.0	8.8
Green Ext Time (p_c), s	0.0	11.2	0.4	0.2	4.5	0.5

Intersection Summary	
HCM 7th Control Delay, s/veh	12.1
HCM 7th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	177	0	54	3	22	4	190	192	6	1	321	258
Future Volume (veh/h)	177	0	54	3	22	4	190	192	6	1	321	258
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		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	1900	1885	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	195	0	7	3	24	1	209	211	6	1	353	252
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, %	0	1	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	319	0	255	55	279	11	697	1282	36	852	608	434
Arrive On Green	0.16	0.00	0.16	0.16	0.16	0.16	0.12	0.70	0.69	0.01	0.78	0.78
Sat Flow, veh/h	1519	0	1588	69	1736	67	1810	1838	52	1810	1031	736
Grp Volume(v), veh/h	195	0	7	28	0	0	209	0	217	1	0	605
Grp Sat Flow(s),veh/h/ln	1519	0	1588	1872	0	0	1810	0	1891	1810	0	1767
Q Serve(g_s), s	9.8	0.0	0.3	0.0	0.0	0.0	3.2	0.0	3.5	0.0	0.0	12.3
Cycle Q Clear(g_c), s	11.0	0.0	0.3	1.1	0.0	0.0	3.2	0.0	3.5	0.0	0.0	12.3
Prop In Lane	1.00		1.00	0.11		0.04	1.00		0.03	1.00		0.42
Lane Grp Cap(c), veh/h	319	0	255	335	0	0	697	0	1319	852	0	1042
V/C Ratio(X)	0.61	0.00	0.03	0.08	0.00	0.00	0.30	0.00	0.16	0.00	0.00	0.58
Avail Cap(c_a), veh/h	467	0	409	513	0	0	704	0	1319	1050	0	1042
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.71	0.00	0.71
Uniform Delay (d), s/veh	36.6	0.0	31.8	32.2	0.0	0.0	5.2	0.0	4.7	7.3	0.0	5.4
Incr Delay (d2), s/veh	2.7	0.0	0.1	0.2	0.0	0.0	0.3	0.0	0.3	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	4.3	0.0	0.1	0.5	0.0	0.0	1.0	0.0	1.2	0.0	0.0	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	39.3	0.0	31.9	32.4	0.0	0.0	5.6	0.0	4.9	7.3	0.0	7.1
LnGrp LOS	D		C	C			A		A	A		A
Approach Vol, veh/h		202			28			426			606	
Approach Delay, s/veh		39.1			32.4			5.2			7.1	
Approach LOS		D			C			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.4	57.1		18.5	4.7	66.8		18.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	10.3	43.5		22.7	10.1	43.7		22.7				
Max Q Clear Time (g_c+I1), s	5.2	14.3		3.1	2.0	5.5		13.0				
Green Ext Time (p_c), s	0.6	8.6		0.1	0.0	2.5		0.9				

Intersection Summary	
HCM 7th Control Delay, s/veh	12.1
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

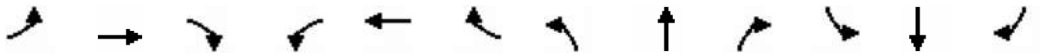
Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	13	223	41	7	135	0	30	0	5	0	0	10
Future Vol, veh/h	13	223	41	7	135	0	30	0	5	0	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	15	262	48	8	159	0	35	0	6	0	0	12

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	159	0	0	311	0	0	494	492	286	468	516	161
Stage 1	-	-	-	-	-	-	317	317	-	175	175	-
Stage 2	-	-	-	-	-	-	177	175	-	293	341	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1433	-	-	1261	-	-	489	480	757	508	466	889
Stage 1	-	-	-	-	-	-	698	658	-	831	758	-
Stage 2	-	-	-	-	-	-	829	758	-	720	642	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1433	-	-	1261	-	-	472	471	757	494	456	888
Mov Cap-2 Maneuver	-	-	-	-	-	-	472	471	-	494	456	-
Stage 1	-	-	-	-	-	-	689	649	-	825	752	-
Stage 2	-	-	-	-	-	-	811	752	-	705	634	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.35	0.39	12.87	9.11
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	498	82	-	-	89	-	-	888
HCM Lane V/C Ratio	0.083	0.011	-	-	0.007	-	-	0.013
HCM Ctrl Dly (s/v)	12.9	7.5	0	-	7.9	0	-	9.1
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	123	188	52	103	208	124	338	51	274	621	72
Future Volume (veh/h)	65	123	188	52	103	208	124	338	51	274	621	72
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	1900	1870	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	69	131	149	55	110	32	132	360	50	291	661	34
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	2	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	122	164	187	113	381	319	187	569	79	360	844	715
Arrive On Green	0.07	0.21	0.19	0.06	0.20	0.20	0.10	0.35	0.34	0.20	0.44	0.44
Sat Flow, veh/h	1810	797	907	1810	1900	1587	1810	1632	227	1810	1900	1610
Grp Volume(v), veh/h	69	0	280	55	110	32	132	0	410	291	661	34
Grp Sat Flow(s),veh/h/ln	1810	0	1704	1810	1900	1587	1810	0	1859	1810	1900	1610
Q Serve(g_s), s	3.2	0.0	13.6	2.6	4.3	1.4	6.1	0.0	16.0	13.3	25.7	0.7
Cycle Q Clear(g_c), s	3.2	0.0	13.6	2.6	4.3	1.4	6.1	0.0	16.0	13.3	25.7	0.7
Prop In Lane	1.00		0.53	1.00		1.00	1.00		0.12	1.00		1.00
Lane Grp Cap(c), veh/h	122	0	351	113	381	319	187	0	648	360	844	715
V/C Ratio(X)	0.56	0.00	0.80	0.49	0.29	0.10	0.71	0.00	0.63	0.81	0.78	0.05
Avail Cap(c_a), veh/h	208	0	550	146	547	457	292	0	921	542	1204	1020
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	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.2	0.0	33.0	39.4	29.4	28.3	37.6	0.0	23.7	33.2	20.6	6.2
Incr Delay (d2), s/veh	4.0	0.0	4.4	3.2	0.4	0.1	4.8	0.0	1.0	5.4	2.2	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	1.5	0.0	5.9	1.2	2.0	0.5	2.8	0.0	6.6	6.2	10.9	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	43.3	0.0	37.4	42.6	29.8	28.4	42.5	0.0	24.7	38.6	22.8	6.2
LnGrp LOS	D		D	D	C	C	D		C	D	C	A
Approach Vol, veh/h		349			197			542			986	
Approach Delay, s/veh		38.6			33.2			29.1			26.9	
Approach LOS		D			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.3	34.2	9.4	21.9	13.0	42.5	9.9	21.4
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	25.0	42.0	6.0	27.0	13.0	54.0	9.0	24.0
Max Q Clear Time (g_c+I1), s	15.3	18.0	4.6	15.6	8.1	27.7	5.2	6.3
Green Ext Time (p_c), s	1.0	6.6	0.0	1.1	0.2	9.8	0.1	0.5

Intersection Summary	
HCM 7th Control Delay, s/veh	30.0
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.



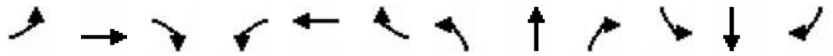
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	449	158	126	1774	2176	798
Future Volume (veh/h)	449	158	126	1774	2176	798
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1885
Adj Flow Rate, veh/h	473	162	133	1867	2291	800
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	1
Cap, veh/h	587	423	173	2766	2300	1285
Arrive On Green	0.17	0.17	0.10	0.77	1.00	1.00
Sat Flow, veh/h	3510	1610	1810	3705	3705	1598
Grp Volume(v), veh/h	473	162	133	1867	2291	800
Grp Sat Flow(s),veh/h/ln	1755	1610	1810	1805	1805	1598
Q Serve(g_s), s	15.6	9.9	8.6	30.0	0.0	0.0
Cycle Q Clear(g_c), s	15.6	9.9	8.6	30.0	0.0	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	587	423	173	2766	2300	1285
V/C Ratio(X)	0.81	0.38	0.77	0.67	1.00	0.62
Avail Cap(c_a), veh/h	673	463	181	2766	2300	1285
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	0.79	0.79	1.00	1.00	0.60	0.60
Uniform Delay (d), s/veh	48.1	36.2	52.9	6.8	0.0	0.0
Incr Delay (d2), s/veh	5.1	0.4	17.2	1.3	13.7	1.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.2	9.4	4.6	7.8	4.4	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	53.2	36.7	70.1	8.1	13.7	1.4
LnGrp LOS	D	D	E	A	B	A
Approach Vol, veh/h	635			2000	3091	
Approach Delay, s/veh	49.0			12.3	10.5	
Approach LOS	D			B	B	

Timer - Assigned Phs	2	4	5	6
Phs Duration (G+Y+Rc), s	95.9	24.1	15.5	80.5
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	88.0	22.0	11.0	72.0
Max Q Clear Time (g_c+I1), s	32.0	17.6	10.6	2.0
Green Ext Time (p_c), s	53.6	1.5	0.0	69.7

Intersection Summary	
HCM 7th Control Delay, s/veh	15.4
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.



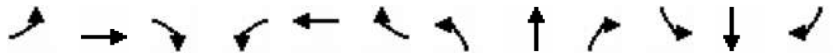
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	161	0	0	480	0	2032	192	0	2696	617
Future Volume (veh/h)	0	0	161	0	0	480	0	2032	192	0	2696	617
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	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	0	1900	1900	0	1900	1900	0	1900	1885	0	1900	1900
Adj Flow Rate, veh/h	0	0	153	0	0	482	0	2117	0	0	2808	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, %	0	0	0	0	0	0	0	0	1	0	0	0
Cap, veh/h	0	404	595	0	404	603	0	3738		0	3738	
Arrive On Green	0.00	0.00	0.21	0.00	0.00	0.21	0.00	1.00	0.00	0.00	0.72	0.00
Sat Flow, veh/h	0	1900	2797	0	1900	2834	0	5358	1598	0	5358	1610
Grp Volume(v), veh/h	0	0	153	0	0	482	0	2117	0	0	2808	0
Grp Sat Flow(s),veh/h/ln	0	1900	1398	0	1900	1417	0	1729	1598	0	1729	1610
Q Serve(g_s), s	0.0	0.0	5.5	0.0	0.0	19.4	0.0	0.0	0.0	0.0	39.6	0.0
Cycle Q Clear(g_c), s	0.0	0.0	5.5	0.0	0.0	19.4	0.0	0.0	0.0	0.0	39.6	0.0
Prop In Lane	0.00		1.00	0.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	0	404	595	0	404	603	0	3738		0	3738	
V/C Ratio(X)	0.00	0.00	0.26	0.00	0.00	0.80	0.00	0.57		0.00	0.75	
Avail Cap(c_a), veh/h	0	538	792	0	538	803	0	3738		0	3738	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.65	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	39.3	0.0	0.0	44.8	0.0	0.0	0.0	0.0	10.2	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.3	0.0	0.0	5.0	0.0	0.4	0.0	0.0	1.4	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(50%),veh/ln	0.0	0.0	1.9	0.0	0.0	7.2	0.0	0.1	0.0	0.0	12.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	39.7	0.0	0.0	49.8	0.0	0.4	0.0	0.0	11.7	0.0
LnGrp LOS			D			D		A			B	
Approach Vol, veh/h		153			482			2117			2808	
Approach Delay, s/veh		39.7			49.8			0.4			11.7	
Approach LOS		D			D			A			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	90.5	29.5	90.5	29.5
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	77.0	33.0	77.0	33.0
Max Q Clear Time (g_c+I1), s	41.6	21.4	2.0	7.5
Green Ext Time (p_c), s	35.3	3.2	73.6	1.2

Intersection Summary	
HCM 7th Control Delay, s/veh	11.5
HCM 7th LOS	B

Notes

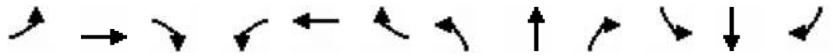
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	2	4	250	1	36	5	251	309	37	370	2
Future Volume (veh/h)	3	2	4	250	1	36	5	251	309	37	370	2
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		0.98	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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	3	2	1	272	1	7	5	273	208	40	402	2
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	216	138	59	408	43	302	736	1311	1088	658	1303	6
Arrive On Green	0.21	0.21	0.21	0.21	0.21	0.21	0.23	0.23	0.23	0.69	0.69	0.69
Sat Flow, veh/h	744	658	280	1559	205	1436	1082	1900	1576	1008	1889	9
Grp Volume(v), veh/h	6	0	0	272	0	8	5	273	208	40	0	404
Grp Sat Flow(s),veh/h/ln	1683	0	0	1559	0	1641	1082	1900	1576	1008	0	1898
Q Serve(g_s), s	0.0	0.0	0.0	14.7	0.0	0.3	0.3	10.5	9.6	1.6	0.0	7.5
Cycle Q Clear(g_c), s	0.2	0.0	0.0	15.0	0.0	0.3	7.9	10.5	9.6	12.1	0.0	7.5
Prop In Lane	0.50		0.17	1.00		0.88	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	413	0	0	408	0	345	736	1311	1088	658	0	1310
V/C Ratio(X)	0.01	0.00	0.00	0.67	0.00	0.02	0.01	0.21	0.19	0.06	0.00	0.31
Avail Cap(c_a), veh/h	794	0	0	765	0	720	736	1311	1088	658	0	1310
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	0.88	0.88	0.88	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.2	0.0	0.0	34.0	0.0	28.2	16.8	14.8	14.5	8.5	0.0	5.5
Incr Delay (d2), s/veh	0.0	0.0	0.0	2.7	0.0	0.0	0.0	0.3	0.3	0.2	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(50%),veh/ln	0.1	0.0	0.0	5.8	0.0	0.1	0.1	5.4	4.0	0.4	0.0	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	28.2	0.0	0.0	36.7	0.0	28.3	16.9	15.1	14.8	8.7	0.0	6.1
LnGrp LOS	C			D		C	B	B	B	A		A
Approach Vol, veh/h		6			280			486			444	
Approach Delay, s/veh		28.2			36.4			15.0			6.3	
Approach LOS		C			D			B			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	66.6	23.4	66.6	23.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	41.5	39.5	41.5	39.5
Max Q Clear Time (g_c+I1), s	14.1	17.0	12.5	2.2
Green Ext Time (p_c), s	5.5	1.9	6.2	0.0

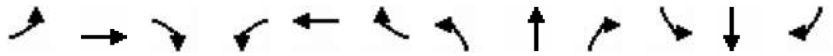
Intersection Summary	
HCM 7th Control Delay, s/veh	16.8
HCM 7th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	107	26	43	20	154	45	32	417	39	45	468	121
Future Volume (veh/h)	107	26	43	20	154	45	32	417	39	45	468	121
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	0.99		0.96	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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	113	27	32	21	162	36	34	439	37	47	493	116
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	195	48	40	62	258	54	586	1042	88	840	913	215
Arrive On Green	0.17	0.18	0.17	0.17	0.18	0.17	0.14	1.00	1.00	0.08	0.62	0.61
Sat Flow, veh/h	713	266	224	99	1430	301	1810	1725	145	1810	1480	348
Grp Volume(v), veh/h	172	0	0	219	0	0	34	0	476	47	0	609
Grp Sat Flow(s),veh/h/ln	1203	0	0	1829	0	0	1810	0	1870	1810	0	1828
Q Serve(g_s), s	2.9	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.8	0.0	17.2
Cycle Q Clear(g_c), s	12.9	0.0	0.0	10.0	0.0	0.0	0.5	0.0	0.0	0.8	0.0	17.2
Prop In Lane	0.66		0.19	0.10		0.16	1.00		0.08	1.00		0.19
Lane Grp Cap(c), veh/h	276	0	0	363	0	0	586	0	1130	840	0	1128
V/C Ratio(X)	0.62	0.00	0.00	0.60	0.00	0.00	0.06	0.00	0.42	0.06	0.00	0.54
Avail Cap(c_a), veh/h	320	0	0	418	0	0	674	0	1130	905	0	1128
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.87	0.00	0.87	0.86	0.00	0.86
Uniform Delay (d), s/veh	35.8	0.0	0.0	34.4	0.0	0.0	5.9	0.0	0.0	4.5	0.0	9.9
Incr Delay (d2), s/veh	3.8	0.0	0.0	2.5	0.0	0.0	0.1	0.0	1.0	0.0	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	3.9	0.0	0.0	4.7	0.0	0.0	0.2	0.0	0.3	0.2	0.0	6.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	39.6	0.0	0.0	36.9	0.0	0.0	6.0	0.0	1.0	4.6	0.0	11.5
LnGrp LOS	D			D			A		A	A		B
Approach Vol, veh/h		172			219			510			656	
Approach Delay, s/veh		39.6			36.9			1.3			11.0	
Approach LOS		D			D			A			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.2	59.5		20.2	11.4	58.4		20.2
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	10.1	47.9		18.5	10.1	47.9		18.5
Max Q Clear Time (g_c+I1), s	12.9	19.2		12.0	2.8	2.0		14.9
Green Ext Time (p_c), s	0.1	8.4		0.7	0.1	6.8		0.3

Intersection Summary		
HCM 7th Control Delay, s/veh	14.6	
HCM 7th LOS	B	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	267	0	174	12	48	7	157	252	13	5	392	128
Future Volume (veh/h)	267	0	174	12	48	7	157	252	13	5	392	128
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)	0.96		0.95	0.96		0.95	1.00		0.97	0.98		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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	293	0	48	13	53	4	173	277	12	5	431	123
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	379	0	320	88	316	22	663	1154	50	751	764	218
Arrive On Green	0.20	0.00	0.21	0.20	0.21	0.20	0.12	0.64	0.63	0.02	0.72	0.71
Sat Flow, veh/h	1423	0	1533	195	1513	104	1810	1805	78	1810	1409	402
Grp Volume(v), veh/h	293	0	48	70	0	0	173	0	289	5	0	554
Grp Sat Flow(s),veh/h/ln	1423	0	1533	1811	0	0	1810	0	1883	1810	0	1811
Q Serve(g_s), s	15.1	0.0	2.3	0.0	0.0	0.0	3.0	0.0	5.9	0.1	0.0	13.0
Cycle Q Clear(g_c), s	17.8	0.0	2.3	2.8	0.0	0.0	3.0	0.0	5.9	0.1	0.0	13.0
Prop In Lane	1.00		1.00	0.19		0.06	1.00		0.04	1.00		0.22
Lane Grp Cap(c), veh/h	379	0	320	416	0	0	663	0	1204	751	0	982
V/C Ratio(X)	0.77	0.00	0.15	0.17	0.00	0.00	0.26	0.00	0.24	0.01	0.00	0.56
Avail Cap(c_a), veh/h	379	0	320	416	0	0	672	0	1204	931	0	982
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.76	0.00	0.76
Uniform Delay (d), s/veh	35.4	0.0	29.1	29.3	0.0	0.0	6.6	0.0	6.9	8.6	0.0	7.6
Incr Delay (d2), s/veh	10.1	0.0	0.3	0.3	0.0	0.0	0.3	0.0	0.5	0.0	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(50%),veh/ln	7.3	0.0	0.9	1.3	0.0	0.0	1.0	0.0	2.3	0.0	0.0	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	45.5	0.0	29.4	29.6	0.0	0.0	6.9	0.0	7.4	8.6	0.0	9.4
LnGrp LOS	D		C	C			A		A	A		A
Approach Vol, veh/h		341			70			462			559	
Approach Delay, s/veh		43.3			29.6			7.2			9.4	
Approach LOS		D			C			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.4	52.8		22.8	5.7	61.5		22.8				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	10.3	47.9		18.3	10.1	48.1		18.3				
Max Q Clear Time (g_c+I1), s	5.0	15.0		4.8	2.1	7.9		19.8				
Green Ext Time (p_c), s	0.4	7.9		0.3	0.0	3.6		0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	17.7
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	431	148	150	1685	2110	780
Future Volume (veh/h)	431	148	150	1685	2110	780
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	440	145	153	1719	2153	754
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	545	423	194	2809	2301	1255
Arrive On Green	0.16	0.16	0.11	0.78	1.00	1.00
Sat Flow, veh/h	3510	1610	1810	3705	3705	1576
Grp Volume(v), veh/h	440	145	153	1719	2153	754
Grp Sat Flow(s),veh/h/ln	1755	1610	1810	1805	1805	1576
Q Serve(g_s), s	14.5	8.8	9.9	24.2	0.0	0.0
Cycle Q Clear(g_c), s	14.5	8.8	9.9	24.2	0.0	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	545	423	194	2809	2301	1255
V/C Ratio(X)	0.81	0.34	0.79	0.61	0.94	0.60
Avail Cap(c_a), veh/h	614	455	211	2809	2301	1255
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	0.76	0.76	1.00	1.00	0.60	0.60
Uniform Delay (d), s/veh	48.9	35.8	52.2	5.6	0.0	0.0
Incr Delay (d2), s/veh	5.5	0.4	16.7	1.0	5.7	1.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	8.4	5.2	6.0	1.8	0.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	54.4	36.2	68.9	6.7	5.7	1.3
LnGrp LOS	D	D	E	A	A	A
Approach Vol, veh/h	585			1872	2907	
Approach Delay, s/veh	49.9			11.7	4.6	
Approach LOS	D			B	A	

Timer - Assigned Phs	2		4	5	6
Phs Duration (G+Y+Rc), s	97.4		22.6	16.9	80.5
Change Period (Y+Rc), s	5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s	90.0		20.0	13.0	72.0
Max Q Clear Time (g_c+I1), s	26.2		16.5	11.9	2.0
Green Ext Time (p_c), s	59.0		1.1	0.1	69.5

Intersection Summary	
HCM 7th Control Delay, s/veh	12.0
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

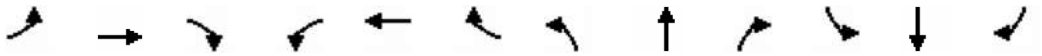
Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	111	14	3	247	1	48	0	3	1	0	12
Future Vol, veh/h	5	111	14	3	247	1	48	0	3	1	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	6	129	16	3	287	1	56	0	3	1	0	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	288	0	0	145	0	0	443	444	138	436	452	288
Stage 1	-	-	-	-	-	-	149	149	-	295	295	-
Stage 2	-	-	-	-	-	-	294	295	-	142	157	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1285	-	-	1449	-	-	528	511	915	534	506	756
Stage 1	-	-	-	-	-	-	859	778	-	718	673	-
Stage 2	-	-	-	-	-	-	718	672	-	866	772	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1285	-	-	1449	-	-	515	507	915	527	502	756
Mov Cap-2 Maneuver	-	-	-	-	-	-	515	507	-	527	502	-
Stage 1	-	-	-	-	-	-	854	774	-	716	671	-
Stage 2	-	-	-	-	-	-	703	670	-	858	768	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.3	0.09	12.68	10.02
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	528	68	-	-	21	-	-	732
HCM Lane V/C Ratio	0.112	0.005	-	-	0.002	-	-	0.021
HCM Ctrl Dly (s/v)	12.7	7.8	0	-	7.5	0	-	10
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0.1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	129	57	84	237	441	205	397	73	180	308	69
Future Volume (veh/h)	57	129	57	84	237	441	205	397	73	180	308	69
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		0.99
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	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	62	140	46	91	258	174	223	432	74	196	335	34
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	126	211	69	212	384	324	487	594	102	266	484	408
Arrive On Green	0.07	0.15	0.14	0.12	0.20	0.20	0.27	0.38	0.36	0.15	0.25	0.25
Sat Flow, veh/h	1810	1366	449	1810	1900	1605	1810	1574	270	1810	1900	1601
Grp Volume(v), veh/h	62	0	186	91	258	174	223	0	506	196	335	34
Grp Sat Flow(s),veh/h/ln	1810	0	1815	1810	1900	1605	1810	0	1843	1810	1900	1601
Q Serve(g_s), s	2.6	0.0	7.6	3.7	9.8	7.6	8.0	0.0	18.5	8.1	12.5	0.9
Cycle Q Clear(g_c), s	2.6	0.0	7.6	3.7	9.8	7.6	8.0	0.0	18.5	8.1	12.5	0.9
Prop In Lane	1.00		0.25	1.00		1.00	1.00		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	126	0	280	212	384	324	487	0	695	266	484	408
V/C Ratio(X)	0.49	0.00	0.66	0.43	0.67	0.54	0.46	0.00	0.73	0.74	0.69	0.08
Avail Cap(c_a), veh/h	162	0	672	277	825	697	554	0	1012	462	946	797
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	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.1	0.0	31.3	32.1	28.9	28.0	23.9	0.0	21.0	32.0	26.4	12.0
Incr Delay (d2), s/veh	3.0	0.0	2.7	1.4	2.0	1.4	0.7	0.0	1.5	4.0	1.8	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	0.0	3.4	1.6	4.5	2.9	3.2	0.0	7.3	3.7	5.6	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	38.1	0.0	34.0	33.5	30.9	29.3	24.5	0.0	22.5	35.9	28.2	12.1
LnGrp LOS	D		C	C	C	C	C		C	D	C	B
Approach Vol, veh/h		248			523			729			565	
Approach Delay, s/veh		35.0			30.8			23.1			29.9	
Approach LOS		D			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.5	33.5	13.2	16.1	25.1	24.0	9.4	19.8
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	19.0	42.0	11.0	28.0	23.0	38.0	6.0	33.0
Max Q Clear Time (g_c+I1), s	10.1	20.5	5.7	9.6	10.0	14.5	4.6	11.8
Green Ext Time (p_c), s	0.5	8.0	0.1	0.8	0.8	4.2	0.0	2.2

Intersection Summary	
HCM 7th Control Delay, s/veh	28.4
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.



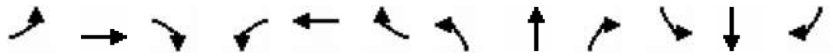
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	664	214	125	1867	1522	451
Future Volume (veh/h)	664	214	125	1867	1522	451
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	692	214	130	1945	1585	415
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	837	536	171	2509	2585	1297
Arrive On Green	0.24	0.24	0.09	0.69	1.00	1.00
Sat Flow, veh/h	3510	1610	1810	3705	4940	1610
Grp Volume(v), veh/h	692	214	130	1945	1585	415
Grp Sat Flow(s),veh/h/ln	1755	1610	1810	1805	1520	1610
Q Serve(g_s), s	22.4	12.3	8.4	42.8	0.0	0.0
Cycle Q Clear(g_c), s	22.4	12.3	8.4	42.8	0.0	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	837	536	171	2509	2585	1297
V/C Ratio(X)	0.83	0.40	0.76	0.78	0.61	0.32
Avail Cap(c_a), veh/h	965	595	211	2509	2585	1297
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	0.57	0.57	1.00	1.00	0.85	0.85
Uniform Delay (d), s/veh	43.3	30.8	53.0	12.1	0.0	0.0
Incr Delay (d2), s/veh	3.1	0.3	11.8	2.4	0.9	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.0	11.9	4.2	13.9	0.2	0.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	46.5	31.0	64.8	14.5	0.9	0.6
LnGrp LOS	D	C	E	B	A	A
Approach Vol, veh/h	906			2075	2000	
Approach Delay, s/veh	42.8			17.7	0.9	
Approach LOS	D			B	A	

Timer - Assigned Phs	2		4	5	6
Phs Duration (G+Y+Rc), s	87.4		32.6	15.4	72.0
Change Period (Y+Rc), s	5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s	78.0		32.0	13.0	60.0
Max Q Clear Time (g_c+I1), s	44.8		24.4	10.4	2.0
Green Ext Time (p_c), s	32.5		3.2	0.1	53.0

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.



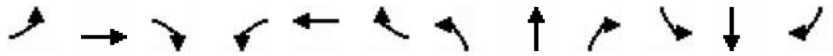
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	164	0	0	545	0	2274	200	0	1822	505
Future Volume (veh/h)	0	0	164	0	0	545	0	2274	200	0	1822	505
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	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	0	1900	1900	0	1900	1900	0	1900	1870	0	1900	1900
Adj Flow Rate, veh/h	0	0	142	0	0	548	0	2344	0	0	1878	0
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	0	0	0	0	0	2	0	0	0
Cap, veh/h	0	451	672	0	451	672	0	3611		0	3611	
Arrive On Green	0.00	0.00	0.24	0.00	0.00	0.24	0.00	1.00	0.00	0.00	0.70	0.00
Sat Flow, veh/h	0	1900	2834	0	1900	2834	0	5358	1585	0	5358	1610
Grp Volume(v), veh/h	0	0	142	0	0	548	0	2344	0	0	1878	0
Grp Sat Flow(s),veh/h/ln	0	1900	1417	0	1900	1417	0	1729	1585	0	1729	1610
Q Serve(g_s), s	0.0	0.0	4.8	0.0	0.0	21.9	0.0	0.0	0.0	0.0	20.7	0.0
Cycle Q Clear(g_c), s	0.0	0.0	4.8	0.0	0.0	21.9	0.0	0.0	0.0	0.0	20.7	0.0
Prop In Lane	0.00		1.00	0.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	0	451	672	0	451	672	0	3611		0	3611	
V/C Ratio(X)	0.00	0.00	0.21	0.00	0.00	0.82	0.00	0.65		0.00	0.52	
Avail Cap(c_a), veh/h	0	570	850	0	570	850	0	3611		0	3611	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.52	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	36.7	0.0	0.0	43.3	0.0	0.0	0.0	0.0	8.7	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.2	0.0	0.0	5.6	0.0	0.5	0.0	0.0	0.5	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(50%),veh/ln	0.0	0.0	1.7	0.0	0.0	8.2	0.0	0.2	0.0	0.0	6.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	37.0	0.0	0.0	48.9	0.0	0.5	0.0	0.0	9.2	0.0
LnGrp LOS			D			D		A			A	
Approach Vol, veh/h		142			548			2344			1878	
Approach Delay, s/veh		37.0			48.9			0.5			9.2	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	87.5	32.5	87.5	32.5
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	75.0	35.0	75.0	35.0
Max Q Clear Time (g_c+I1), s	22.7	23.9	2.0	6.8
Green Ext Time (p_c), s	48.8	3.5	72.4	1.2

Intersection Summary	
HCM 7th Control Delay, s/veh	10.3
HCM 7th LOS	B

Notes

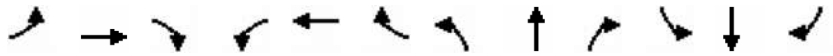
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	2	6	426	1	37	8	249	200	26	557	6
Future Volume (veh/h)	5	2	6	426	1	37	8	249	200	26	557	6
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		0.98	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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	5	2	3	463	1	13	9	271	104	28	605	7
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	315	130	165	604	39	508	398	1071	888	706	1056	12
Arrive On Green	0.34	0.34	0.34	0.34	0.34	0.34	1.00	1.00	1.00	0.56	0.56	0.56
Sat Flow, veh/h	759	387	491	1556	116	1512	893	1900	1576	1111	1874	22
Grp Volume(v), veh/h	10	0	0	463	0	14	9	271	104	28	0	612
Grp Sat Flow(s),veh/h/ln	1637	0	0	1556	0	1628	893	1900	1576	1111	0	1896
Q Serve(g_s), s	0.0	0.0	0.0	24.9	0.0	0.5	0.3	0.0	0.0	1.0	0.0	18.7
Cycle Q Clear(g_c), s	0.3	0.0	0.0	25.2	0.0	0.5	19.1	0.0	0.0	1.0	0.0	18.7
Prop In Lane	0.50		0.30	1.00		0.93	1.00		1.00	1.00		0.01
Lane Grp Cap(c), veh/h	610	0	0	604	0	548	398	1071	888	706	0	1068
V/C Ratio(X)	0.02	0.00	0.00	0.77	0.00	0.03	0.02	0.25	0.12	0.04	0.00	0.57
Avail Cap(c_a), veh/h	813	0	0	799	0	751	398	1071	888	706	0	1068
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	0.92	0.92	0.92	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.9	0.0	0.0	28.2	0.0	20.0	3.5	0.0	0.0	8.8	0.0	12.7
Incr Delay (d2), s/veh	0.0	0.0	0.0	3.9	0.0	0.0	0.1	0.5	0.2	0.1	0.0	2.2
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	0.1	0.0	0.0	9.5	0.0	0.2	0.1	0.2	0.1	0.3	0.0	8.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	19.9	0.0	0.0	32.1	0.0	20.0	3.6	0.5	0.2	8.9	0.0	14.9
LnGrp LOS	B			C		C	A	A	A	A		B
Approach Vol, veh/h		10			477			384			640	
Approach Delay, s/veh		19.9			31.7			0.5			14.6	
Approach LOS		B			C			A			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	55.2	34.8	55.2	34.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	39.5	41.5	39.5	41.5
Max Q Clear Time (g_c+I1), s	20.7	27.2	21.1	2.3
Green Ext Time (p_c), s	7.4	3.1	3.9	0.0

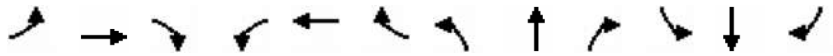
Intersection Summary	
HCM 7th Control Delay, s/veh	16.5
HCM 7th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	63	63	23	12	67	37	23	364	67	76	644	265
Future Volume (veh/h)	63	63	23	12	67	37	23	364	67	76	644	265
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		0.96	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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	68	68	17	13	73	19	25	396	66	83	700	274
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	142	108	24	60	172	41	383	1013	169	920	888	348
Arrive On Green	0.12	0.13	0.12	0.12	0.13	0.12	0.11	1.00	1.00	0.10	0.68	0.68
Sat Flow, veh/h	671	862	192	119	1370	329	1810	1587	265	1810	1299	508
Grp Volume(v), veh/h	153	0	0	105	0	0	25	0	462	83	0	974
Grp Sat Flow(s),veh/h/ln	1724	0	0	1817	0	0	1810	0	1852	1810	0	1808
Q Serve(g_s), s	2.7	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	1.0	0.0	33.3
Cycle Q Clear(g_c), s	7.5	0.0	0.0	4.8	0.0	0.0	0.4	0.0	0.0	1.0	0.0	33.3
Prop In Lane	0.44		0.11	0.12		0.18	1.00		0.14	1.00		0.28
Lane Grp Cap(c), veh/h	265	0	0	263	0	0	383	0	1182	920	0	1236
V/C Ratio(X)	0.58	0.00	0.00	0.40	0.00	0.00	0.07	0.00	0.39	0.09	0.00	0.79
Avail Cap(c_a), veh/h	396	0	0	406	0	0	493	0	1182	947	0	1236
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.84	0.00	0.84	0.62	0.00	0.62
Uniform Delay (d), s/veh	37.7	0.0	0.0	36.6	0.0	0.0	8.6	0.0	0.0	2.7	0.0	9.8
Incr Delay (d2), s/veh	2.8	0.0	0.0	1.4	0.0	0.0	0.1	0.0	0.8	0.0	0.0	3.2
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	3.4	0.0	0.0	2.2	0.0	0.0	0.1	0.0	0.3	0.3	0.0	11.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	40.5	0.0	0.0	38.0	0.0	0.0	8.7	0.0	0.8	2.7	0.0	13.1
LnGrp LOS	D			D			A		A	A		B
Approach Vol, veh/h		153			105			487			1057	
Approach Delay, s/veh		40.5			38.0			1.2			12.2	
Approach LOS		D			D			A			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.1	65.5		15.3	13.2	61.4		15.3				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	10.1	48.3		18.1	10.1	48.3		18.1				
Max Q Clear Time (g_c+I1), s	2.4	35.3		6.8	3.0	2.0		9.5				
Green Ext Time (p_c), s	0.0	9.1		0.4	0.2	6.6		0.6				

Intersection Summary	
HCM 7th Control Delay, s/veh	13.2
HCM 7th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	246	0	56	3	23	4	196	234	6	1	379	292
Future Volume (veh/h)	246	0	56	3	23	4	196	234	6	1	379	292
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	1900	1885	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	270	0	10	3	25	1	215	257	6	1	416	288
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, %	0	1	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	389	0	329	60	358	13	736	1205	28	764	568	393
Arrive On Green	0.20	0.00	0.21	0.20	0.21	0.20	0.12	0.65	0.65	0.02	1.00	1.00
Sat Flow, veh/h	1520	0	1590	76	1730	64	1810	1849	43	1810	1045	724
Grp Volume(v), veh/h	270	0	10	29	0	0	215	0	263	1	0	704
Grp Sat Flow(s),veh/h/ln	1520	0	1590	1870	0	0	1810	0	1892	1810	0	1769
Q Serve(g_s), s	14.2	0.0	0.5	0.0	0.0	0.0	3.9	0.0	5.1	0.0	0.0	0.0
Cycle Q Clear(g_c), s	15.3	0.0	0.5	1.1	0.0	0.0	3.9	0.0	5.1	0.0	0.0	0.0
Prop In Lane	1.00		1.00	0.10		0.03	1.00		0.02	1.00		0.41
Lane Grp Cap(c), veh/h	389	0	329	421	0	0	736	0	1233	764	0	962
V/C Ratio(X)	0.69	0.00	0.03	0.07	0.00	0.00	0.29	0.00	0.21	0.00	0.00	0.73
Avail Cap(c_a), veh/h	467	0	410	515	0	0	743	0	1233	962	0	962
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.50	0.00	0.50
Uniform Delay (d), s/veh	34.7	0.0	28.5	28.8	0.0	0.0	5.2	0.0	6.3	9.0	0.0	0.0
Incr Delay (d2), s/veh	4.2	0.0	0.1	0.1	0.0	0.0	0.3	0.0	0.4	0.0	0.0	2.5
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	6.0	0.0	0.2	0.5	0.0	0.0	1.3	0.0	1.9	0.0	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	38.9	0.0	28.5	28.9	0.0	0.0	5.5	0.0	6.7	9.0	0.0	2.5
LnGrp LOS	D		C	C			A		A	A		A
Approach Vol, veh/h		280			29			478			705	
Approach Delay, s/veh		38.6			28.9			6.2			2.5	
Approach LOS		D			C			A			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.5	52.9		22.6	4.7	62.6		22.6
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	10.0	43.5		22.7	10.1	43.7		22.7
Max Q Clear Time (g_c+I1), s	5.9	2.0		3.1	2.0	7.1		17.3
Green Ext Time (p_c), s	0.5	12.1		0.1	0.0	3.1		0.8

Intersection Summary	
HCM 7th Control Delay, s/veh	11.0
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	664	214	125	1867	1522	451
Future Volume (veh/h)	664	214	125	1867	1522	451
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	692	214	130	1945	1585	415
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	880	430	171	2747	2285	1297
Arrive On Green	0.17	0.17	0.09	0.76	1.00	1.00
Sat Flow, veh/h	5103	1610	1810	3705	3705	1610
Grp Volume(v), veh/h	692	214	130	1945	1585	415
Grp Sat Flow(s),veh/h/ln	1701	1610	1810	1805	1805	1610
Q Serve(g_s), s	15.6	13.5	8.4	33.5	0.0	0.0
Cycle Q Clear(g_c), s	15.6	13.5	8.4	33.5	0.0	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	880	430	171	2747	2285	1297
V/C Ratio(X)	0.79	0.50	0.76	0.71	0.69	0.32
Avail Cap(c_a), veh/h	978	461	196	2747	2285	1297
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	0.57	0.57	1.00	1.00	0.85	0.85
Uniform Delay (d), s/veh	47.5	37.2	53.0	7.4	0.0	0.0
Incr Delay (d2), s/veh	2.3	0.5	14.0	1.6	1.5	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	12.4	4.3	9.0	0.5	0.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	49.8	37.7	67.0	9.0	1.5	0.6
LnGrp LOS	D	D	E	A	A	A
Approach Vol, veh/h	906			2075	2000	
Approach Delay, s/veh	46.9			12.6	1.3	
Approach LOS	D			B	A	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		95.3		24.7	15.3	80.0
Change Period (Y+Rc), s		5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s		88.0		22.0	12.0	71.0
Max Q Clear Time (g_c+I1), s		35.5		17.6	10.4	2.0
Green Ext Time (p_c), s		50.9		2.1	0.1	63.5

Intersection Summary	
HCM 7th Control Delay, s/veh	14.3
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

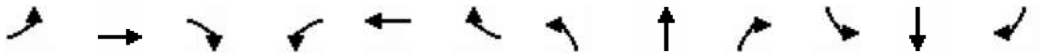
Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	13	275	42	7	182	0	31	0	5	0	0	10
Future Vol, veh/h	13	275	42	7	182	0	31	0	5	0	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	15	324	49	8	214	0	36	0	6	0	0	12

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	214	0	0	373	0	0	611	609	348	585	634	216
Stage 1	-	-	-	-	-	-	379	379	-	231	231	-
Stage 2	-	-	-	-	-	-	233	231	-	354	404	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1368	-	-	1197	-	-	409	412	700	426	399	829
Stage 1	-	-	-	-	-	-	647	618	-	777	717	-
Stage 2	-	-	-	-	-	-	775	717	-	667	603	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1368	-	-	1197	-	-	393	403	700	413	390	827
Mov Cap-2 Maneuver	-	-	-	-	-	-	393	403	-	413	390	-
Stage 1	-	-	-	-	-	-	638	609	-	771	712	-
Stage 2	-	-	-	-	-	-	756	712	-	652	594	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.3	0.3	14.56	9.41
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	419	69	-	-	67	-	-	827
HCM Lane V/C Ratio	0.101	0.011	-	-	0.007	-	-	0.014
HCM Ctrl Dly (s/v)	14.6	7.7	0	-	8	0	-	9.4
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	151	179	211	57	153	277	159	333	56	379	635	136
Future Volume (veh/h)	151	179	211	57	153	277	159	333	56	379	635	136
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	1900	1870	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	161	190	187	61	163	46	169	354	55	403	676	57
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	2	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	211	217	213	104	363	303	217	458	71	459	796	675
Arrive On Green	0.12	0.25	0.24	0.06	0.19	0.19	0.12	0.29	0.28	0.25	0.42	0.42
Sat Flow, veh/h	1810	864	851	1810	1900	1587	1810	1606	249	1810	1900	1610
Grp Volume(v), veh/h	161	0	377	61	163	46	169	0	409	403	676	57
Grp Sat Flow(s),veh/h/ln	1810	0	1715	1810	1900	1587	1810	0	1855	1810	1900	1610
Q Serve(g_s), s	9.0	0.0	22.1	3.4	7.9	2.5	9.5	0.0	21.1	22.3	33.5	1.4
Cycle Q Clear(g_c), s	9.0	0.0	22.1	3.4	7.9	2.5	9.5	0.0	21.1	22.3	33.5	1.4
Prop In Lane	1.00		0.50	1.00		1.00	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	211	0	430	104	363	303	217	0	529	459	796	675
V/C Ratio(X)	0.76	0.00	0.88	0.59	0.45	0.15	0.78	0.00	0.77	0.88	0.85	0.08
Avail Cap(c_a), veh/h	295	0	509	121	382	319	260	0	604	555	928	787
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	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.7	0.0	37.8	48.0	37.3	35.2	44.6	0.0	34.3	37.4	27.4	7.4
Incr Delay (d2), s/veh	7.4	0.0	14.1	5.3	0.9	0.2	11.7	0.0	5.4	13.0	6.7	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	4.4	0.0	10.7	1.7	3.8	1.0	4.8	0.0	9.8	11.3	15.9	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	52.1	0.0	52.0	53.3	38.2	35.4	56.3	0.0	39.7	50.4	34.0	7.4
LnGrp LOS	D		D	D	D	D	E		D	D	C	A
Approach Vol, veh/h		538			270			578			1136	
Approach Delay, s/veh		52.0			41.2			44.6			38.5	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	30.5	33.8	10.0	30.2	16.5	47.7	16.2	24.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	31.0	33.0	6.0	30.0	14.0	50.0	16.0	20.0
Max Q Clear Time (g_c+I1), s	24.3	23.1	5.4	24.1	11.5	35.5	11.0	9.9
Green Ext Time (p_c), s	1.2	3.7	0.0	1.0	0.2	7.2	0.3	0.7

Intersection Summary	
HCM 7th Control Delay, s/veh	43.1
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.



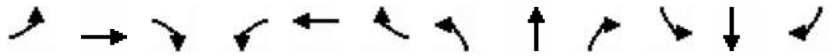
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	559	198	188	1837	2262	934
Future Volume (veh/h)	559	198	188	1837	2262	934
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1885
Adj Flow Rate, veh/h	588	206	198	1934	2381	946
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	1
Cap, veh/h	679	523	238	2671	2622	1228
Arrive On Green	0.19	0.19	0.13	0.74	1.00	1.00
Sat Flow, veh/h	3510	1610	1810	3705	4940	1598
Grp Volume(v), veh/h	588	206	198	1934	2381	946
Grp Sat Flow(s),veh/h/ln	1755	1610	1810	1805	1520	1598
Q Serve(g_s), s	19.5	11.9	12.8	36.0	0.0	69.0
Cycle Q Clear(g_c), s	19.5	11.9	12.8	36.0	0.0	69.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	679	523	238	2671	2622	1228
V/C Ratio(X)	0.87	0.39	0.83	0.72	0.91	0.77
Avail Cap(c_a), veh/h	702	534	241	2671	2622	1228
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	0.64	0.64	1.00	1.00	0.50	0.50
Uniform Delay (d), s/veh	46.9	31.3	50.8	8.7	0.0	0.0
Incr Delay (d2), s/veh	7.3	0.3	21.0	1.7	3.2	2.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.1	11.5	6.9	10.4	0.8	0.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	54.2	31.7	71.8	10.5	3.2	2.4
LnGrp LOS	D	C	E	B	A	A
Approach Vol, veh/h	794			2132	3327	
Approach Delay, s/veh	48.3			16.2	2.9	
Approach LOS	D			B	A	

Timer - Assigned Phs	2		4	5	6
Phs Duration (G+Y+Rc), s	92.8		27.2	19.8	73.0
Change Period (Y+Rc), s	5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s	87.0		23.0	15.0	67.0
Max Q Clear Time (g_c+I1), s	38.0		21.5	14.8	71.0
Green Ext Time (p_c), s	47.5		0.7	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	13.2
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.



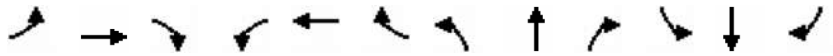
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	188	0	0	684	0	2135	263	0	2839	834
Future Volume (veh/h)	0	0	188	0	0	684	0	2135	263	0	2839	834
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	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	0	1900	1900	0	1900	1900	0	1900	1885	0	1900	1900
Adj Flow Rate, veh/h	0	0	181	0	0	694	0	2224	0	0	2957	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, %	0	0	0	0	0	0	0	0	1	0	0	0
Cap, veh/h	0	475	699	0	475	708	0	3544		0	3544	
Arrive On Green	0.00	0.00	0.25	0.00	0.00	0.25	0.00	1.00	0.00	0.00	0.68	0.00
Sat Flow, veh/h	0	1900	2797	0	1900	2834	0	5358	1598	0	5358	1610
Grp Volume(v), veh/h	0	0	181	0	0	694	0	2224	0	0	2957	0
Grp Sat Flow(s),veh/h/ln	0	1900	1399	0	1900	1417	0	1729	1598	0	1729	1610
Q Serve(g_s), s	0.0	0.0	6.2	0.0	0.0	29.2	0.0	0.0	0.0	0.0	50.4	0.0
Cycle Q Clear(g_c), s	0.0	0.0	6.2	0.0	0.0	29.2	0.0	0.0	0.0	0.0	50.4	0.0
Prop In Lane	0.00		1.00	0.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	0	475	699	0	475	708	0	3544		0	3544	
V/C Ratio(X)	0.00	0.00	0.26	0.00	0.00	0.98	0.00	0.63		0.00	0.83	
Avail Cap(c_a), veh/h	0	475	699	0	475	708	0	3544		0	3544	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.57	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	36.1	0.0	0.0	44.7	0.0	0.0	0.0	0.0	14.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.3	0.0	0.0	28.7	0.0	0.5	0.0	0.0	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(50%),veh/ln	0.0	0.0	2.2	0.0	0.0	13.0	0.0	0.2	0.0	0.0	16.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	36.4	0.0	0.0	73.4	0.0	0.5	0.0	0.0	16.5	0.0
LnGrp LOS			D			E		A			B	
Approach Vol, veh/h		181			694			2224			2957	
Approach Delay, s/veh		36.4			73.4			0.5			16.5	
Approach LOS		D			E			A			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	86.0	34.0	86.0	34.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	81.0	29.0	81.0	29.0
Max Q Clear Time (g_c+I1), s	52.4	31.2	2.0	8.2
Green Ext Time (p_c), s	28.6	0.0	77.9	1.4

Intersection Summary	
HCM 7th Control Delay, s/veh	17.7
HCM 7th LOS	B

Notes

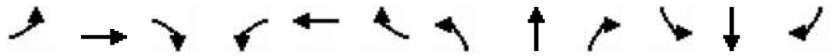
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	3	9	318	3	44	11	355	391	43	472	7
Future Volume (veh/h)	7	3	9	318	3	44	11	355	391	43	472	7
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		0.98	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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	8	3	2	346	3	12	12	386	237	47	513	8
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	310	114	65	485	86	345	570	1217	1010	494	1195	19
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.26	0.21	0.21	0.21	0.64	0.64	0.64
Sat Flow, veh/h	946	438	252	1556	332	1329	971	1900	1576	884	1865	29
Grp Volume(v), veh/h	13	0	0	346	0	15	12	386	237	47	0	521
Grp Sat Flow(s),veh/h/ln	1635	0	0	1556	0	1661	971	1900	1576	884	0	1894
Q Serve(g_s), s	0.0	0.0	0.0	18.5	0.0	0.6	0.9	15.5	11.2	2.7	0.0	12.3
Cycle Q Clear(g_c), s	0.5	0.0	0.0	19.0	0.0	0.6	13.2	15.5	11.2	18.1	0.0	12.3
Prop In Lane	0.62		0.15	1.00		0.80	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	489	0	0	485	0	431	570	1217	1010	494	0	1213
V/C Ratio(X)	0.03	0.00	0.00	0.71	0.00	0.03	0.02	0.32	0.23	0.10	0.00	0.43
Avail Cap(c_a), veh/h	762	0	0	747	0	710	570	1217	1010	494	0	1213
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	0.79	0.79	0.79	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.9	0.0	0.0	31.7	0.0	24.9	23.1	18.8	17.2	13.4	0.0	8.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	2.8	0.0	0.0	0.1	0.5	0.4	0.4	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	0.2	0.0	0.0	7.2	0.0	0.2	0.2	8.0	4.8	0.6	0.0	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	24.9	0.0	0.0	34.4	0.0	25.0	23.2	19.4	17.6	13.8	0.0	9.1
LnGrp LOS	C			C		C	C	B	B	B		A
Approach Vol, veh/h		13			361			635			568	
Approach Delay, s/veh		24.9			34.1			18.8			9.5	
Approach LOS		C			C			B			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	62.2	27.8	62.2	27.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	42.5	38.5	42.5	38.5
Max Q Clear Time (g_c+I1), s	20.1	21.0	17.5	2.5
Green Ext Time (p_c), s	6.9	2.4	8.0	0.0

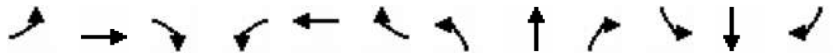
Intersection Summary	
HCM 7th Control Delay, s/veh	19.0
HCM 7th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	122	27	44	21	159	46	33	553	40	49	550	210
Future Volume (veh/h)	122	27	44	21	159	46	33	553	40	49	550	210
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	0.99		0.96	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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	128	28	33	22	167	36	35	582	40	52	579	207
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	214	47	41	64	283	58	426	1023	70	752	795	284
Arrive On Green	0.19	0.20	0.19	0.19	0.20	0.19	0.14	1.00	1.00	0.09	0.60	0.59
Sat Flow, veh/h	743	240	208	100	1436	293	1810	1755	121	1810	1327	475
Grp Volume(v), veh/h	189	0	0	225	0	0	35	0	622	52	0	786
Grp Sat Flow(s),veh/h/ln	1192	0	0	1829	0	0	1810	0	1875	1810	0	1802
Q Serve(g_s), s	4.2	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.9	0.0	28.0
Cycle Q Clear(g_c), s	14.3	0.0	0.0	10.1	0.0	0.0	0.6	0.0	0.0	0.9	0.0	28.0
Prop In Lane	0.68		0.17	0.10		0.16	1.00		0.06	1.00		0.26
Lane Grp Cap(c), veh/h	295	0	0	394	0	0	426	0	1094	752	0	1080
V/C Ratio(X)	0.64	0.00	0.00	0.57	0.00	0.00	0.08	0.00	0.57	0.07	0.00	0.73
Avail Cap(c_a), veh/h	408	0	0	538	0	0	520	0	1094	817	0	1080
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.71	0.00	0.71	0.77	0.00	0.77
Uniform Delay (d), s/veh	35.2	0.0	0.0	33.1	0.0	0.0	8.9	0.0	0.0	5.1	0.0	12.9
Incr Delay (d2), s/veh	3.3	0.0	0.0	1.9	0.0	0.0	0.1	0.0	1.5	0.0	0.0	3.3
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	4.2	0.0	0.0	4.6	0.0	0.0	0.2	0.0	0.5	0.3	0.0	11.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	38.5	0.0	0.0	35.0	0.0	0.0	8.9	0.0	1.5	5.1	0.0	16.2
LnGrp LOS	D			C			A		A	A		B
Approach Vol, veh/h		189			225			657			838	
Approach Delay, s/veh		38.5			35.0			1.9			15.5	
Approach LOS		D			C			A			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.3	57.9		21.7	11.8	56.5		21.7				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	10.5	41.5		24.5	10.5	41.5		24.5				
Max Q Clear Time (g_c+I1), s	2.6	30.0		12.1	2.9	2.0		16.3				
Green Ext Time (p_c), s	0.1	6.7		1.2	0.1	9.5		0.8				

Intersection Summary	
HCM 7th Control Delay, s/veh	15.4
HCM 7th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	376	0	179	12	49	7	162	317	13	5	444	159
Future Volume (veh/h)	376	0	179	12	49	7	162	317	13	5	444	159
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)	0.97		0.97	0.97		0.97	1.00		0.97	0.98		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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	413	0	53	13	54	3	178	348	13	5	488	159
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	520	0	474	117	458	24	433	988	37	593	606	198
Arrive On Green	0.30	0.00	0.30	0.30	0.30	0.30	0.12	0.54	0.54	0.02	0.59	0.59
Sat Flow, veh/h	1444	0	1557	230	1504	78	1810	1817	68	1810	1356	442
Grp Volume(v), veh/h	413	0	53	70	0	0	178	0	361	5	0	647
Grp Sat Flow(s),veh/h/ln	1444	0	1557	1811	0	0	1810	0	1885	1810	0	1798
Q Serve(g_s), s	22.1	0.0	2.2	0.0	0.0	0.0	4.1	0.0	9.7	0.1	0.0	25.2
Cycle Q Clear(g_c), s	24.5	0.0	2.2	2.4	0.0	0.0	4.1	0.0	9.7	0.1	0.0	25.2
Prop In Lane	1.00		1.00	0.19		0.04	1.00		0.04	1.00		0.25
Lane Grp Cap(c), veh/h	520	0	474	588	0	0	433	0	1025	593	0	804
V/C Ratio(X)	0.79	0.00	0.11	0.12	0.00	0.00	0.41	0.00	0.35	0.01	0.00	0.80
Avail Cap(c_a), veh/h	530	0	484	601	0	0	445	0	1025	780	0	804
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.57	0.00	0.57
Uniform Delay (d), s/veh	30.5	0.0	22.6	22.7	0.0	0.0	13.8	0.0	11.6	12.8	0.0	15.3
Incr Delay (d2), s/veh	8.5	0.0	0.1	0.1	0.0	0.0	0.9	0.0	1.0	0.0	0.0	5.0
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	9.6	0.0	0.8	1.1	0.0	0.0	1.6	0.0	4.1	0.1	0.0	9.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	39.0	0.0	22.7	22.8	0.0	0.0	14.7	0.0	12.5	12.8	0.0	20.2
LnGrp LOS	D		C	C			B		B	B		C
Approach Vol, veh/h		466			70			539			652	
Approach Delay, s/veh		37.2			22.8			13.2			20.2	
Approach LOS		D			C			B			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.4	44.2		31.4	5.7	52.9		31.4				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	10.5	38.5		27.5	10.5	38.5		27.5				
Max Q Clear Time (g_c+I1), s	6.1	27.2		4.4	2.1	11.7		26.5				
Green Ext Time (p_c), s	0.4	5.4		0.4	0.0	4.2		0.3				

Intersection Summary	
HCM 7th Control Delay, s/veh	22.7
HCM 7th LOS	C



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	531	181	205	1745	2193	902
Future Volume (veh/h)	531	181	205	1745	2193	902
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	542	182	209	1781	2238	887
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	648	512	241	2703	2655	1215
Arrive On Green	0.18	0.18	0.13	0.75	1.00	1.00
Sat Flow, veh/h	3510	1610	1810	3705	4940	1576
Grp Volume(v), veh/h	542	182	209	1781	2238	887
Grp Sat Flow(s),veh/h/ln	1755	1610	1810	1805	1520	1576
Q Serve(g_s), s	17.9	10.4	13.6	29.4	0.0	0.0
Cycle Q Clear(g_c), s	17.9	10.4	13.6	29.4	0.0	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	648	512	241	2703	2655	1215
V/C Ratio(X)	0.84	0.36	0.87	0.66	0.84	0.73
Avail Cap(c_a), veh/h	702	537	241	2703	2655	1215
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	0.65	0.65	1.00	1.00	0.53	0.53
Uniform Delay (d), s/veh	47.2	31.5	51.0	7.5	0.0	0.0
Incr Delay (d2), s/veh	5.5	0.3	26.5	1.3	1.9	2.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.2	10.2	7.7	8.2	0.5	0.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	52.7	31.7	77.5	8.7	1.9	2.1
LnGrp LOS	D	C	E	A	A	A
Approach Vol, veh/h	724			1990	3125	
Approach Delay, s/veh	47.4			16.0	1.9	
Approach LOS	D			B	A	

Timer - Assigned Phs	2		4	5	6
Phs Duration (G+Y+Rc), s	93.9		26.1	20.0	73.9
Change Period (Y+Rc), s	5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s	87.0		23.0	15.0	67.0
Max Q Clear Time (g_c+I1), s	31.4		19.9	15.6	2.0
Green Ext Time (p_c), s	52.6		1.3	0.0	64.6

Intersection Summary	
HCM 7th Control Delay, s/veh	12.4
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	559	198	188	1837	2262	934
Future Volume (veh/h)	559	198	188	1837	2262	934
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1885
Adj Flow Rate, veh/h	588	202	198	1934	2381	957
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	1
Cap, veh/h	595	376	211	2948	2407	1251
Arrive On Green	0.12	0.12	0.12	0.82	1.00	1.00
Sat Flow, veh/h	5103	1610	1810	3705	3705	1598
Grp Volume(v), veh/h	588	202	198	1934	2381	957
Grp Sat Flow(s),veh/h/ln	1701	1610	1810	1805	1805	1598
Q Serve(g_s), s	13.8	13.2	13.0	25.4	0.0	0.0
Cycle Q Clear(g_c), s	13.8	13.2	13.0	25.4	0.0	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	595	376	211	2948	2407	1251
V/C Ratio(X)	0.99	0.54	0.94	0.66	0.99	0.76
Avail Cap(c_a), veh/h	595	376	211	2948	2407	1251
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	0.64	0.64	1.00	1.00	0.50	0.50
Uniform Delay (d), s/veh	52.9	40.3	52.6	4.3	0.0	0.0
Incr Delay (d2), s/veh	26.4	1.0	44.7	1.2	10.7	2.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.3	12.0	8.3	4.9	3.6	0.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	79.3	41.3	97.3	5.5	10.7	2.3
LnGrp LOS	E	D	F	A	B	A
Approach Vol, veh/h	790			2132	3338	
Approach Delay, s/veh	69.6			14.0	8.3	
Approach LOS	E			B	A	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		102.0		18.0	18.0	84.0
Change Period (Y+Rc), s		5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s		97.0		13.0	13.0	79.0
Max Q Clear Time (g_c+I1), s		27.4		15.8	15.0	2.0
Green Ext Time (p_c), s		66.8		0.0	0.0	76.7

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	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	531	181	205	1745	2193	902
Future Volume (veh/h)	531	181	205	1745	2193	902
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	542	177	209	1781	2238	892
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	595	389	226	2948	2377	1225
Arrive On Green	0.12	0.12	0.13	0.82	1.00	1.00
Sat Flow, veh/h	5103	1610	1810	3705	3705	1576
Grp Volume(v), veh/h	542	177	209	1781	2238	892
Grp Sat Flow(s),veh/h/ln	1701	1610	1810	1805	1805	1576
Q Serve(g_s), s	12.6	11.2	13.7	21.4	0.0	0.0
Cycle Q Clear(g_c), s	12.6	11.2	13.7	21.4	0.0	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	595	389	226	2948	2377	1225
V/C Ratio(X)	0.91	0.45	0.92	0.60	0.94	0.73
Avail Cap(c_a), veh/h	595	389	226	2948	2377	1225
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	0.65	0.65	1.00	1.00	0.53	0.53
Uniform Delay (d), s/veh	52.4	38.8	51.9	4.0	0.0	0.0
Incr Delay (d2), s/veh	13.0	0.5	39.5	0.9	5.4	2.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	10.4	8.4	4.1	1.8	0.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	65.4	39.3	91.5	4.9	5.4	2.0
LnGrp LOS	E	D	F	A	A	A
Approach Vol, veh/h	719			1990	3130	
Approach Delay, s/veh	58.9			14.0	4.4	
Approach LOS	E			B	A	

Timer - Assigned Phs	2		4	5	6
Phs Duration (G+Y+Rc), s	102.0		18.0	19.0	83.0
Change Period (Y+Rc), s	5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s	97.0		13.0	14.0	78.0
Max Q Clear Time (g_c+I1), s	23.4		14.6	15.7	2.0
Green Ext Time (p_c), s	68.4		0.0	0.0	75.7

Intersection Summary	
HCM 7th Control Delay, s/veh	14.4
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	3.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	115	21	8	226	114	25
Future Vol, veh/h	115	21	8	226	114	25
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	134	24	9	263	133	29

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	158	0	427	147
Stage 1	-	-	-	-	146	-
Stage 2	-	-	-	-	281	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1434	-	588	905
Stage 1	-	-	-	-	886	-
Stage 2	-	-	-	-	771	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1434	-	584	904
Mov Cap-2 Maneuver	-	-	-	-	584	-
Stage 1	-	-	-	-	886	-
Stage 2	-	-	-	-	765	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.26	12.78
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	623	-	-	62	-
HCM Lane V/C Ratio	0.259	-	-	0.006	-
HCM Ctrl Dly (s/v)	12.8	-	-	7.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1	-	-	0	-

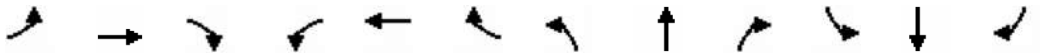
Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	132	21	3	247	1	48	0	3	1	0	12
Future Vol, veh/h	5	132	21	3	247	1	48	0	3	1	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	6	153	24	3	287	1	56	0	3	1	0	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	288	0	0	178	0	0	472	473	167	461	484	288
Stage 1	-	-	-	-	-	-	177	177	-	295	295	-
Stage 2	-	-	-	-	-	-	294	295	-	166	190	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1285	-	-	1410	-	-	506	493	883	514	485	756
Stage 1	-	-	-	-	-	-	829	756	-	718	673	-
Stage 2	-	-	-	-	-	-	718	672	-	841	747	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1285	-	-	1410	-	-	493	489	882	508	482	756
Mov Cap-2 Maneuver	-	-	-	-	-	-	493	489	-	508	482	-
Stage 1	-	-	-	-	-	-	825	752	-	716	671	-
Stage 2	-	-	-	-	-	-	703	670	-	832	743	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.25	0.09	13.06	10.05
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	506	55	-	-	21	-	-	729
HCM Lane V/C Ratio	0.117	0.005	-	-	0.002	-	-	0.021
HCM Ctrl Dly (s/v)	13.1	7.8	0	-	7.6	0	-	10
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0.1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	138	57	88	266	493	205	397	74	197	308	69
Future Volume (veh/h)	57	138	57	88	266	493	205	397	74	197	308	69
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		0.99
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	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	62	150	48	96	289	258	223	432	73	214	335	21
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	120	216	69	243	428	362	493	575	97	279	469	395
Arrive On Green	0.07	0.16	0.15	0.13	0.23	0.23	0.27	0.36	0.35	0.15	0.25	0.25
Sat Flow, veh/h	1810	1377	441	1810	1900	1606	1810	1577	267	1810	1900	1600
Grp Volume(v), veh/h	62	0	198	96	289	258	223	0	505	214	335	21
Grp Sat Flow(s),veh/h/ln	1810	0	1817	1810	1900	1606	1810	0	1844	1810	1900	1600
Q Serve(g_s), s	2.8	0.0	8.7	4.1	11.7	12.5	8.6	0.0	20.3	9.6	13.6	0.6
Cycle Q Clear(g_c), s	2.8	0.0	8.7	4.1	11.7	12.5	8.6	0.0	20.3	9.6	13.6	0.6
Prop In Lane	1.00		0.24	1.00		1.00	1.00		0.14	1.00		1.00
Lane Grp Cap(c), veh/h	120	0	286	243	428	362	493	0	673	279	469	395
V/C Ratio(X)	0.52	0.00	0.69	0.39	0.67	0.71	0.45	0.00	0.75	0.77	0.71	0.05
Avail Cap(c_a), veh/h	150	0	623	257	764	646	514	0	938	428	876	738
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	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.2	0.0	33.8	33.4	29.9	30.2	25.5	0.0	23.6	34.3	29.1	13.9
Incr Delay (d2), s/veh	3.4	0.0	3.0	1.0	1.9	2.6	0.7	0.0	2.2	4.4	2.0	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(50%),veh/ln	1.3	0.0	4.0	1.8	5.4	5.0	3.5	0.0	8.3	4.4	6.2	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	41.6	0.0	36.8	34.5	31.8	32.8	26.2	0.0	25.8	38.7	31.2	13.9
LnGrp LOS	D		D	C	C	C	C		C	D	C	B
Approach Vol, veh/h		260			643			728			570	
Approach Delay, s/veh		38.0			32.6			25.9			33.3	
Approach LOS		D			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.1	34.8	15.4	17.3	27.0	24.9	9.6	23.1
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	19.0	42.0	11.0	28.0	23.0	38.0	6.0	33.0
Max Q Clear Time (g_c+I1), s	11.6	22.3	6.1	10.7	10.6	15.6	4.8	14.5
Green Ext Time (p_c), s	0.5	7.6	0.1	0.8	0.7	4.0	0.0	2.8

Intersection Summary	
HCM 7th Control Delay, s/veh	31.2
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	707	223	128	1867	1522	465
Future Volume (veh/h)	707	223	128	1867	1522	465
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	736	218	133	1945	1585	438
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	871	555	174	2473	2533	1294
Arrive On Green	0.25	0.25	0.10	0.69	1.00	1.00
Sat Flow, veh/h	3510	1610	1810	3705	4940	1610
Grp Volume(v), veh/h	736	218	133	1945	1585	438
Grp Sat Flow(s),veh/h/ln	1755	1610	1810	1805	1520	1610
Q Serve(g_s), s	23.9	12.3	8.6	44.1	0.0	0.0
Cycle Q Clear(g_c), s	23.9	12.3	8.6	44.1	0.0	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	871	555	174	2473	2533	1294
V/C Ratio(X)	0.84	0.39	0.76	0.79	0.63	0.34
Avail Cap(c_a), veh/h	965	598	211	2473	2533	1294
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	0.51	0.51	1.00	1.00	0.85	0.85
Uniform Delay (d), s/veh	42.9	29.8	52.9	12.9	0.0	0.0
Incr Delay (d2), s/veh	3.4	0.2	12.4	2.6	1.0	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.6	12.1	4.4	14.6	0.2	0.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	46.3	30.0	65.3	15.5	1.0	0.6
LnGrp LOS	D	C	E	B	A	A
Approach Vol, veh/h	954			2078	2023	
Approach Delay, s/veh	42.6			18.7	0.9	
Approach LOS	D			B	A	

Timer - Assigned Phs	2	4	5	6
Phs Duration (G+Y+Rc), s	86.2	33.8	15.6	70.7
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	78.0	32.0	13.0	60.0
Max Q Clear Time (g_c+I1), s	46.1	25.9	10.6	2.0
Green Ext Time (p_c), s	31.2	2.8	0.1	53.2

Intersection Summary	
HCM 7th Control Delay, s/veh	16.1
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.



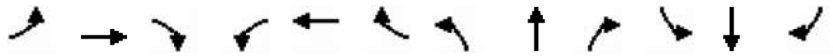
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	164	0	0	545	0	2317	200	0	1836	505
Future Volume (veh/h)	0	0	164	0	0	545	0	2317	200	0	1836	505
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	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	0	1900	1900	0	1900	1900	0	1900	1870	0	1900	1900
Adj Flow Rate, veh/h	0	0	142	0	0	548	0	2389	0	0	1893	0
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	0	0	0	0	0	2	0	0	0
Cap, veh/h	0	451	672	0	451	672	0	3611		0	3611	
Arrive On Green	0.00	0.00	0.24	0.00	0.00	0.24	0.00	1.00	0.00	0.00	0.70	0.00
Sat Flow, veh/h	0	1900	2834	0	1900	2834	0	5358	1585	0	5358	1610
Grp Volume(v), veh/h	0	0	142	0	0	548	0	2389	0	0	1893	0
Grp Sat Flow(s),veh/h/ln	0	1900	1417	0	1900	1417	0	1729	1585	0	1729	1610
Q Serve(g_s), s	0.0	0.0	4.8	0.0	0.0	21.9	0.0	0.0	0.0	0.0	21.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	4.8	0.0	0.0	21.9	0.0	0.0	0.0	0.0	21.0	0.0
Prop In Lane	0.00		1.00	0.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	0	451	672	0	451	672	0	3611		0	3611	
V/C Ratio(X)	0.00	0.00	0.21	0.00	0.00	0.82	0.00	0.66		0.00	0.52	
Avail Cap(c_a), veh/h	0	570	850	0	570	850	0	3611		0	3611	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.50	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	36.7	0.0	0.0	43.3	0.0	0.0	0.0	0.0	8.7	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.2	0.0	0.0	5.6	0.0	0.5	0.0	0.0	0.5	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(50%),veh/ln	0.0	0.0	1.7	0.0	0.0	8.2	0.0	0.2	0.0	0.0	6.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	37.0	0.0	0.0	48.9	0.0	0.5	0.0	0.0	9.3	0.0
LnGrp LOS			D			D		A			A	
Approach Vol, veh/h		142			548			2389			1893	
Approach Delay, s/veh		37.0			48.9			0.5			9.3	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	87.5	32.5	87.5	32.5
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	75.0	35.0	75.0	35.0
Max Q Clear Time (g_c+I1), s	23.0	23.9	2.0	6.8
Green Ext Time (p_c), s	48.7	3.5	72.5	1.2

Intersection Summary	
HCM 7th Control Delay, s/veh	10.2
HCM 7th LOS	B

Notes

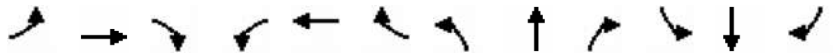
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	2	6	455	1	37	8	249	209	26	557	6
Future Volume (veh/h)	5	2	6	455	1	37	8	249	209	26	557	6
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		0.98	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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	5	2	3	495	1	14	9	271	105	28	605	7
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	331	136	175	635	39	541	372	1034	857	684	1019	12
Arrive On Green	0.36	0.36	0.36	0.36	0.36	0.36	1.00	1.00	1.00	0.54	0.54	0.54
Sat Flow, veh/h	761	383	491	1556	108	1518	893	1900	1576	1110	1874	22
Grp Volume(v), veh/h	10	0	0	495	0	15	9	271	105	28	0	612
Grp Sat Flow(s),veh/h/ln	1635	0	0	1556	0	1627	893	1900	1576	1110	0	1896
Q Serve(g_s), s	0.0	0.0	0.0	26.6	0.0	0.5	0.4	0.0	0.0	1.1	0.0	19.6
Cycle Q Clear(g_c), s	0.3	0.0	0.0	27.0	0.0	0.5	19.9	0.0	0.0	1.1	0.0	19.6
Prop In Lane	0.50		0.30	1.00		0.93	1.00		1.00	1.00		0.01
Lane Grp Cap(c), veh/h	642	0	0	635	0	579	372	1034	857	684	0	1031
V/C Ratio(X)	0.02	0.00	0.00	0.78	0.00	0.03	0.02	0.26	0.12	0.04	0.00	0.59
Avail Cap(c_a), veh/h	813	0	0	799	0	750	372	1034	857	684	0	1031
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	0.91	0.91	0.91	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.8	0.0	0.0	27.3	0.0	18.8	4.0	0.0	0.0	9.6	0.0	13.8
Incr Delay (d2), s/veh	0.0	0.0	0.0	4.5	0.0	0.0	0.1	0.6	0.3	0.1	0.0	2.5
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	0.1	0.0	0.0	10.2	0.0	0.2	0.1	0.2	0.1	0.3	0.0	8.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	18.8	0.0	0.0	31.9	0.0	18.9	4.1	0.6	0.3	9.7	0.0	16.3
LnGrp LOS	B			C		B	A	A	A	A		B
Approach Vol, veh/h		10			510			385			640	
Approach Delay, s/veh		18.8			31.5			0.6			16.0	
Approach LOS		B			C			A			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	53.5	36.5	53.5	36.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	39.5	41.5	39.5	41.5
Max Q Clear Time (g_c+I1), s	21.6	29.0	21.9	2.3
Green Ext Time (p_c), s	7.2	3.1	3.9	0.0

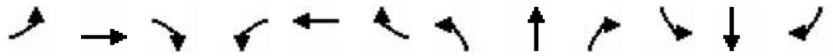
Intersection Summary	
HCM 7th Control Delay, s/veh	17.3
HCM 7th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	63	23	12	67	37	23	371	67	76	670	268
Future Volume (veh/h)	65	63	23	12	67	37	23	371	67	76	670	268
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		0.96	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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	71	68	17	13	73	18	25	403	66	83	728	278
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	146	107	24	60	177	40	358	1013	166	914	893	341
Arrive On Green	0.12	0.13	0.12	0.12	0.13	0.12	0.11	1.00	1.00	0.10	0.68	0.68
Sat Flow, veh/h	690	842	187	120	1386	315	1810	1592	261	1810	1309	500
Grp Volume(v), veh/h	156	0	0	104	0	0	25	0	469	83	0	1006
Grp Sat Flow(s),veh/h/ln	1719	0	0	1820	0	0	1810	0	1853	1810	0	1809
Q Serve(g_s), s	2.9	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	1.0	0.0	35.9
Cycle Q Clear(g_c), s	7.7	0.0	0.0	4.8	0.0	0.0	0.4	0.0	0.0	1.0	0.0	35.9
Prop In Lane	0.46		0.11	0.12		0.17	1.00		0.14	1.00		0.28
Lane Grp Cap(c), veh/h	268	0	0	267	0	0	358	0	1179	914	0	1234
V/C Ratio(X)	0.58	0.00	0.00	0.39	0.00	0.00	0.07	0.00	0.40	0.09	0.00	0.82
Avail Cap(c_a), veh/h	396	0	0	406	0	0	468	0	1179	941	0	1234
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.83	0.00	0.83	0.58	0.00	0.58
Uniform Delay (d), s/veh	37.6	0.0	0.0	36.4	0.0	0.0	9.5	0.0	0.0	2.7	0.0	10.3
Incr Delay (d2), s/veh	2.8	0.0	0.0	1.3	0.0	0.0	0.1	0.0	0.8	0.0	0.0	3.6
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	3.5	0.0	0.0	2.2	0.0	0.0	0.2	0.0	0.3	0.3	0.0	12.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	40.5	0.0	0.0	37.7	0.0	0.0	9.6	0.0	0.8	2.7	0.0	13.9
LnGrp LOS	D			D			A		A	A		B
Approach Vol, veh/h		156			104			494			1089	
Approach Delay, s/veh		40.5			37.7			1.3			13.0	
Approach LOS		D			D			A			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.1	65.4		15.5	13.2	61.3		15.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	10.1	48.3		18.1	10.1	48.3		18.1				
Max Q Clear Time (g_c+I1), s	2.4	37.9		6.8	3.0	2.0		9.7				
Green Ext Time (p_c), s	0.0	7.8		0.4	0.2	6.7		0.6				

Intersection Summary		
HCM 7th Control Delay, s/veh	13.6	
HCM 7th LOS	B	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	248	0	56	3	23	4	196	239	6	1	393	304
Future Volume (veh/h)	248	0	56	3	23	4	196	239	6	1	393	304
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	1900	1885	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	273	0	10	3	25	1	215	263	6	1	432	300
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, %	0	1	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	392	0	332	60	361	13	723	1202	27	758	566	393
Arrive On Green	0.20	0.00	0.21	0.20	0.21	0.20	0.12	0.65	0.64	0.02	1.00	1.00
Sat Flow, veh/h	1520	0	1590	77	1729	64	1810	1850	42	1810	1044	725
Grp Volume(v), veh/h	273	0	10	29	0	0	215	0	269	1	0	732
Grp Sat Flow(s),veh/h/ln	1520	0	1590	1870	0	0	1810	0	1892	1810	0	1769
Q Serve(g_s), s	14.3	0.0	0.5	0.0	0.0	0.0	3.9	0.0	5.2	0.0	0.0	0.0
Cycle Q Clear(g_c), s	15.4	0.0	0.5	1.1	0.0	0.0	3.9	0.0	5.2	0.0	0.0	0.0
Prop In Lane	1.00		1.00	0.10		0.03	1.00		0.02	1.00		0.41
Lane Grp Cap(c), veh/h	392	0	332	424	0	0	723	0	1229	758	0	958
V/C Ratio(X)	0.70	0.00	0.03	0.07	0.00	0.00	0.30	0.00	0.22	0.00	0.00	0.76
Avail Cap(c_a), veh/h	467	0	410	515	0	0	730	0	1229	956	0	958
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.45	0.00	0.45
Uniform Delay (d), s/veh	34.6	0.0	28.4	28.6	0.0	0.0	5.3	0.0	6.4	9.0	0.0	0.0
Incr Delay (d2), s/veh	4.3	0.0	0.1	0.1	0.0	0.0	0.3	0.0	0.4	0.0	0.0	2.7
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	6.1	0.0	0.2	0.5	0.0	0.0	1.3	0.0	2.0	0.0	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	39.0	0.0	28.4	28.7	0.0	0.0	5.6	0.0	6.8	9.0	0.0	2.7
LnGrp LOS	D		C	C			A		A	A		A
Approach Vol, veh/h		283			29			484			733	
Approach Delay, s/veh		38.6			28.7			6.3			2.7	
Approach LOS		D			C			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.5	52.8		22.8	4.7	62.5		22.8				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	10.0	43.5		22.7	10.1	43.7		22.7				
Max Q Clear Time (g_c+I1), s	5.9	2.0		3.1	2.0	7.2		17.4				
Green Ext Time (p_c), s	0.5	12.8		0.1	0.0	3.2		0.8				

Intersection Summary	
HCM 7th Control Delay, s/veh	11.0
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	707	223	128	1867	1522	465
Future Volume (veh/h)	707	223	128	1867	1522	465
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	736	223	133	1945	1585	429
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	927	447	174	2714	2246	1294
Arrive On Green	0.18	0.18	0.10	0.75	1.00	1.00
Sat Flow, veh/h	5103	1610	1810	3705	3705	1610
Grp Volume(v), veh/h	736	223	133	1945	1585	429
Grp Sat Flow(s),veh/h/ln	1701	1610	1810	1805	1805	1610
Q Serve(g_s), s	16.6	13.9	8.6	34.8	0.0	0.0
Cycle Q Clear(g_c), s	16.6	13.9	8.6	34.8	0.0	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	927	447	174	2714	2246	1294
V/C Ratio(X)	0.79	0.50	0.76	0.72	0.71	0.33
Avail Cap(c_a), veh/h	1021	477	196	2714	2246	1294
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	0.51	0.51	1.00	1.00	0.85	0.85
Uniform Delay (d), s/veh	47.0	36.3	52.9	8.0	0.0	0.0
Incr Delay (d2), s/veh	2.1	0.4	14.6	1.7	1.6	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.1	12.9	4.5	9.6	0.5	0.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	49.1	36.8	67.6	9.7	1.6	0.6
LnGrp LOS	D	D	E	A	A	A
Approach Vol, veh/h	959			2078	2014	
Approach Delay, s/veh	46.2			13.4	1.4	
Approach LOS	D			B	A	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		94.2		25.8	15.5	78.7
Change Period (Y+Rc), s		5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s		87.0		23.0	12.0	70.0
Max Q Clear Time (g_c+I1), s		36.8		18.6	10.6	2.0
Green Ext Time (p_c), s		48.7		2.2	0.1	62.7

Intersection Summary	
HCM 7th Control Delay, s/veh	14.8
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	283	77	24	178	62	14
Future Vol, veh/h	283	77	24	178	62	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	333	91	28	209	73	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	424	0	644	378
Stage 1	-	-	-	-	378	-
Stage 2	-	-	-	-	266	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1147	-	440	673
Stage 1	-	-	-	-	697	-
Stage 2	-	-	-	-	783	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1147	-	428	673
Mov Cap-2 Maneuver	-	-	-	-	428	-
Stage 1	-	-	-	-	697	-
Stage 2	-	-	-	-	762	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.98	14.73
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	459	-	-	214	-
HCM Lane V/C Ratio	0.195	-	-	0.025	-
HCM Ctrl Dly (s/v)	14.7	-	-	8.2	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.7	-	-	0.1	-

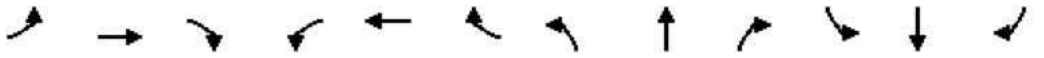
Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	13	352	68	12	228	0	46	0	8	0	0	10
Future Vol, veh/h	13	352	68	12	228	0	46	0	8	0	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	15	414	80	14	268	0	54	0	9	0	0	12

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	268	0	0	494	0	0	783	781	454	741	821	270
Stage 1	-	-	-	-	-	-	485	485	-	296	296	-
Stage 2	-	-	-	-	-	-	298	296	-	445	525	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1307	-	-	1080	-	-	314	329	610	335	312	773
Stage 1	-	-	-	-	-	-	567	555	-	716	672	-
Stage 2	-	-	-	-	-	-	715	672	-	596	533	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1307	-	-	1080	-	-	299	318	610	319	302	772
Mov Cap-2 Maneuver	-	-	-	-	-	-	299	318	-	319	302	-
Stage 1	-	-	-	-	-	-	558	546	-	705	661	-
Stage 2	-	-	-	-	-	-	692	661	-	578	524	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.23	0.42	18.86	9.74
HCM LOS			C	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	323	52	-	-	90	-	-	772
HCM Lane V/C Ratio	0.197	0.012	-	-	0.013	-	-	0.015
HCM Ctrl Dly (s/v)	18.9	7.8	0	-	8.4	0	-	9.7
HCM Lane LOS	C	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.7	0	-	-	0	-	-	0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	151	211	211	60	171	313	159	333	61	439	635	136
Future Volume (veh/h)	151	211	211	60	171	313	159	333	61	439	635	136
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	1900	1870	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	161	224	192	64	182	59	169	354	59	467	676	57
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	2	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	161	239	205	99	425	355	230	423	70	505	795	674
Arrive On Green	0.09	0.26	0.25	0.05	0.22	0.22	0.13	0.27	0.26	0.28	0.42	0.42
Sat Flow, veh/h	1810	929	796	1810	1900	1587	1810	1588	265	1810	1900	1610
Grp Volume(v), veh/h	161	0	416	64	182	59	169	0	413	467	676	57
Grp Sat Flow(s),veh/h/ln	1810	0	1725	1810	1900	1587	1810	0	1852	1810	1900	1610
Q Serve(g_s), s	10.0	0.0	26.6	3.9	9.3	3.4	10.1	0.0	23.7	28.2	36.2	1.7
Cycle Q Clear(g_c), s	10.0	0.0	26.6	3.9	9.3	3.4	10.1	0.0	23.7	28.2	36.2	1.7
Prop In Lane	1.00		0.46	1.00		1.00	1.00		0.14	1.00		1.00
Lane Grp Cap(c), veh/h	161	0	444	99	425	355	230	0	493	505	795	674
V/C Ratio(X)	1.00	0.00	0.94	0.64	0.43	0.17	0.74	0.00	0.84	0.92	0.85	0.08
Avail Cap(c_a), veh/h	161	0	444	128	455	380	230	0	575	514	944	800
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	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.3	0.0	41.2	52.2	37.6	35.3	47.4	0.0	39.1	39.4	29.6	9.5
Incr Delay (d2), s/veh	71.6	0.0	27.5	6.8	0.7	0.2	11.6	0.0	9.3	22.5	6.5	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	7.7	0.0	14.5	2.0	4.4	1.3	5.2	0.0	11.6	15.4	17.2	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	123.0	0.0	68.7	58.9	38.2	35.5	59.0	0.0	48.4	61.9	36.0	9.6
LnGrp LOS	F		E	E	D	D	E		D	E	D	A
Approach Vol, veh/h		577			305			582			1200	
Approach Delay, s/veh		83.8			42.0			51.4			44.8	
Approach LOS		F			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	35.5	34.0	10.2	33.0	18.3	51.2	14.0	29.2
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	31.0	34.0	7.0	28.0	10.0	55.0	9.0	26.0
Max Q Clear Time (g_c+I1), s	30.2	25.7	5.9	28.6	12.1	38.2	12.0	11.3
Green Ext Time (p_c), s	0.2	3.3	0.0	0.0	0.0	8.0	0.0	1.0

Intersection Summary	
HCM 7th Control Delay, s/veh	54.4
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.



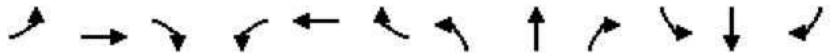
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	589	204	198	1837	2262	984
Future Volume (veh/h)	589	204	198	1837	2262	984
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1885
Adj Flow Rate, veh/h	620	213	208	1934	2381	1002
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	1
Cap, veh/h	697	534	241	2653	2591	1225
Arrive On Green	0.20	0.20	0.13	0.73	1.00	1.00
Sat Flow, veh/h	3510	1610	1810	3705	4940	1598
Grp Volume(v), veh/h	620	213	208	1934	2381	1002
Grp Sat Flow(s),veh/h/ln	1755	1610	1810	1805	1520	1598
Q Serve(g_s), s	20.6	12.2	13.5	36.7	0.0	68.2
Cycle Q Clear(g_c), s	20.6	12.2	13.5	36.7	0.0	68.2
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	697	534	241	2653	2591	1225
V/C Ratio(X)	0.89	0.40	0.86	0.73	0.92	0.82
Avail Cap(c_a), veh/h	702	537	241	2653	2591	1225
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	0.54	0.54	1.00	1.00	0.48	0.48
Uniform Delay (d), s/veh	46.8	30.9	50.9	9.1	0.0	0.0
Incr Delay (d2), s/veh	7.9	0.3	25.8	1.8	3.5	3.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.7	11.9	7.6	10.8	0.8	1.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	54.7	31.1	76.7	10.9	3.5	3.1
LnGrp LOS	D	C	E	B	A	A
Approach Vol, veh/h	833			2142	3383	
Approach Delay, s/veh	48.7			17.3	3.3	
Approach LOS	D			B	A	

Timer - Assigned Phs	2		4	5	6
Phs Duration (G+Y+Rc), s	92.2		27.8	20.0	72.2
Change Period (Y+Rc), s	5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s	87.0		23.0	15.0	67.0
Max Q Clear Time (g_c+I1), s	38.7		22.6	15.5	70.2
Green Ext Time (p_c), s	46.9		0.2	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	14.0
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.



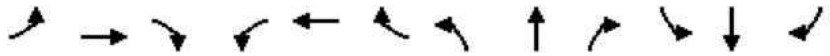
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	188	0	0	684	0	2165	263	0	2889	834
Future Volume (veh/h)	0	0	188	0	0	684	0	2165	263	0	2889	834
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	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	0	1900	1900	0	1900	1900	0	1900	1885	0	1900	1900
Adj Flow Rate, veh/h	0	0	181	0	0	695	0	2255	0	0	3009	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, %	0	0	0	0	0	0	0	0	1	0	0	0
Cap, veh/h	0	475	699	0	475	708	0	3544		0	3544	
Arrive On Green	0.00	0.00	0.25	0.00	0.00	0.25	0.00	1.00	0.00	0.00	0.68	0.00
Sat Flow, veh/h	0	1900	2797	0	1900	2834	0	5358	1598	0	5358	1610
Grp Volume(v), veh/h	0	0	181	0	0	695	0	2255	0	0	3009	0
Grp Sat Flow(s),veh/h/ln	0	1900	1399	0	1900	1417	0	1729	1598	0	1729	1610
Q Serve(g_s), s	0.0	0.0	6.2	0.0	0.0	29.2	0.0	0.0	0.0	0.0	52.5	0.0
Cycle Q Clear(g_c), s	0.0	0.0	6.2	0.0	0.0	29.2	0.0	0.0	0.0	0.0	52.5	0.0
Prop In Lane	0.00		1.00	0.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	0	475	699	0	475	708	0	3544		0	3544	
V/C Ratio(X)	0.00	0.00	0.26	0.00	0.00	0.98	0.00	0.64		0.00	0.85	
Avail Cap(c_a), veh/h	0	475	699	0	475	708	0	3544		0	3544	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.55	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	36.1	0.0	0.0	44.7	0.0	0.0	0.0	0.0	14.3	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.3	0.0	0.0	29.0	0.0	0.5	0.0	0.0	2.7	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	0.0	2.2	0.0	0.0	13.0	0.0	0.2	0.0	0.0	17.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	36.4	0.0	0.0	73.8	0.0	0.5	0.0	0.0	17.1	0.0
LnGrp LOS			D			E		A			B	
Approach Vol, veh/h		181			695			2255			3009	
Approach Delay, s/veh		36.4			73.8			0.5			17.1	
Approach LOS		D			E			A			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	86.0	34.0	86.0	34.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	81.0	29.0	81.0	29.0
Max Q Clear Time (g_c+I1), s	54.5	31.2	2.0	8.2
Green Ext Time (p_c), s	26.5	0.0	78.0	1.4

Intersection Summary	
HCM 7th Control Delay, s/veh	18.0
HCM 7th LOS	B

Notes

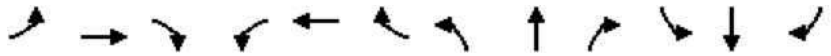
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	3	9	336	3	44	11	355	423	43	472	7
Future Volume (veh/h)	7	3	9	336	3	44	11	355	423	43	472	7
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		0.98	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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	8	3	2	365	3	12	12	386	250	47	513	8
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	322	118	68	504	90	361	553	1194	990	478	1172	18
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.21	0.21	0.21	0.63	0.63	0.63
Sat Flow, veh/h	948	435	252	1556	332	1329	971	1900	1576	873	1865	29
Grp Volume(v), veh/h	13	0	0	365	0	15	12	386	250	47	0	521
Grp Sat Flow(s),veh/h/ln	1635	0	0	1556	0	1661	971	1900	1576	873	0	1894
Q Serve(g_s), s	0.0	0.0	0.0	19.5	0.0	0.6	0.9	15.5	11.9	2.8	0.0	12.7
Cycle Q Clear(g_c), s	0.5	0.0	0.0	20.0	0.0	0.6	13.6	15.5	11.9	18.3	0.0	12.7
Prop In Lane	0.62		0.15	1.00		0.80	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	509	0	0	504	0	451	553	1194	990	478	0	1190
V/C Ratio(X)	0.03	0.00	0.00	0.72	0.00	0.03	0.02	0.32	0.25	0.10	0.00	0.44
Avail Cap(c_a), veh/h	762	0	0	747	0	710	553	1194	990	478	0	1190
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	0.76	0.76	0.76	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.0	0.0	0.0	31.1	0.0	24.1	24.0	19.4	18.0	14.1	0.0	8.6
Incr Delay (d2), s/veh	0.0	0.0	0.0	2.8	0.0	0.0	0.1	0.5	0.5	0.4	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	0.0	0.0	7.6	0.0	0.2	0.3	8.0	5.1	0.6	0.0	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	24.1	0.0	0.0	33.9	0.0	24.1	24.1	20.0	18.5	14.5	0.0	9.8
LnGrp LOS	C			C		C	C	B	B	B		A
Approach Vol, veh/h		13			380			648			568	
Approach Delay, s/veh		24.1			33.5			19.5			10.1	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	61.0	29.0	61.0	29.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	42.5	38.5	42.5	38.5
Max Q Clear Time (g_c+I1), s	20.3	22.0	17.5	2.5
Green Ext Time (p_c), s	6.9	2.5	8.2	0.0

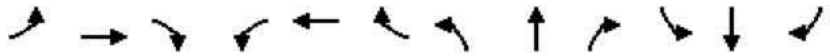
Intersection Summary	
HCM 7th Control Delay, s/veh	19.5
HCM 7th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	27	44	21	159	46	33	577	40	49	567	211
Future Volume (veh/h)	130	27	44	21	159	46	33	577	40	49	567	211
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	0.99		0.96	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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	137	28	34	22	167	36	35	607	40	52	597	208
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	224	45	41	64	293	60	403	1014	67	734	792	276
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	0.14	1.00	1.00	0.09	0.59	0.59
Sat Flow, veh/h	764	221	203	100	1437	293	1810	1760	116	1810	1338	466
Grp Volume(v), veh/h	199	0	0	225	0	0	35	0	647	52	0	805
Grp Sat Flow(s),veh/h/ln	1188	0	0	1829	0	0	1810	0	1876	1810	0	1804
Q Serve(g_s), s	5.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.9	0.0	29.6
Cycle Q Clear(g_c), s	15.1	0.0	0.0	10.1	0.0	0.0	0.6	0.0	0.0	0.9	0.0	29.6
Prop In Lane	0.69		0.17	0.10		0.16	1.00		0.06	1.00		0.26
Lane Grp Cap(c), veh/h	304	0	0	407	0	0	403	0	1081	734	0	1068
V/C Ratio(X)	0.66	0.00	0.00	0.55	0.00	0.00	0.09	0.00	0.60	0.07	0.00	0.75
Avail Cap(c_a), veh/h	406	0	0	538	0	0	497	0	1081	799	0	1068
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.69	0.00	0.69	0.76	0.00	0.76
Uniform Delay (d), s/veh	35.0	0.0	0.0	32.6	0.0	0.0	9.6	0.0	0.0	5.3	0.0	13.6
Incr Delay (d2), s/veh	3.4	0.0	0.0	1.7	0.0	0.0	0.1	0.0	1.7	0.0	0.0	3.8
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	4.5	0.0	0.0	4.6	0.0	0.0	0.2	0.0	0.5	0.3	0.0	11.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	38.4	0.0	0.0	34.2	0.0	0.0	9.7	0.0	1.7	5.3	0.0	17.4
LnGrp LOS	D			C			A		A	A		B
Approach Vol, veh/h		199			225			682			857	
Approach Delay, s/veh		38.4			34.2			2.1			16.6	
Approach LOS		D			C			A			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.3	57.3		22.4	11.8	55.8		22.4
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	10.5	41.5		24.5	10.5	41.5		24.5
Max Q Clear Time (g_c+I1), s	2.6	31.6		12.1	2.9	2.0		17.1
Green Ext Time (p_c), s	0.1	6.1		1.2	0.1	10.1		0.8

Intersection Summary		
HCM 7th Control Delay, s/veh	15.8	
HCM 7th LOS	B	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	384	0	179	12	49	7	162	333	13	5	454	166
Future Volume (veh/h)	384	0	179	12	49	7	162	333	13	5	454	166
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)	0.97		0.97	0.97		0.97	1.00		0.97	0.98		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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	422	0	54	13	54	3	178	366	12	5	499	166
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	526	0	481	119	464	24	410	986	32	573	597	198
Arrive On Green	0.30	0.00	0.31	0.30	0.31	0.30	0.12	0.54	0.53	0.02	0.59	0.58
Sat Flow, veh/h	1445	0	1558	231	1503	78	1810	1827	60	1810	1348	448
Grp Volume(v), veh/h	422	0	54	70	0	0	178	0	378	5	0	665
Grp Sat Flow(s),veh/h/ln	1445	0	1558	1811	0	0	1810	0	1887	1810	0	1796
Q Serve(g_s), s	22.7	0.0	2.2	0.0	0.0	0.0	4.1	0.0	10.4	0.1	0.0	27.0
Cycle Q Clear(g_c), s	25.1	0.0	2.2	2.4	0.0	0.0	4.1	0.0	10.4	0.1	0.0	27.0
Prop In Lane	1.00		1.00	0.19		0.04	1.00		0.03	1.00		0.25
Lane Grp Cap(c), veh/h	526	0	481	596	0	0	410	0	1018	573	0	795
V/C Ratio(X)	0.80	0.00	0.11	0.12	0.00	0.00	0.43	0.00	0.37	0.01	0.00	0.84
Avail Cap(c_a), veh/h	530	0	485	601	0	0	422	0	1018	761	0	795
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.52	0.00	0.52
Uniform Delay (d), s/veh	30.4	0.0	22.3	22.4	0.0	0.0	14.7	0.0	11.9	13.0	0.0	15.9
Incr Delay (d2), s/veh	9.0	0.0	0.1	0.1	0.0	0.0	1.0	0.0	1.0	0.0	0.0	5.6
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	9.9	0.0	0.8	1.1	0.0	0.0	1.6	0.0	4.4	0.1	0.0	9.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	39.4	0.0	22.4	22.5	0.0	0.0	15.7	0.0	13.0	13.0	0.0	21.5
LnGrp LOS	D		C	C			B		B	B		C
Approach Vol, veh/h		476			70			556			670	
Approach Delay, s/veh		37.5			22.5			13.9			21.5	
Approach LOS		D			C			B			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.4	43.8		31.8	5.7	52.6		31.8				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	10.5	38.5		27.5	10.5	38.5		27.5				
Max Q Clear Time (g_c+I1), s	6.1	29.0		4.4	2.1	12.4		27.1				
Green Ext Time (p_c), s	0.4	4.8		0.4	0.0	4.4		0.1				

Intersection Summary	
HCM 7th Control Delay, s/veh	23.4
HCM 7th LOS	C



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	560	187	214	1745	2193	951
Future Volume (veh/h)	560	187	214	1745	2193	951
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	571	188	218	1781	2238	940
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	668	521	241	2683	2629	1215
Arrive On Green	0.19	0.19	0.13	0.74	1.00	1.00
Sat Flow, veh/h	3510	1610	1810	3705	4940	1576
Grp Volume(v), veh/h	571	188	218	1781	2238	940
Grp Sat Flow(s),veh/h/ln	1755	1610	1810	1805	1520	1576
Q Serve(g_s), s	18.9	10.7	14.2	30.0	0.0	69.2
Cycle Q Clear(g_c), s	18.9	10.7	14.2	30.0	0.0	69.2
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	668	521	241	2683	2629	1215
V/C Ratio(X)	0.86	0.36	0.90	0.66	0.85	0.77
Avail Cap(c_a), veh/h	702	537	241	2683	2629	1215
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	0.61	0.61	1.00	1.00	0.51	0.51
Uniform Delay (d), s/veh	47.0	31.1	51.2	7.8	0.0	0.0
Incr Delay (d2), s/veh	6.3	0.3	33.5	1.3	1.9	2.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.7	10.5	8.4	8.5	0.5	0.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	53.2	31.3	84.7	9.1	1.9	2.5
LnGrp LOS	D	C	F	A	A	A
Approach Vol, veh/h	759			1999	3178	
Approach Delay, s/veh	47.8			17.4	2.1	
Approach LOS	D			B	A	

Timer - Assigned Phs	2	4	5	6
Phs Duration (G+Y+Rc), s	93.2	26.8	20.0	73.2
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	87.0	23.0	15.0	67.0
Max Q Clear Time (g_c+I1), s	32.0	20.9	16.2	71.2
Green Ext Time (p_c), s	52.0	1.0	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	13.1
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	589	204	198	1837	2262	984
Future Volume (veh/h)	589	204	198	1837	2262	984
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1885
Adj Flow Rate, veh/h	620	209	208	1934	2381	1013
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	1
Cap, veh/h	595	376	211	2948	2407	1251
Arrive On Green	0.12	0.12	0.12	0.82	1.00	1.00
Sat Flow, veh/h	5103	1610	1810	3705	3705	1598
Grp Volume(v), veh/h	620	209	208	1934	2381	1013
Grp Sat Flow(s),veh/h/ln	1701	1610	1810	1805	1805	1598
Q Serve(g_s), s	14.0	13.7	13.8	25.4	0.0	0.0
Cycle Q Clear(g_c), s	14.0	13.7	13.8	25.4	0.0	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	595	376	211	2948	2407	1251
V/C Ratio(X)	1.04	0.56	0.99	0.66	0.99	0.81
Avail Cap(c_a), veh/h	595	376	211	2948	2407	1251
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	0.57	0.57	1.00	1.00	0.48	0.48
Uniform Delay (d), s/veh	53.0	40.5	52.9	4.3	0.0	0.0
Incr Delay (d2), s/veh	39.2	1.0	57.5	1.2	10.5	2.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.1	12.4	9.3	4.9	3.5	1.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	92.2	41.6	110.4	5.5	10.5	2.8
LnGrp LOS	F	D	F	A	B	A
Approach Vol, veh/h	829			2142	3394	
Approach Delay, s/veh	79.5			15.7	8.2	
Approach LOS	E			B	A	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		102.0		18.0	18.0	84.0
Change Period (Y+Rc), s		5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s		97.0		13.0	13.0	79.0
Max Q Clear Time (g_c+I1), s		27.4		16.0	15.8	2.0
Green Ext Time (p_c), s		66.8		0.0	0.0	76.7

Intersection Summary	
HCM 7th Control Delay, s/veh	20.0
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	560	187	214	1745	2193	951
Future Volume (veh/h)	560	187	214	1745	2193	951
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	571	183	218	1781	2238	946
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	595	389	226	2948	2377	1225
Arrive On Green	0.12	0.12	0.13	0.82	1.00	1.00
Sat Flow, veh/h	5103	1610	1810	3705	3705	1576
Grp Volume(v), veh/h	571	183	218	1781	2238	946
Grp Sat Flow(s),veh/h/ln	1701	1610	1810	1805	1805	1576
Q Serve(g_s), s	13.4	11.7	14.4	21.4	0.0	0.0
Cycle Q Clear(g_c), s	13.4	11.7	14.4	21.4	0.0	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	595	389	226	2948	2377	1225
V/C Ratio(X)	0.96	0.47	0.96	0.60	0.94	0.77
Avail Cap(c_a), veh/h	595	389	226	2948	2377	1225
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	0.61	0.61	1.00	1.00	0.51	0.51
Uniform Delay (d), s/veh	52.7	38.9	52.2	4.0	0.0	0.0
Incr Delay (d2), s/veh	19.6	0.5	49.5	0.9	5.2	2.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	10.8	9.3	4.1	1.7	0.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	72.3	39.5	101.7	4.9	5.2	2.5
LnGrp LOS	E	D	F	A	A	A
Approach Vol, veh/h	754			1999	3184	
Approach Delay, s/veh	64.3			15.5	4.4	
Approach LOS	E			B	A	

Timer - Assigned Phs	2		4	5	6
Phs Duration (G+Y+Rc), s	102.0		18.0	19.0	83.0
Change Period (Y+Rc), s	5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s	97.0		13.0	14.0	78.0
Max Q Clear Time (g_c+I1), s	23.4		15.4	16.4	2.0
Green Ext Time (p_c), s	68.4		0.0	0.0	75.7

Intersection Summary	
HCM 7th Control Delay, s/veh	15.7
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Signalized Intersection V/C Calculation Summary

REDLAND & ABERNATHY/HOLCOMB

2025 Existing AM

	Protected Left-Turn Phasing					Protected Left-Turn Phasing				
Critical Movement:	EBL	EBTR	WBL	WBT	WBR	NBL	NBTR	SBL	SBT	SBR
Adjusted Flow Rate:	33	144	85	197	49	200	498	142	327	17
Saturated Flow:	1810	1820	1810	1900	1605	1810	1844	1810	1900	1601
Flow Ratio:	0.018	0.079	0.047	0.104	0.031	0.110	0.270	0.078	0.172	0.011
			0.126					0.349		

Sum of Critical Flow Ratios:	0.475	Critical Intersection V/C:	0.62
Cycle Length (seconds):	66.7		
Lost Time per phase (seconds)	4		
Number of Phases	4		

2025 Existing PM

	Protected Left-Turn Phasing					Protected Left-Turn Phasing				
Critical Movement:	EBL	EBTR	WBL	WBT	WBR	NBL	NBTR	SBL	SBT	SBR
Adjusted Flow Rate:	69	280	55	110	32	132	410	291	661	34
Saturated Flow:	1810	1704	1810	1900	1587	1810	1859	1810	1900	1610
Flow Ratio:	0.038	0.164	0.030	0.058	0.020	0.073	0.221	0.161	0.348	0.021
			0.195					0.421		

Sum of Critical Flow Ratios:	0.616	Critical Intersection V/C:	0.76
Cycle Length (seconds):	86.6		
Lost Time per phase (seconds)	4		
Number of Phases	4		

2028 Background AM

	Protected Left-Turn Phasing					Protected Left-Turn Phasing				
Critical Movement:	EBL	EBTR	WBL	WBT	WBR	NBL	NBTR	SBL	SBT	SBR
Adjusted Flow Rate:	62	186	91	258	174	223	506	196	335	34
Saturated Flow:	1810	1815	1810	1900	1605	1810	1843	1810	1900	1601
Flow Ratio:	0.034	0.102	0.050	0.136	0.108	0.123	0.275	0.108	0.176	0.021
			0.170					0.383		

Sum of Critical Flow Ratios:	0.553	Critical Intersection V/C:	0.69
Cycle Length (seconds):	78.9		
Lost Time per phase (seconds)	4		
Number of Phases	4		

2028 Background PM

	Protected Left-Turn Phasing					Protected Left-Turn Phasing				
Critical Movement:	EBL	EBTR	WBL	WBT	WBR	NBL	NBTR	SBL	SBT	SBR
Adjusted Flow Rate:	161	377	61	163	46	169	409	403	676	57
Saturated Flow:	1810	1715	1810	1900	1587	1810	1855	1810	1900	1610
Flow Ratio:	0.089	0.220	0.034	0.086	0.029	0.093	0.220	0.223	0.356	0.035
			0.254					0.449		

Sum of Critical Flow Ratios:	0.703	Critical Intersection V/C:	0.83
Cycle Length (seconds):	104.5		
Lost Time per phase (seconds)	4		
Number of Phases	4		

2028 Buildout AM

	Protected Left-Turn Phasing					Protected Left-Turn Phasing				
Critical Movement:	EBL	EBTR	WBL	WBT	WBR	NBL	NBTR	SBL	SBT	SBR
Adjusted Flow Rate:	62	198	96	289	258	223	505	214	335	21
Saturated Flow:	1810	1817	1810	1900	1606	1810	1844	1810	1900	1600
Flow Ratio:	0.034	0.109	0.053	0.152	0.161	0.123	0.274	0.118	0.176	0.013
			0.195					0.392		

Sum of Critical Flow Ratios:	0.587	Critical Intersection V/C:	0.72
Cycle Length (seconds):	84.6		
Lost Time per phase (seconds)	4		
Number of Phases	4		

2028 Buildout PM

	Protected Left-Turn Phasing					Protected Left-Turn Phasing				
Critical Movement:	EBL	EBTR	WBL	WBT	WBR	NBL	NBTR	SBL	SBT	SBR
Adjusted Flow Rate:	161	416	64	182	59	169	413	467	676	57
Saturated Flow:	1810	1725	1810	1900	1587	1810	1852	1810	1900	1610
Critical Movement:	0.089	0.241	0.035	0.096	0.037	0.093	0.223	0.258	0.356	0.035
			0.277					0.481		

Sum of Critical Flow Ratios:	0.758	Critical Intersection V/C:	0.88
Cycle Length (seconds):	112.7		
Lost Time per phase (seconds)	4		
Number of Phases	4		

Signalized Intersection V/C Calculation Summary

OR 213 & REDLAND ROAD

2025 Existing AM	Protected Left-Turn Phasing (w/ Overlap)			Protected Left-Turn Phasing (w/ Overlap)					
Critical Movement:	EBL	EBR+O		NBL	NBT		SBT	SBR+O	
Adjusted Flow Rate:	579	156		99	1874		1529	341	
Saturated Flow:	3510	1610		1810	3705		3705	1610	
Flow Ratio:	0.165	0.042		0.055	0.506		0.413	0.047	
		0.165			0.506				

Sum of Critical Flow Ratios:	0.671	Critical Intersection V/C:	0.72
Cycle Length (seconds):	120		
Lost Time per phase (seconds)	4		
Number of Phases	2		

2028 Background AM	Protected Left-Turn Phasing (w/ Overlap)			Protected Left-Turn Phasing (w/ Overlap)					
Critical Movement:	EBL	EBR+O		NBL	NBT		SBT	SBR+O	
Adjusted Flow Rate:	692	214		130	1945		1585	415	
Saturated Flow:	3510	1610		1810	3705		4940	1610	
Flow Ratio:	0.197	0.061		0.072	0.525		0.321	0.061	
		0.197			0.525				

Sum of Critical Flow Ratios:	0.722	Critical Intersection V/C:	0.77
Cycle Length (seconds):	120		
Lost Time per phase (seconds)	4		
Number of Phases	2		

2028 Buildout AM	Protected Left-Turn Phasing (w/ Overlap)			Protected Left-Turn Phasing (w/ Overlap)					
Critical Movement:	EBL	EBR+O		NBL	NBT		SBT	SBR+O	
Adjusted Flow Rate:	736	218		133	1945		1585	438	
Saturated Flow:	3510	1610		1810	3705		4940	1610	
Flow Ratio:	0.210	0.062		0.073	0.525		0.321	0.062	
		0.210			0.525				

Sum of Critical Flow Ratios:	0.735	Critical Intersection V/C:	0.79
Cycle Length (seconds):	120		
Lost Time per phase (seconds)	4		
Number of Phases	2		

Signalized Intersection V/C Calculation Summary

1st Hour Standard	1.10
2nd Hour Standard	0.99

OR 213 & REDLAND ROAD

2025 Existing PM1

	Protected Left-Turn Phasing (w/ Overlap)			Protected Left-Turn Phasing (w/ Overlap)		
Critical Movement:	EBL	EBR+O	NBL	NBT	SBT	SBR+O
Adjusted Flow Rate:	473	162	133	1867	2291	800
Saturated Flow:	3510	1610	1810	3705	3705	1598
Flow Ratio:	0.135	0.027	0.073	0.504	0.618	0.366
	0.135			0.692		

Sum of Critical Flow Ratios:	0.827	Critical Intersection V/C:	0.92
Cycle Length (seconds):	120		
Lost Time per phase (seconds)	4		
Number of Phases	3		

2025 Existing PM2

	Protected Left-Turn Phasing (w/ Overlap)			Protected Left-Turn Phasing (w/ Overlap)		
Critical Movement:	EBL	EBR+O	NBL	NBT	SBT	SBR+O
Adjusted Flow Rate:	440	145	153	1719	2153	754
Saturated Flow:	3510	1610	1810	3705	3705	1576
Flow Ratio:	0.125	0.006	0.085	0.464	0.581	0.353
	0.125			0.666		

Sum of Critical Flow Ratios:	0.791	Critical Intersection V/C:	0.88
Cycle Length (seconds):	120		
Lost Time per phase (seconds)	4		
Number of Phases	3		

2028 Background PM1

	Protected Left-Turn Phasing (w/ Overlap)			Protected Left-Turn Phasing (w/ Overlap)		
Critical Movement:	EBL	EBR+O	NBL	NBT	SBT	SBR+O
Adjusted Flow Rate:	588	206	198	1934	2381	946
Saturated Flow:	3510	1610	1810	3705	4940	1598
Flow Ratio:	0.168	0.019	0.109	0.522	0.482	0.424
	0.168			0.591		

Sum of Critical Flow Ratios:	0.759	Critical Intersection V/C:	0.84
Cycle Length (seconds):	120		
Lost Time per phase (seconds)	4		
Number of Phases	3		

2028 Background PM2

	Protected Left-Turn Phasing (w/ Overlap)			Protected Left-Turn Phasing (w/ Overlap)		
Critical Movement:	EBL	EBR+O	NBL	NBT	SBT	SBR+O
Adjusted Flow Rate:	542	182	209	1781	2238	887
Saturated Flow:	3510	1610	1810	3705	4940	1576
Critical Movement:	0.154	0.000	0.115	0.481	0.453	0.408
	0.154			0.569		

Sum of Critical Flow Ratios:	0.723	Critical Intersection V/C:	0.80
Cycle Length (seconds):	120		
Lost Time per phase (seconds)	4		
Number of Phases	3		

2028 Buildout PM1

	Protected Left-Turn Phasing (w/ Overlap)			Protected Left-Turn Phasing (w/ Overlap)		
Critical Movement:	EBL	EBR+O	NBL	NBT	SBT	SBR+O
Adjusted Flow Rate:	620	213	208	1934	2381	1002
Saturated Flow:	3510	1610	1810	3705	4940	1598
Flow Ratio:	0.177	0.017	0.115	0.522	0.482	0.450
	0.177			0.597		

Sum of Critical Flow Ratios:	0.774	Critical Intersection V/C:	0.86
Cycle Length (seconds):	120		
Lost Time per phase (seconds)	4		
Number of Phases	3		

2028 Buildout PM2

	Protected Left-Turn Phasing (w/ Overlap)			Protected Left-Turn Phasing (w/ Overlap)		
Critical Movement:	EBL	EBR+O	NBL	NBT	SBT	SBR+O
Adjusted Flow Rate:	571	188	218	1781	2238	940
Saturated Flow:	3510	1610	1810	3705	4940	1576
Critical Movement:	0.163	0.000	0.120	0.481	0.453	0.434
	0.163			0.573		

Sum of Critical Flow Ratios:	0.736	Critical Intersection V/C:	0.82
Cycle Length (seconds):	120		
Lost Time per phase (seconds)	4		
Number of Phases	3		

Signalized Intersection V/C Calculation Summary

1st Hour Standard 1.10
2nd Hour Standard 0.99

OR 213 & REDLAND ROAD - ALTERNATIVE MITIGATION FOR COURTHOUSE - TRIPLE EASTBOUND LEFT

2028 Background AM

	Protected Left-Turn Phasing (w/ Overlap)			Protected Left-Turn Phasing (w/ Overlap)		
Critical Movement:	EBL	EBR+O	NBL	NBT	SBT	SBR+O
Adjusted Flow Rate:	692	214	130	1945	1585	415
Saturated Flow:	5103	1610	1810	3705	3705	1610
Flow Ratio:	0.136	0.061	0.072	0.525	0.428	0.122
	0.136			0.525		

Sum of Critical Flow Ratios: 0.661
Cycle Length (seconds): 120
Lost Time per phase (seconds): 4
Number of Phases 2
Critical Intersection V/C: 0.71

2028 Buildout AM

	Protected Left-Turn Phasing (w/ Overlap)			Protected Left-Turn Phasing (w/ Overlap)		
Critical Movement:	EBL	EBR+O	NBL	NBT	SBT	SBR+O
Adjusted Flow Rate:	736	218	133	1945	1585	438
Saturated Flow:	5103	1610	1810	3705	3705	1610
Flow Ratio:	0.144	0.062	0.073	0.525	0.428	0.128
	0.144			0.525		

Sum of Critical Flow Ratios: 0.669
Cycle Length (seconds): 120
Lost Time per phase (seconds): 4
Number of Phases 2
Critical Intersection V/C: 0.72

2028 Background PM1

	Protected Left-Turn Phasing (w/ Overlap)			Protected Left-Turn Phasing (w/ Overlap)		
Critical Movement:	EBL	EBR+O	NBL	NBT	SBT	SBR+O
Adjusted Flow Rate:	588	202	198	1934	2381	957
Saturated Flow:	5103	1610	1810	3705	3705	1598
Flow Ratio:	0.115	0.016	0.109	0.522	0.643	0.484
	0.115			0.752		

Sum of Critical Flow Ratios: 0.867
Cycle Length (seconds): 120
Lost Time per phase (seconds): 4
Number of Phases 3
Critical Intersection V/C: 0.96

2028 Background PM2

	Protected Left-Turn Phasing (w/ Overlap)			Protected Left-Turn Phasing (w/ Overlap)		
Critical Movement:	EBL	EBR+O	NBL	NBT	SBT	SBR+O
Adjusted Flow Rate:	542	177	209	1781	2238	892
Saturated Flow:	5103	1610	1810	3705	3705	1576
Critical Movement:	0.106	0.000	0.115	0.481	0.604	0.460
	0.106			0.720		

Sum of Critical Flow Ratios: 0.826
Cycle Length (seconds): 120
Lost Time per phase (seconds): 4
Number of Phases 3
Critical Intersection V/C: 0.92

2028 Buildout PM1

	Protected Left-Turn Phasing (w/ Overlap)			Protected Left-Turn Phasing (w/ Overlap)		
Critical Movement:	EBL	EBR+O	NBL	NBT	SBT	SBR+O
Adjusted Flow Rate:	620	209	208	1934	2381	1013
Saturated Flow:	5103	1610	1810	3705	3705	1598
Flow Ratio:	0.121	0.015	0.115	0.522	0.643	0.512
	0.121			0.758		

Sum of Critical Flow Ratios: 0.879
Cycle Length (seconds): 120
Lost Time per phase (seconds): 4
Number of Phases 3
Critical Intersection V/C: 0.98

2028 Buildout PM2

	Protected Left-Turn Phasing (w/ Overlap)			Protected Left-Turn Phasing (w/ Overlap)		
Critical Movement:	EBL	EBR+O	NBL	NBT	SBT	SBR+O
Adjusted Flow Rate:	571	183	218	1781	2238	946
Saturated Flow:	5103	1610	1810	3705	3705	1576
Critical Movement:	0.112	0.000	0.120	0.481	0.604	0.488
	0.112			0.724		

Sum of Critical Flow Ratios: 0.836
Cycle Length (seconds): 120
Lost Time per phase (seconds): 4
Number of Phases 3
Critical Intersection V/C: 0.93

Signalized Intersection V/C Calculation Summary

1st Hour Standard	1.10
2nd Hour Standard	0.99

OR 213 & PRAIRIE SCHOONER WAY /CLACKMAS RIVER DRIVE

2025 Existing AM

	Permitted Left-Turn Phasing		Permitted Left-Turn Phasing					
Critical Movement:	EBR	WBR	NBT	SBT	Sum of Critical Flow Ratios:	0.57	Critical Intersection V/C:	0.62
Adjusted Flow Rate:	119	466	2198	1803	Cycle Length (seconds):	120		
Saturated Flow:	2834	2834	5358	5358	Lost Time per phase (seconds):	4		
Flow Ratio:	0.04	0.16	0.41	0.34	Number of Phases:	2		
	0.16		0.41					

2025 Existing PM

	Permitted Left-Turn Phasing		Permitted Left-Turn Phasing					
Critical Movement:	EBR	WBR	NBT	SBT	Sum of Critical Flow Ratios:	0.69	Critical Intersection V/C:	0.74
Adjusted Flow Rate:	153	482	2117	2808	Cycle Length (seconds):	120		
Saturated Flow:	2797	2834	5358	5358	Lost Time per phase (seconds):	4		
Flow Ratio:	0.05	0.17	0.40	0.52	Number of Phases:	2		
	0.17		0.52					

2028 Background AM

	Permitted Left-Turn Phasing		Permitted Left-Turn Phasing					
Critical Movement:	EBR	WBR	NBT	SBT	Sum of Critical Flow Ratios:	0.63	Critical Intersection V/C:	0.68
Adjusted Flow Rate:	142	548	2344	1878	Cycle Length (seconds):	120		
Saturated Flow:	2834	2834	5358	5358	Lost Time per phase (seconds):	4		
Flow Ratio:	0.05	0.19	0.44	0.35	Number of Phases:	2		
	0.19		0.44					

2028 Background PM

	Permitted Left-Turn Phasing		Permitted Left-Turn Phasing					
Critical Movement:	EBR	WBR	NBT	SBT	Sum of Critical Flow Ratios:	0.80	Critical Intersection V/C:	0.85
Adjusted Flow Rate:	181	694	2224	2957	Cycle Length (seconds):	120		
Saturated Flow:	2797	2834	5358	5358	Lost Time per phase (seconds):	4		
Flow Ratio:	0.06	0.24	0.42	0.55	Number of Phases:	2		
	0.24		0.55					

2028 Buildout AM

	Permitted Left-Turn Phasing		Permitted Left-Turn Phasing					
Critical Movement:	EBR	WBR	NBT	SBT	Sum of Critical Flow Ratios:	0.64	Critical Intersection V/C:	0.68
Adjusted Flow Rate:	142	548	2389	1893	Cycle Length (seconds):	120		
Saturated Flow:	2834	2834	5358	5358	Lost Time per phase (seconds):	4		
Flow Ratio:	0.05	0.19	0.45	0.35	Number of Phases:	2		
	0.19		0.45					

2028 Buildout PM

	Permitted Left-Turn Phasing		Permitted Left-Turn Phasing					
Critical Movement:	EBR	WBR	NBT	SBT	Sum of Critical Flow Ratios:	0.81	Critical Intersection V/C:	0.86
Adjusted Flow Rate:	181	695	2255	3009	Cycle Length (seconds):	120		
Saturated Flow:	2797	2834	5358	5358	Lost Time per phase (seconds):	4		
Critical Movement:	0.06	0.25	0.42	0.56	Number of Phases:	2		
	0.25		0.56					

Notes:

Signalized Intersection V/C Calculation Summary

WASHINGTON STREET & ABERNETHY ROAD/17TH STREET

2025 Existing AM

	Permitted Left-Turn Phasing			Permitted Left-Turn Phasing				
Critical Movement:	EBLTR	WBL	WBTR	NBL	NBT	NBR	SBL	SBTR
Adjusted Flow Rate:	0	386	9	3	190	91	20	512
Saturated Flow:	1900	1810	1610	902	1900	1576	1116	1898
Flow Ratio:	0.00	0.21	0.01	0.00	0.10	0.06	0.02	0.27
		0.21				0.27		

Sum of Critical Flow Ratios:	0.48	Critical Intersection V/C:	0.53
Cycle Length (seconds):	90		
Lost Time per phase (seconds):	4		
Number of Phases:	2		

2025 Existing PM

	Permitted Left-Turn Phasing			Permitted Left-Turn Phasing				
Critical Movement:	EBLTR	WBL	WBTR	NBL	NBT	NBR	SBL	SBTR
Adjusted Flow Rate:	6	272	8	5	273	208	40	404
Saturated Flow:	1616	1436	1641	997	1900	1576	928	1898
Flow Ratio:	0.00	0.19	0.00	0.01	0.14	0.13	0.04	0.21
		0.19				0.21		

Sum of Critical Flow Ratios:	0.40	Critical Intersection V/C:	0.44
Cycle Length (seconds):	90		
Lost Time per phase (seconds):	4		
Number of Phases:	2		

2028 Background AM

	Permitted Left-Turn Phasing			Permitted Left-Turn Phasing				
Critical Movement:	EBLTR	WBL	WBTR	NBL	NBT	NBR	SBL	SBTR
Adjusted Flow Rate:	10	463	14	9	271	104	28	612
Saturated Flow:	1570	1434	1628	823	1900	1576	1024	1896
Flow Ratio:	0.01	0.32	0.01	0.01	0.14	0.07	0.03	0.32
		0.32				0.32		

Sum of Critical Flow Ratios:	0.65	Critical Intersection V/C:	0.71
Cycle Length (seconds):	90		
Lost Time per phase (seconds):	4		
Number of Phases:	2		

2028 Background PM

	Permitted Left-Turn Phasing			Permitted Left-Turn Phasing				
Critical Movement:	EBLTR	WBL	WBTR	NBL	NBT	NBR	SBL	SBTR
Adjusted Flow Rate:	13	346	15	12	386	237	47	521
Saturated Flow:	1554	1434	1661	865	1900	1576	814	1894
Flow Ratio:	0.01	0.24	0.01	0.01	0.20	0.15	0.06	0.28
		0.24				0.28		

Sum of Critical Flow Ratios:	0.52	Critical Intersection V/C:	0.57
Cycle Length (seconds):	90		
Lost Time per phase (seconds):	4		
Number of Phases:	2		

2028 Buildout AM

	Permitted Left-Turn Phasing			Permitted Left-Turn Phasing				
Critical Movement:	EBLTR	WBL	WBTR	NBL	NBT	NBR	SBL	SBTR
Adjusted Flow Rate:	10	495	15	9	271	105	28	612
Saturated Flow:	1569	1434	1627	823	1900	1576	1023	1896
Flow Ratio:	0.01	0.35	0.01	0.01	0.14	0.07	0.03	0.32
		0.35				0.32		

Sum of Critical Flow Ratios:	0.67	Critical Intersection V/C:	0.73
Cycle Length (seconds):	90		
Lost Time per phase (seconds):	4		
Number of Phases:	2		

2028 Buildout PM

	Permitted Left-Turn Phasing			Permitted Left-Turn Phasing				
Critical Movement:	EBLTR	WBL	WBTR	NBL	NBT	NBR	SBL	SBTR
Adjusted Flow Rate:	13	365	15	12	386	250	47	521
Saturated Flow:	1553	1434	1661	895	1900	1576	804	1894
Critical Movement:	0.01	0.25	0.01	0.01	0.20	0.16	0.06	0.28
		0.25				0.28		

Sum of Critical Flow Ratios:	0.53	Critical Intersection V/C:	0.58
Cycle Length (seconds):	90		
Lost Time per phase (seconds):	4		
Number of Phases:	2		

Notes:

Since EB and WB left-turn phases are permitted, critical ring is maximum of any lane group.
Since NB and SB left-turn phases are permitted, critical ring is maximum of any lane group.

Signalized Intersection V/C Calculation Summary

WASHINGTON STREET & 15TH STREET

2025 Existing AM

	Permitted Left-Turn Phasing		Protected Left-Turn Phasing			
Critical Movement:	EBLTR	WBLTR	NBL	NBTR	SBL	SBTR
Adjusted Flow Rate:	141	99	24	339	75	805
Saturated Flow:	1689	1811	1810	1840	1810	1816
Flow Ratio:	0.08	0.05	0.01	0.18	0.04	0.44
	0.08			0.46		

Sum of Critical Flow Ratios:	0.54	Critical Intersection V/C:	0.62
Cycle Length (seconds):	90		
Lost Time per phase (seconds):	4		
Number of Phases:	3		

2025 Existing PM

	Permitted Left-Turn Phasing		Protected Left-Turn Phasing			
Critical Movement:	EBLTR	WBLTR	NBL	NBTR	SBL	SBTR
Adjusted Flow Rate:	172	219	34	476	47	609
Saturated Flow:	1177	1826	1810	1870	1810	1828
Flow Ratio:	0.15	0.12	0.02	0.25	0.03	0.33
	0.15			0.35		

Sum of Critical Flow Ratios:	0.50	Critical Intersection V/C:	0.57
Cycle Length (seconds):	90		
Lost Time per phase (seconds):	4		
Number of Phases:	3		

2028 Background AM

	Permitted Left-Turn Phasing		Protected Left-Turn Phasing			
Critical Movement:	EBLTR	WBLTR	NBL	NBTR	SBL	SBTR
Adjusted Flow Rate:	153	105	25	462	83	974
Saturated Flow:	1686	1811	1810	1852	1810	1808
Flow Ratio:	0.09	0.06	0.01	0.25	0.05	0.54
	0.09			0.55		

Sum of Critical Flow Ratios:	0.64	Critical Intersection V/C:	0.74
Cycle Length (seconds):	90		
Lost Time per phase (seconds):	4		
Number of Phases:	3		

2028 Background PM

	Permitted Left-Turn Phasing		Protected Left-Turn Phasing			
Critical Movement:	EBLTR	WBLTR	NBL	NBTR	SBL	SBTR
Adjusted Flow Rate:	189	225	35	622	52	786
Saturated Flow:	1163	1825	1810	1875	1810	1802
Flow Ratio:	0.16	0.12	0.02	0.33	0.03	0.44
	0.16			0.46		

Sum of Critical Flow Ratios:	0.62	Critical Intersection V/C:	0.71
Cycle Length (seconds):	90		
Lost Time per phase (seconds):	4		
Number of Phases:	3		

2028 Buildout AM

	Permitted Left-Turn Phasing		Protected Left-Turn Phasing			
Critical Movement:	EBLTR	WBLTR	NBL	NBTR	SBL	SBTR
Adjusted Flow Rate:	156	104	25	469	83	1006
Saturated Flow:	1679	1814	1810	1853	1810	1809
Flow Ratio:	0.09	0.06	0.01	0.25	0.05	0.56
	0.09			0.57		

Sum of Critical Flow Ratios:	0.66	Critical Intersection V/C:	0.76
Cycle Length (seconds):	90		
Lost Time per phase (seconds):	4		
Number of Phases:	3		

2028 Buildout PM

	Permitted Left-Turn Phasing		Protected Left-Turn Phasing			
Critical Movement:	EBLTR	WBLTR	NBL	NBTR	SBL	SBTR
Adjusted Flow Rate:	198	225	35	647	52	805
Saturated Flow:	1158	1826	1810	1876	1810	1804
Critical Movement:	0.17	0.12	0.02	0.34	0.03	0.45
	0.17			0.47		

Sum of Critical Flow Ratios:	0.64	Critical Intersection V/C:	0.73
Cycle Length (seconds):	90		
Lost Time per phase (seconds):	4		
Number of Phases:	3		

Notes:

Since EB and WB left-turn phases are permitted, critical ring is maximum of any lane group.

Since NB and SB left-turn phases are protected, critical ring is either NBL+SBT or SBL+NBT

Signalized Intersection V/C Calculation Summary

WASHINGTON STREET & 14TH STREET

2025 Existing AM

	Permitted Left-Turn Phasing			Protected Left-Turn Phasing			
Critical Movement:	EBLT	EBR	WBLTR	NBL	NBTR	SBL	SBTR
Adjusted Flow Rate:	195	7	28	209	217	1	605
Saturated Flow:	1400	1588	1864	1810	1891	1810	1767
Flow Ratio:	0.14	0.00	0.02	0.12	0.11	0.00	0.34
		0.14				0.46	

Sum of Critical Flow Ratios: 0.60 — Critical Intersection V/C: 0.69
Cycle Length (seconds): 90
Lost Time per phase (seconds): 4
Number of Phases: 3

2025 Existing PM

	Permitted Left-Turn Phasing			Protected Left-Turn Phasing			
Critical Movement:	EBLT	EBR	WBLTR	NBL	NBTR	SBL	SBTR
Adjusted Flow Rate:	293	48	70	173	289	5	554
Saturated Flow:	1310	1533	1791	1810	1883	1810	1811
Flow Ratio:	0.22	0.03	0.04	0.10	0.15	0.00	0.31
		0.22				0.40	

Sum of Critical Flow Ratios: 0.63 — Critical Intersection V/C: 0.72
Cycle Length (seconds): 90
Lost Time per phase (seconds): 4
Number of Phases: 3

2028 Background AM

	Permitted Left-Turn Phasing			Protected Left-Turn Phasing			
Critical Movement:	EBLT	EBR	WBLTR	NBL	NBTR	SBL	SBTR
Adjusted Flow Rate:	270	10	29	215	263	1	704
Saturated Flow:	1400	1590	1862	1810	1892	1810	1769
Flow Ratio:	0.19	0.01	0.02	0.12	0.14	0.00	0.40
		0.19				0.52	

Sum of Critical Flow Ratios: 0.71 — Critical Intersection V/C: 0.82
Cycle Length (seconds): 90
Lost Time per phase (seconds): 4
Number of Phases: 3

2028 Background PM

	Permitted Left-Turn Phasing			Protected Left-Turn Phasing			
Critical Movement:	EBLT	EBR	WBLTR	NBL	NBTR	SBL	SBTR
Adjusted Flow Rate:	413	53	70	178	361	5	647
Saturated Flow:	1331	1558	1787	1810	1885	1810	1797
Flow Ratio:	0.31	0.03	0.04	0.10	0.19	0.00	0.36
		0.31				0.46	

Sum of Critical Flow Ratios: 0.77 — Critical Intersection V/C: 0.89
Cycle Length (seconds): 90
Lost Time per phase (seconds): 4
Number of Phases: 3

2028 Buildout AM

	Permitted Left-Turn Phasing			Protected Left-Turn Phasing			
Critical Movement:	EBLT	EBR	WBLTR	NBL	NBTR	SBL	SBTR
Adjusted Flow Rate:	273	10	29	215	269	1	732
Saturated Flow:	1400	1590	1862	1810	1892	1810	1769
Flow Ratio:	0.20	0.01	0.02	0.12	0.14	0.00	0.41
		0.20				0.53	

Sum of Critical Flow Ratios: 0.73 — Critical Intersection V/C: 0.84
Cycle Length (seconds): 90
Lost Time per phase (seconds): 4
Number of Phases: 3

2028 Buildout PM

	Permitted Left-Turn Phasing			Protected Left-Turn Phasing			
Critical Movement:	EBLT	EBR	WBLTR	NBL	NBTR	SBL	SBTR
Adjusted Flow Rate:	422	54	70	178	378	5	665
Saturated Flow:	1331	1558	1787	1810	1887	1810	1796
Critical Movement:	0.32	0.03	0.04	0.10	0.20	0.00	0.37
		0.32				0.47	

Sum of Critical Flow Ratios: 0.79 — Critical Intersection V/C: 0.91
Cycle Length (seconds): 90
Lost Time per phase (seconds): 4
Number of Phases: 3

Notes:

Since EB and WB left-turn phases are permitted, critical ring is maximum of any lane group.

Since NB and SB left-turn phases are protected, critical ring is either NBL+SBT or SBL+NBT

HCM 7 does not appear to be calculating shared lane capacity correctly; therefore, left-through lane is assumed to be all left-turn movements.

Intersection: 2: Winston Dr & Holcomb Blvd

Movement	EB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	24	56	29
Average Queue (ft)	1	26	10
95th Queue (ft)	14	46	32
Link Distance (ft)	1859	320	313
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Abernethy Rd/Holcomb Blvd & Redland Road

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	T	R
Maximum Queue (ft)	115	210	137	353	190	225	476	227	278	39
Average Queue (ft)	45	101	51	137	120	137	246	100	159	9
95th Queue (ft)	96	179	106	278	206	246	421	180	263	26
Link Distance (ft)		986		1232			927		776	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	115		90		90	125		325		255
Storage Blk Time (%)	0	8	4	20	14	6	32		1	
Queuing Penalty (veh)	1	5	29	104	45	28	67		3	

Intersection: 4: OR 213 & Redland Road

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	L	R	L	T	T	T	T	T	R
Maximum Queue (ft)	286	316	296	328	486	456	309	297	274	113
Average Queue (ft)	174	200	97	110	218	213	150	144	111	29
95th Queue (ft)	263	289	217	204	350	337	242	233	208	75
Link Distance (ft)		776	776		540	540	1627	1627	1627	1627
Upstream Blk Time (%)					0					
Queuing Penalty (veh)					0					
Storage Bay Dist (ft)	335			300						
Storage Blk Time (%)		0			2					
Queuing Penalty (veh)		1			2					

Intersection: 5: OR 213 & Prairie Schooner Wy/Clackamas River Dr

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	R	R	R	R	T	T	T	T	T	T	R
Maximum Queue (ft)	115	56	357	306	278	276	232	264	251	241	98
Average Queue (ft)	43	19	205	151	128	106	73	130	108	96	7
95th Queue (ft)	83	45	308	275	230	201	161	224	197	187	45
Link Distance (ft)	366	366	448	448	1627	1627	1627	2374	2374	2374	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)											425
Storage Blk Time (%)											
Queuing Penalty (veh)											

Intersection: 6: Washington St & 17th St/Abernethy Rd

Movement	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	L	TR	L	T	R	L	TR
Maximum Queue (ft)	38	270	399	35	173	75	149	383
Average Queue (ft)	9	187	59	5	55	26	17	165
95th Queue (ft)	33	282	247	23	129	57	85	312
Link Distance (ft)	347		1574		797			1077
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)		170		110		220	125	
Storage Blk Time (%)		13			2			14
Queuing Penalty (veh)		5			5			4

Intersection: 7: Washington St & 15th St

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (ft)	178	144	173	285	204	705
Average Queue (ft)	88	60	23	133	64	304
95th Queue (ft)	152	112	80	260	183	638
Link Distance (ft)	715	467		282		797
Upstream Blk Time (%)				0		0
Queuing Penalty (veh)				2		1
Storage Bay Dist (ft)			105		105	
Storage Blk Time (%)				8	0	24
Queuing Penalty (veh)				2	1	18

Intersection: 8: Washington St & 14th St

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	L	TR	LTR	L	TR	L	TR
Maximum Queue (ft)	267	174	69	186	191	6	298
Average Queue (ft)	150	42	20	88	67	1	220
95th Queue (ft)	238	129	52	158	146	6	353
Link Distance (ft)	694		202		635		282
Upstream Blk Time (%)							4
Queuing Penalty (veh)							29
Storage Bay Dist (ft)		100		105		105	
Storage Blk Time (%)	29			7	2		25
Queuing Penalty (veh)	16			18	3		0

Zone Summary

Zone wide Queuing Penalty: 389

Intersection: 2: Winston Dr & Holcomb Blvd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	61	41	41	33
Average Queue (ft)	3	2	22	4
95th Queue (ft)	24	18	43	22
Link Distance (ft)	1859	911	320	313
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Abernethy Rd/Holcomb Blvd & Redland Road

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	T	R
Maximum Queue (ft)	215	506	128	237	187	225	525	424	756	355
Average Queue (ft)	156	254	42	101	73	155	287	267	360	111
95th Queue (ft)	260	443	91	185	145	272	508	431	621	360
Link Distance (ft)		986		1232			927		776	
Upstream Blk Time (%)									0	
Queuing Penalty (veh)									1	
Storage Bay Dist (ft)	115		90		90	125		325		255
Storage Blk Time (%)	20	41	3	16	3	12	44	3	20	
Queuing Penalty (veh)	78	63	13	52	6	49	70	28	105	

Intersection: 4: OR 213 & Redland Road

Movement	EB	EB	EB	NB	NB	NB	B29	B29	SB	SB	SB	SB
Directions Served	L	L	R	L	T	T	T	T	T	T	T	R
Maximum Queue (ft)	410	589	495	398	571	558	443	402	692	784	702	708
Average Queue (ft)	246	299	142	279	296	260	76	46	332	382	335	241
95th Queue (ft)	418	550	402	445	629	573	372	274	612	687	632	627
Link Distance (ft)		776	776		540	540	1976	1976	1640	1640	1640	1640
Upstream Blk Time (%)		0			10	2						
Queuing Penalty (veh)		1			0	0						
Storage Bay Dist (ft)	335			300								
Storage Blk Time (%)	8	12		31	4							
Queuing Penalty (veh)	23	35		284	7							

Intersection: 5: OR 213 & Prairie Schooner Wy/Clackamas River Dr

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	R	R	R	R	T	T	T	T	T	T
Maximum Queue (ft)	138	110	391	328	259	249	192	419	496	542
Average Queue (ft)	60	29	249	201	121	109	83	229	234	267
95th Queue (ft)	117	72	348	292	208	195	155	357	399	466
Link Distance (ft)	365	365	449	449	1640	1640	1640	2385	2385	2385
Upstream Blk Time (%)			0							
Queuing Penalty (veh)			0							
Storage Bay Dist (ft)										
Storage Blk Time (%)										3
Queuing Penalty (veh)										0

Intersection: 6: Washington St & 17th St/Abernethy Rd

Movement	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	L	TR	L	T	R	L	TR
Maximum Queue (ft)	51	269	159	39	199	89	88	212
Average Queue (ft)	13	164	25	8	73	34	18	101
95th Queue (ft)	39	266	87	28	160	71	55	185
Link Distance (ft)	347		1574		797			1077
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)		170		110		220	125	
Storage Blk Time (%)		10			3			4
Queuing Penalty (veh)		5			12			2

Intersection: 7: Washington St & 15th St

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (ft)	258	223	174	295	205	672
Average Queue (ft)	118	109	32	179	48	288
95th Queue (ft)	203	183	111	339	152	566
Link Distance (ft)	715	467		282		797
Upstream Blk Time (%)				2		0
Queuing Penalty (veh)				14		0
Storage Bay Dist (ft)			105		105	
Storage Blk Time (%)				13	0	33
Queuing Penalty (veh)				4	0	16

Intersection: 8: Washington St & 14th St

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	L	TR	LTR	L	TR	L	TR
Maximum Queue (ft)	644	200	115	163	225	100	296
Average Queue (ft)	277	119	38	76	102	6	226
95th Queue (ft)	542	243	83	131	186	47	345
Link Distance (ft)	694		202		635		282
Upstream Blk Time (%)	2						5
Queuing Penalty (veh)	0						29
Storage Bay Dist (ft)		100		105		105	
Storage Blk Time (%)	47	2		3	7		30
Queuing Penalty (veh)	84	8		9	12		1

Zone Summary

Zone wide Queuing Penalty: 1011

Intersection: 1: Street A & Holcomb Blvd

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	29	77
Average Queue (ft)	1	38
95th Queue (ft)	11	63
Link Distance (ft)	408	507
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Winston Dr & Holcomb Blvd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	19	9	51	29
Average Queue (ft)	1	1	25	9
95th Queue (ft)	12	7	47	31
Link Distance (ft)	1859	911	320	313
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Abernethy Rd/Holcomb Blvd & Redland Road

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	T	R
Maximum Queue (ft)	127	255	182	471	190	224	425	234	303	32
Average Queue (ft)	41	111	64	159	127	136	213	116	160	10
95th Queue (ft)	93	194	133	338	208	245	352	194	273	24
Link Distance (ft)		986		1232			927		776	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	115		90		90	125		325		255
Storage Blk Time (%)	1	11	5	24	17	5	29		2	
Queuing Penalty (veh)	1	7	36	139	62	26	59		5	

Intersection: 4: OR 213 & Redland Road

Movement	EB	EB	EB	NB	NB	NB	B13	B13	SB	SB	SB	SB
Directions Served	L	L	R	L	T	T	T	T	T	T	T	R
Maximum Queue (ft)	296	320	313	237	410	428	17	14	314	312	282	130
Average Queue (ft)	178	206	96	118	222	222	0	0	146	139	108	31
95th Queue (ft)	272	295	214	196	345	338	0	0	250	243	209	85
Link Distance (ft)		776	776		540	540	1976	1976	1627	1627	1627	1627
Upstream Blk Time (%)					0	0						
Queuing Penalty (veh)					0	0						
Storage Bay Dist (ft)	335			300								
Storage Blk Time (%)	0	0			2							
Queuing Penalty (veh)	0	1			3							

Intersection: 5: OR 213 & Prairie Schooner Wy/Clackamas River Dr

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB	
Directions Served	R	R	R	R	T	T	T	T	T	T	R	
Maximum Queue (ft)	102	70	326	287	258	227	193	238	232	224	83	
Average Queue (ft)	46	24	208	161	134	116	87	135	115	103	7	
95th Queue (ft)	85	53	295	258	220	196	165	215	200	196	41	
Link Distance (ft)	366	366	448	448	1627	1627	1627	2374	2374	2374		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)											425	
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 6: Washington St & 17th St/Abernethy Rd

Movement	EB	WB	WB	NB	NB	NB	SB	SB				
Directions Served	LTR	L	TR	L	T	R	L	TR				
Maximum Queue (ft)	37	270	387	31	199	86	154	353				
Average Queue (ft)	9	196	63	6	57	27	17	167				
95th Queue (ft)	32	290	255	24	140	60	85	312				
Link Distance (ft)	347		1574		797			1077				
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)		170		110		220	125					
Storage Blk Time (%)		16			2			14				
Queuing Penalty (veh)		6			5			4				

Intersection: 7: Washington St & 15th St

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (ft)	172	159	110	281	205	735
Average Queue (ft)	83	65	18	133	69	293
95th Queue (ft)	143	129	70	260	193	601
Link Distance (ft)	715	467		282		797
Upstream Blk Time (%)				0		0
Queuing Penalty (veh)				1		1
Storage Bay Dist (ft)			105		105	
Storage Blk Time (%)				9		24
Queuing Penalty (veh)				2		19

Intersection: 8: Washington St & 14th St

Movement	EB	EB	WB	NB	NB	SB
Directions Served	L	TR	LTR	L	TR	TR
Maximum Queue (ft)	294	200	64	184	153	296
Average Queue (ft)	151	32	18	80	60	228
95th Queue (ft)	248	104	48	139	118	358
Link Distance (ft)	694		202		635	282
Upstream Blk Time (%)						5
Queuing Penalty (veh)						36
Storage Bay Dist (ft)		100		105		
Storage Blk Time (%)	30			4	2	25
Queuing Penalty (veh)	17			11	3	0

Zone Summary

Zone wide Queuing Penalty: 443

Intersection: 1: Street A & Holcomb Blvd

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	4	69	68
Average Queue (ft)	0	6	30
95th Queue (ft)	3	29	55
Link Distance (ft)	911	408	507
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Winston Dr & Holcomb Blvd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	56	42	68	33
Average Queue (ft)	6	5	26	9
95th Queue (ft)	32	24	54	30
Link Distance (ft)	1859	911	320	313
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Abernethy Rd/Holcomb Blvd & Redland Road

Movement	EB	EB	B36	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	T	L	T	R	L	TR	L	T	R
Maximum Queue (ft)	215	802	99	177	238	190	225	713	424	729	355
Average Queue (ft)	179	522	15	51	108	94	168	391	330	410	94
95th Queue (ft)	274	930	140	115	193	168	282	703	482	700	324
Link Distance (ft)		986	1574		1232			927		776	
Upstream Blk Time (%)		4								1	
Queuing Penalty (veh)		18								14	
Storage Bay Dist (ft)	115			90		90	125		325		255
Storage Blk Time (%)	30	59		6	20	8	16	57	12	23	
Queuing Penalty (veh)	128	89		27	76	18	64	91	91	132	

Intersection: 4: OR 213 & Redland Road

Movement	EB	EB	EB	NB	NB	NB	B29	B29	SB	SB	SB	SB
Directions Served	L	L	R	L	T	T	T	T	T	T	T	R
Maximum Queue (ft)	428	666	667	400	604	589	453	304	688	748	698	793
Average Queue (ft)	280	351	215	272	297	273	67	46	401	468	421	350
95th Queue (ft)	463	651	552	455	618	573	383	281	688	783	736	759
Link Distance (ft)		776	776		540	540	1976	1976	1640	1640	1640	1640
Upstream Blk Time (%)		1	0		9	3						
Queuing Penalty (veh)		5	1		0	0						
Storage Bay Dist (ft)	335			300								
Storage Blk Time (%)	17	23		31	5							
Queuing Penalty (veh)	49	69		281	10							

Intersection: 5: OR 213 & Prairie Schooner Wy/Clackamas River Dr

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	R	R	R	R	T	T	T	T	T	T
Maximum Queue (ft)	123	111	395	320	234	230	198	520	657	756
Average Queue (ft)	62	40	239	181	112	105	80	264	314	375
95th Queue (ft)	113	81	344	289	193	185	151	446	559	655
Link Distance (ft)	365	365	449	449	1640	1640	1640	2385	2385	2385
Upstream Blk Time (%)			0							
Queuing Penalty (veh)			0							
Storage Bay Dist (ft)										
Storage Blk Time (%)										12
Queuing Penalty (veh)										0

Intersection: 6: Washington St & 17th St/Abernethy Rd

Movement	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	L	TR	L	T	R	L	TR
Maximum Queue (ft)	43	270	342	35	193	93	96	226
Average Queue (ft)	11	164	42	5	64	36	18	101
95th Queue (ft)	37	269	178	22	145	74	55	187
Link Distance (ft)	347		1574		797			1077
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)		170		110		220	125	
Storage Blk Time (%)		11			2			4
Queuing Penalty (veh)		5			8			2

Intersection: 7: Washington St & 15th St

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (ft)	236	210	204	296	204	575
Average Queue (ft)	120	112	32	174	57	287
95th Queue (ft)	200	182	106	317	172	536
Link Distance (ft)	715	467		282		797
Upstream Blk Time (%)				1		0
Queuing Penalty (veh)				10		1
Storage Bay Dist (ft)			105		105	
Storage Blk Time (%)				13	0	33
Queuing Penalty (veh)				4	0	16

Intersection: 8: Washington St & 14th St

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	L	TR	LTR	L	TR	L	TR
Maximum Queue (ft)	445	200	79	170	248	134	298
Average Queue (ft)	224	104	29	72	108	6	234
95th Queue (ft)	392	215	65	133	198	55	354
Link Distance (ft)	694		202		635		282
Upstream Blk Time (%)							5
Queuing Penalty (veh)							32
Storage Bay Dist (ft)		100		105		105	
Storage Blk Time (%)	42	3		3	8		30
Queuing Penalty (veh)	76	10		9	13		1

Zone Summary

Zone wide Queuing Penalty: 1350

Preliminary Stormwater Report for
Park Place 2 Subdivision
City of Oregon City, Oregon
(TL 100, 190, 302, 400, 500, 502, & 3700, Tax Map 2N2E-28D; TL 1000 & 2000, Tax Map 2N2E-27BC)

Emerio Project Number:	0082-012
Oregon City Permit Number:	TBD
Date:	09/06/2024



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Project Overview and Description:

The purpose of this report is to address stormwater management for the proposed development. The site is currently made up of nine large tax lots covering approximately 80 acres of land made up of forested and grassed areas with multiple single-family homes throughout. All onsite homes and associated driveways will be removed as part of the development. The proposed site will consist of approximately 273 residential lots, new ROW roadway and sidewalk areas, and open space tracts. Improvements from the Park Place Crossing subdivision will be accommodated by this development's stormwater management system.

Existing tax lots at the southwest corner and northern portion of the site may not be developed at this time. The stormwater management methods outlined in this report assume that these areas will be included in the development, or will be developed at a later date, and are included in the facility sizing calculations and models discussed below.

See Appendix A(1) for a vicinity map of the project location.

Soil Classification:

The NRCS soil survey of Clackamas County, Oregon classifies the development site soil as Helvetia silt loam, Laurelwood silt loam, Saum silt loam, Woodburn silt loam, and Xerochrepts and Haploxerolls, all with associated hydrologic soil groups (HSG) of C, B, C, C and B, respectively. Approximately 19% of the site is made up of HSG B. Most of this area along the northwest corner of the site is located in open tract areas that will not be developed. Due to these factors and a lack of onsite infiltration, HSG C will be used to size the proposed stormwater management system. See Appendix B(1) for a soil classification map and Appendix B(2) for a table of the applicable curve numbers.

Basin Delineation:

Onsite basins were created after determining post-developed runoff paths to each proposed facility. Each proposed lot with a single-family home was assumed to contain 3,000 SF of impervious area. All proposed ROW areas are assumed to be approximately 85% impervious based on road cross section geometries. See Appendix C(1) for tabulated basin areas and Appendices D(1) and D(2) for basin maps.

Infiltration:

Onsite infiltration tests were conducted by GeoPacific Engineering in October of 2020. These tests yielded an infiltration rate 0.0 in/hr across the site, see Appendix B(3). Due to the low infiltration rates, all proposed stormwater management facilities will be lined.

Stormwater Management Methodology:

New stormwater management facilities will manage runoff from both the proposed development and the adjacent Park Place Crossing subdivision. The temporary detention pond associated with Park Place Crossing will be removed as a part of this development.

A proposed onsite detention pond will manage detention standards for the whole development and the Park Place Crossing subdivision. The pond will also provide water quality treatment for approximately 1,378,869 SF of new impervious area. Water quality treatment for most of the development's remaining impervious area (~176,308 SF), and Park Place Crossing's impervious area (~382,553 SF) will be provided by filtration planters located in the proposed ROW.

The southernmost portion of the site will be unable to drain to the onsite pond due to grading restrictions. To compensate, the rest of the site and Park Place Crossing will be overdetained to adequately mitigate peak flows from the whole site. HydroCAD plots shown in Appendix C(2) illustrate the overdetention provided by the proposed pond.

Most of the undetained impervious area will receive water quality treatment from proposed planters. Undetained lots 114 through 118 and 120 (18,000 SF of impervious area) area unable to route to these planter facilities and will have water quality covered by a fee in lieu.

The proposed pond will have 3 ft of open storage, 1 ft of freeboard, and 3:1 side slopes. The pond was designed and modeled using the BMP Sizing Tool and is assumed to receive flows from all newly developed areas and filtration planters. See Appendix C(3) for the BMP Sizing Tool report.

The pond flow control structure consists of two horizontal orifices within a flow control manhole per Figure C-12 of the 2020 Oregon City Stormwater and Grading Standards. An overflow will be set at the elevation of the peak 10-year design storm elevation. The geometries of the two orifices can be seen in Appendices C(2) & C(3), and are shown below.

Low Orifice: 8.0” Diameter, 216.00’ Elevation
High Orifice: 18.0” Diameter, 222.00’ Elevation

To determine the required height of the beehive pond outlet grate, a HydroCAD model was constructed to simulate the water quality storm event ponding up in the open storage and infiltrating through the growing medium. It was determined that the Oregon City water quality storm event ponds to a depth of 0.22’ (2.64”) above the top of the pond growing medium. The 60” beehive outlet was placed 3” above the top of the growing medium to allow this event to fully infiltrate and be treated. Rock storage was not considered in this model. See Appendix C(2) for the HydroCAD plots.

All proposed planters were sized using the BMP sizing tool. All numbered planters listed below manage runoff from Park Place 2 impervious area. The planter shown managing Park Place Crossing is a representation of the total planter area that will be provided. Specific planter locations and sizes for Park Place Crossing will be determined later in the design process. A full summary of the BMP model can be found in Appendix C(3).

Planter Name	Basin (SF)	Minimum Planter Area (SF)	Proposed Planter Area (SF)	Orifice Size (in)
Park Place Crossing WQ Planter	382,553	5,738.3	5,739	3.4
Planter 1	24,259	363.9	448	0.9
Planter 2	20,380	305.7	316	0.8
Planter 3	26,388	395.8	405	0.9
Planter 4	22,978	344.7	345	0.8
Planter 5	12,121	181.8	189	0.6
Planter 6	10,247	153.7	213	0.6
Planter 7	12,682	190.2	214	0.6
Planter 8	6,000	90.0	135	0.4
Planter 9	31,858	477.9	528	1.0
Planter 10	8,313	124.7	130	0.5
Planter 11	3,623	54.3	107	0.3
Planter 12	4,002	60.0	88	0.4
Planter 13	4,981	74.7	104	0.4
Planter 14	6,476	97.1	144	0.4

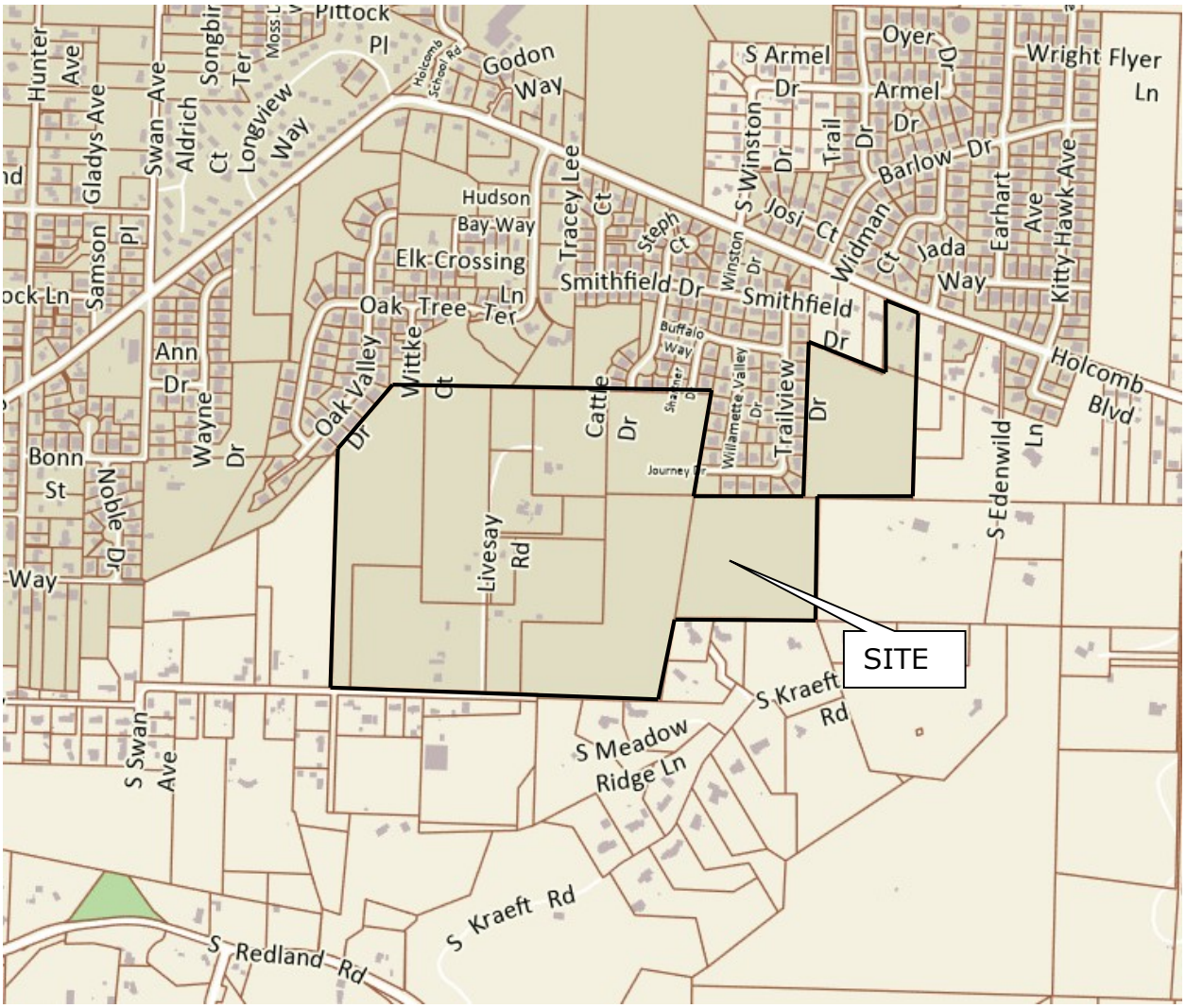
As shown in the table above, all proposed planter areas meet water quality requirements set by the BMP Sizing Tool. See Appendix D(3) for a map of the proposed facility locations.

Conclusion:

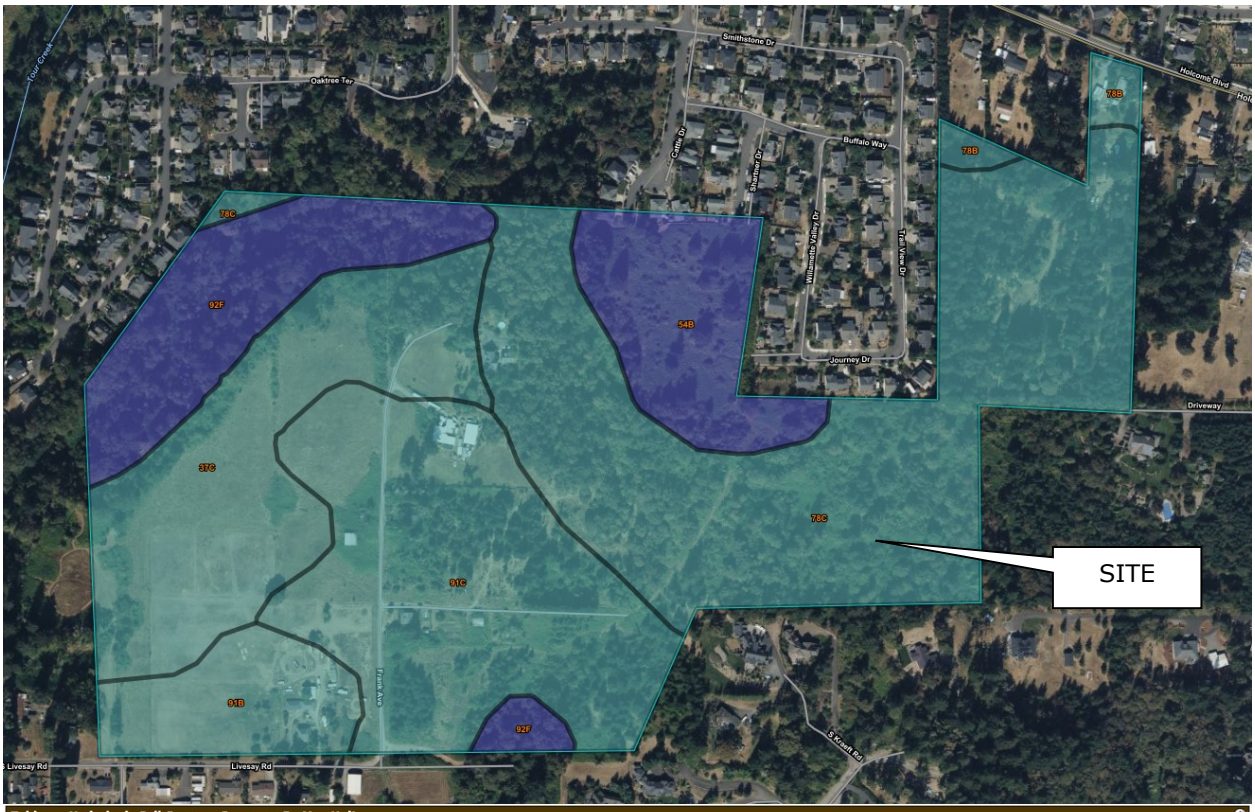
The design of the proposed site satisfies the water quality and detention standards set by the 2020 Oregon City Stormwater and Grading Standards.

Appendix A:

Appendix A(1)
Vicinity Map



Appendix B:



Tables — Hydrologic Soil Group — Summary By Map Unit

Summary by Map Unit — Clackamas County Area, Oregon (OR610)

Summary by Map Unit — Clackamas County Area, Oregon (OR610)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
37C	Helvetia silt loam, 8 to 15 percent slopes	C	16.2	17.2%
54B	Laurelwood silt loam, 3 to 8 percent slopes	B	7.9	8.4%
78B	Saum silt loam, 3 to 8 percent slopes	C	1.3	1.3%
78C	Saum silt loam, 8 to 15 percent slopes	C	32.6	34.6%
91B	Woodburn silt loam, 3 to 8 percent slopes	C	5.5	5.9%
91C	Woodburn silt loam, 8 to 15 percent slopes	C	20.7	22.0%
92F	Xerochrepts and Haploxerolls, very steep	B	10.0	10.7%
Totals for Area of Interest			**94.2**	**100.0%**

RUNOFF CURVE NUMBERS (TR55)

Table 2-2a: Runoff curve numbers for urban areas [1]

Cover description		CN for hydrologic soil group			
Cover type and hydrologic condition	Average percent impervious area[2]	A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.) [3]:					
Poor condition (grass cover <50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover >75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) [4]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82

Use CN = 86 for Post-Dev. Pervious Surfaces

Use CN = 98 for Impervious Areas

Real-World Geotechnical Solutions
Investigation • Design • Construction Support

June 14, 2021
Project No. 20-5600

Darren Gusdorf
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SUBJECT: GEOTECHNICAL ENGINEERING REPORT
PARK PLACE SUBDIVISION
TERMINUS OF SOUTH LIVESAY ROAD
OREGON CITY, OREGON

This report presents the results of a geotechnical engineering study conducted by GeoPacific Engineering, Inc. (GeoPacific) for the above-referenced project. The purpose of our investigation was to evaluate subsurface conditions at the site and to provide geotechnical recommendations for site development. This geotechnical study was performed in accordance with GeoPacific Proposal No. P-7453C, dated September 17, 2020, and your subsequent authorization of our proposal and *General Conditions for Geotechnical Services*. The site is mapped by Oregon City as being within a designated Geologic Hazard Zone.

SITE DESCRIPTION AND PROPOSED DEVELOPMENT

The subject site is located at the terminus of South Livesay Road in Oregon City, Clackamas County, Oregon (Figure 1). The site is located north of the portion of South Livesay Road which runs east-west and south of Holcomb Boulevard. The property consists of 9 tax lots that total approximately 70.72 acres in size. The adjacent tax Lots 200, 300, 301, 303, and 502 may be incorporated into future development plans. Vegetation on the site is highly variable. Overall, vegetation in the western portion the site consists of grass, vegetation in the central portion of the site consists of grass, shrubs, and trees, and vegetation in the eastern portion of the site consists of small to large trees. The site is currently occupied by three residences and several outbuildings.

Overall, topography on the site slopes down to the west at grades of 25 percent or less. However, there is a drainage in the northwest portion of the site which runs northeast to southwest and the side slopes are inclined at average grades of about 50 percent (Figures 2 and 3). There are also drainages near the southwest corner of the site and in the southern-central portion of the site, with side slopes inclined at average grades of about 50 percent. Two landslides are mapped by the

Oregon Department of Geology and Mineral Industries (DOGAMI) within the drainage in the northwest portion of the site (Figure 2). The large slide is classified as prehistoric (greater than 150 years old) and the small earthflow is considered historic with movement occurring in the last 150 years.

It is our understanding most of the site, except for an open space park area near the southwestern corner of the site and the existing drainages, will be developed for +/- 394 lots for single family homes, civic and retail space, new streets, water quality facilities, and associated underground utilities. The grading plan has not yet been finalized; however, we anticipate maximum cuts and fills will be on the order of about 24 feet. Utilities with depths of 10 feet below grade may be planned in areas with about 24 feet of cut, resulting in depths of about 30 feet below existing grade. Based on conversation with the project civil engineer, some utilities may be planned to depths of up to 30 feet below existing grades.

It is our understanding that a sewer utility line is proposed across the drainage in the northwest portion of the site. The proposed sewer utility line is to cross the drainage and connect to an existing sewer line in an existing development to the east of the drainage.

REGIONAL AND LOCAL GEOLOGIC SETTING

Regionally, the subject site lies within the Willamette Valley/Puget Sound lowland, a broad structural depression situated between the Coast Range on the west and the Cascade Range on the east. A series of discontinuous faults subdivide the Willamette Valley into a mosaic of fault-bounded, structural blocks (Yeats et al., 1996). Uplifted structural blocks form bedrock highlands, while down-warped structural blocks form sedimentary basins.

The southwestern portion of the subject site is underlain by the Quaternary age (last 1.6 million years) Willamette Formation, a catastrophic flood deposit associated with repeated glacial outburst flooding of the Willamette Valley (Yeats et al., 1996). The last of these outburst floods occurred about 10,000 years ago. These deposits typically consist of horizontally layered, micaceous, silt to coarse sand forming poorly-defined to distinct beds less than 3 feet thick.

Portions of the site above 360 feet elevation are underlain by the Boring Lava lithologic unit which consists of basaltic and basaltic andesite lava flows erupted from a series of local volcanic vents during Plio-Pleistocene time (about 600,000 thousand to 2.6 million years ago) (Schlicker and Finlayson, 1979; Madin, 2009). The total thickness of the Boring Lava unit ranges from greater than 600 feet near vents to less than 50 feet on the outer margins.

The Willamette Formation in the southwestern portion of the site and the Boring Lava Formation in the northeastern portion of the site are underlain by the Pliocene to Pleistocene aged (about 200,00 to 2 million years ago) Springwater Formation, which consists of fluvial conglomerate, volcaniclastic sandstone, siltstone and debris flows comprised by sediment derived from the Cascade Range deposited by the ancestral Clackamas River (Madin, 1994; Yeats et al., 1996; Madin, 2009). The Springwater Formation consists primarily of deeply weathered conglomerate including well-rounded pebbles to cobbles of basalt, andesite and dacite with a sand matrix composed of feldspathic and volcanic lithics. Siltstone units typically consist of quartzofeldspathic silt, volcanic ash and clay. The consistency of the Springwater Formation is generally hard where decomposed to clayey silt and medium-dense to very dense where highly weathered and can be 100 to 150 feet in thickness (Madin, 2009).

Underlying the Springwater Formation is the Miocene to Pliocene aged (2-65 million years ago) Troutdale formation - a partially cemented conglomerate, sandstone, and mudstone deposited by the ancestral Columbia River (Trimble, 1963; Madin, 2009). Regionally, the Troutdale Formation is informally divided into an upper and a lower member (Phillips, 1987). Lithologies in the upper member include lenticular layers of volcaniclastic (vitric) sand, quartzite-bearing gravel, fine-grained sand, silt and clay, micaceous quartz-rich sand, and conglomerate with a cumulative average thickness of 100 to 150 feet. The lower member consists primarily of laminated silty clay and sand with reported thicknesses in water well logs of up to 880 feet and is the equivalent of the Sandy River Mudstone.

REGIONAL SEISMIC SETTING

At least four potential source zones capable of generating damaging earthquakes are thought to exist in the region. These include the Portland Hills Fault Zone, the Grant Butte and Damascus-Tickle Creek Fault Zones, the Gales Creek-Newberg-Mt. Angel Structural Zone, and the Cascadia Subduction Zone, as discussed below.

Portland Hills Fault Zone

The Portland Hills Fault Zone is a series of NW-trending faults that include the central Portland Hills Fault, the western Oatfield Fault, and the eastern East Bank Fault. These faults occur in a northwest-trending zone that varies in width between 3.5 and 5.0 miles. The combined three faults vertically displace the Columbia River Basalt by 1,130 feet and appear to control thickness changes in late Pleistocene (approx. 780,000 years) sediment (Madin, 1990). The Portland Hills Fault occurs along the Willamette River at the base of the Portland Hills and is approximately 1 mile northeast of the site. The East Bank Fault occurs along the eastern margin of the Willamette River, and is located approximately 10.8 miles north of the site. The Oatfield Fault occurs along the western side of the Portland Hills and is approximately 0.5 miles southwest of the site. The accuracy of the fault mapping is stated to be within 500 meters (Wong, et al., 2000). No historical seismicity is correlated with the mapped portion of the Portland Hills Fault Zone, but in 1991 a M3.5 earthquake occurred on a NW-trending shear plane located 1.3 miles east of the fault (Yelin, 1992). Although there is no definitive evidence of recent activity, the Portland Hills Fault Zone is assumed to be potentially active (Geomatrix Consultants, 1995).

Grant Butte and Damascus-Tickle Creek Fault Zones

The Grant Butte fault zone was mapped along the north side of Mt. Scott and Powell Butte by Madin (1990). It was also extended eastward to Grant Butte on the basis of mapping by CH2M Hill and others (1991) and informally named the Grant Butte fault (Cornforth and Geomatrix, 1992). The Damascus-Tickle Creek fault zone displaces Pliocene and possibly Pleistocene sediments in the vicinity of Boring, Oregon (Madin, 1992; Lite, 1992). Relatively short faults define a 17-km-long fault zone that is apparently linked to the Grant Butte fault on the basis of stratigraphic relationships showing middle and late Pleistocene activity. Geomatrix (1995) assigns a probability of 0.5 for activity on structures within these fault zones. The nearest portion of the Grant Butte and Damascus-Tickle Creek Fault Zone is approximately 2.3 miles east of the subject site.

Gales Creek-Newberg-Mt. Angel Structural Zone

The Gales Creek-Newberg-Mt. Angel Structural Zone is a 50-mile-long zone of discontinuous, NW-trending faults that lies approximately 19.9 miles southwest of the subject site. These faults are recognized in the subsurface by vertical separation of the Columbia River Basalt and offset seismic

reflectors in the overlying basin sediment (Yeats et al., 1996; Werner et al., 1992). A geologic reconnaissance and photogeologic analysis study conducted for the Scoggins Dam site in the Tualatin Basin revealed no evidence of deformed geomorphic surfaces along the structural zone (Unruh et al., 1994). No seismicity has been recorded on the Gales Creek Fault or Newberg Fault; however, these faults are considered to be potentially active because they may connect with the seismically active Mount Angel Fault and the rupture plane of the 1993 M5.6 Scotts Mills earthquake (Werner et al. 1992; Geomatrix Consultants, 1995).

Cascadia Subduction Zone

The Cascadia Subduction Zone is a 680-mile-long zone of active tectonic convergence where oceanic crust of the Juan de Fuca Plate is subducting beneath the North American continent at a rate of 4 cm per year (Goldfinger et al., 1996). A growing body of geologic evidence suggests that prehistoric subduction zone earthquakes have occurred (Atwater, 1992; Carver, 1992; Peterson et al., 1993; Geomatrix Consultants, 1995). This evidence includes: (1) buried tidal marshes recording episodic, sudden subsidence along the coast of northern California, Oregon, and Washington, (2) burial of subsided tidal marshes by tsunami wave deposits, (3) paleoliquefaction features, and (4) geodetic uplift patterns on the Oregon coast. Radiocarbon dates on buried tidal marshes indicate a recurrence interval for major subduction zone earthquakes of 250 to 650 years with the last event occurring 300 years ago (Atwater, 1992; Carver, 1992; Peterson et al., 1993; Geomatrix Consultants, 1995). The inferred seismogenic portion of the plate interface lies approximately 50 miles west of the Portland Basin at depths of between 20 and 40 kilometers below the surface.

FIELD EXPLORATION

Our site-specific explorations for this report were conducted in October, 2020 and consisted of test pits and borings. On October 6, 7, 8, 2020, twenty four exploratory test pits were excavated with a medium or large sized trackhoe to depths of 15 to 29 feet at the approximate locations presented on Figure 3. Five exploratory borings were drilled to depths of 70.4 to 81.5 feet with an all-terrain drill rig at the approximate locations presented on Figure 3 on October 20, 21, and 22, 2020. It should be noted that exploration locations were located in the field by pacing or taping distances from apparent property corners and other site features shown on the plans provided. As such, the locations of the explorations should be considered approximate.

The boreholes were drilled using a drill rig and mud rotary methods operated by Western States Soil Conservation, Inc. of Hubbard, Oregon. At each boring location, SPT (Standard Penetration Test) sampling was performed in general accordance with ASTM D1586 using a 2-inch outside diameter split-spoon sampler and a 140-pound pneumatic hammer. During the test, a sample is obtained by driving the sampler 18 inches into the soil with the hammer free-falling 30 inches. The number of blows for each 6 inches of penetration is recorded. The Standard Penetration Resistance ("N-value") of the soil is calculated as the number of blows required for the final 12 inches of penetration. If 50 or more blows are recorded within a single 6-inch interval, the test is terminated, and the blow count is recorded as 50 blows for the number of inches driven. This resistance, or N-value, provides a measure of the relative density of granular soils and the relative consistency of cohesive soils. At the completion of the borings, the holes were backfilled with bentonite.

A GeoPacific Engineering Geologist continuously monitored the field exploration program and logged the test pits. Soils observed in the explorations were classified in general accordance with the Unified Soil Classification System (USCS). Rock hardness was classified in accordance with Table 1, modified from the ODOT Rock Hardness Classification Chart. During exploration, our

geologist also noted geotechnical conditions such as soil consistency, moisture and groundwater conditions. Logs of test pits are attached to this report. The following report sections are based on the exploration program and summarize subsurface conditions encountered at the site.

Table 1. Rock Hardness Classification Chart

ODOT Rock Hardness Rating	Field Criteria	Unconfined Compressive Strength	Typical Equipment Needed For Excavation
Extremely Soft (R0)	Indented by thumbnail	<100 psi	Small excavator
Very Soft (R1)	Scratched by thumbnail, crumbled by rock hammer	100-1,000 psi	Small excavator
Soft (R2)	Not scratched by thumbnail, indented by rock hammer	1,000-4,000 psi	Medium excavator (slow digging with small excavator)
Medium Hard (R3)	Scratched or fractured by rock hammer	4,000-8,000 psi	Medium to large excavator (slow to very slow digging), typically requires chipping with hydraulic hammer or mass excavation)
Hard (R4)	Scratched or fractured w/ difficulty	8,000-16,000 psi	Slow chipping with hydraulic hammer and/or blasting
Very Hard (R5)	Not scratched or fractured after many blows, hammer rebounds	>16,000 psi	Blasting

Undocumented Fill: Undocumented fill was not encountered in our explorations; however, it is likely that areas of undocumented fill may exist in the vicinity existing access driveways and structures.

Topsoil Horizon: The ground surface in test pits TP-1 through TP-24 and soil borings B-1 through B-5 was directly underlain by a topsoil horizon. The brown topsoil horizon consisted of silt (OL-ML), was loose, and contained trace fine roots throughout. The topsoil horizon typically had a low to high organic content and extended to a depth of 7 to 16 inches.

Landslide Debris: Landslide debris was encountered beneath the topsoil horizon in test pits TP-20 and TP-21. The landslide debris generally consisted of silt (ML) with clay or sand, silty clay (CL) with or without gravel, and zones of fat clay (CH). The landslide debris had a medium stiff to stiff consistency, was highly fractured, and extended to a depth of 24 feet in test pit TP-20 and to 20 feet in test pit TP-21.

> ***Fat Clay:*** Fat clay (CH) was encountered within the landslide debris in test pits TP-20 and TP-21. The fat clay was stiff to very stiff, gray in color, and extended to depths of 14 to 16 feet. This material was not sampled for laboratory testing; however, it is likely highly expansive.

Willamette Formation: Underlying the topsoil horizon in test pits TP-1 through TP-3, TP-16 through TP-19, TP-22, and TP-23 and soil borings B-1 through B-5 was material belonging to the Willamette Formation. In explorations, the Willamette Formation soils generally consisted of light brown, clayey silt (ML) characterized by a stiff to very stiff consistency, soft to stiff sandy silt, and loose silty sand (SM). Willamette Formation materials tend to be highly moisture sensitive. Soils belonging to the Willamette Formation extended to depths of approximately 3 to 25 feet in test pits TP-1 through TP-3, TP-19, and TP-23 and soil borings B-1 through B-5 and beyond the maximum depth of exploration in test pits TP-16 through TP-18 and TP-22 (15 to 15.5 feet).

Residual Soil of Boring Lava Formation: Underlying the topsoil horizon in test pits TP-4 through TP-14 was residual soil derived from in place weathering of the underlying Boring Lava Formation. These soils generally consisted of light reddish brown to gray clayey silt (ML) to silty clay (CL) with basalt fragments typically exhibiting a stiff to very stiff consistency and silty gravel boulders (GM) that had a medium dense to dense relative density. The residual soil of the Boring Lava Formation extended to depths of 3 to 5 feet in test pits TP-4 through TP-14.

Boring Lava Formation: The residual soil of the Boring Lava in test pits TP-4 through TP-14 and the topsoil horizon in test pit TP24 was underlain by weathered basalt belonging to the Boring Lava Formation. In test pits TP-4 through TP-14 and TP-24, the gray to brown basalt contained trace silty clay to clayey silt matrix and was weathered to extremely soft (R0) to soft (R2) according to the ODOT Rock Hardness Chart (Table 1). Occasionally, less weathered boulders that were medium hard (R3) to hard (R4) were encountered. Excavation was generally achievable in Boring Lava material to depths of 15 to 25 feet; however, practical refusal was encountered with a large sized trackhoe on these boulders in test pits TP-7 and TP-14 at depths of 19 and 21 feet, respectively. Basalt belonging to the Boring Lava Formation extended to a depth of 2 feet in test pit TP-24 and beyond the maximum depth of exploration in test pits TP-4 through TP-14 (15 to 25 feet). The depth at which rock belonging to the Boring Lava Formation was first encountered and the depth at which practical refusal was achieved is presented in Table 2.

Table 2. Depth of Basalt Bedrock Encountered in Explorations

Test Pit	Depth Rock First Encountered (feet)	Depth of Practical Refusal on Medium Hard (R3) to Hard (R4) Basalt (feet)
TP-4	5	>25
TP-5	3.5	>15
TP-6	3.5	>15
TP-7	3.5	19 (R3 Boulder)
TP-8	4	>25
TP-9	3.5	>15
TP-10	3.5	>16.5
TP-11	3.5	>15
TP-12	3	>15
TP-13	3.5	>24

Test Pit	Depth Rock First Encountered (feet)	Depth of Practical Refusal on Medium Hard (R3) to Hard (R4) Basalt (feet)
TP-14	4	21 (R3 to R4 Boulder)
TP-24	1	Springwater Formation materials encountered below 2’

Springwater Formation: Underlying the topsoil horizon in test pit TP-15; the landslide debris in test pits TP-20 and TP-21; the Willamette Formation in test pits TP-1 through TP-3, TP-19, and TP-23 and soil borings B-1 through B-5; and the Boring Lava Formation in test pit TP-24 was material belonging to the Springwater Formation. This material generally consisted of light brown to gray silty clay (CL), clayey silt (ML), fat clay (CH), silty sand (SM), silty gravel (GM), and gravel conglomerate (GP) with a medium dense relative density or medium stiff to very stiff consistency. The Springwater Formation extended to a depth of approximately 35 to 50 feet in soil borings B-3 through B-5 and beyond the maximum depth of exploration in test pits TP-1 through TP-3, TP-15, TP-19 through TP-21, TP-23, and TP-24 (15 to 29 feet) and soil borings B-1 and B-2 (51.5 feet).

> ***Fat Clay:*** Fat clay (CH) was encountered within and underlying the Springwater Formation in test pits TP-2, TP-23, and TP-24. The fat clay was stiff to very stiff, gray in color, and extended to depths of 12 to 15 feet in test pits TP-2 and TP-24 and beyond the depth of exploration in test pits TP-23 (18 feet). Laboratory testing of a sample of the fat clay from test pit TP-2 at a depth of 12 to 13 feet indicates the clay is very highly expansive with an expansion index of 132. Results of laboratory testing are attached at the end of this report.

Weathered Troutdale Formation: Weathered Troutdale Formation soils were encountered beneath the Springwater Formation in soil borings B-3 through B-5. These soils generally consisted of light reddish brown to dark gray, well graded sand (SW) and silty sand (SM). The Troutdale Formation materials were loose to medium dense to very dense with depth. In borings B-3 through B-5, soils belonging to the Troutdale Formation extended beyond the maximum depth of exploration (70.4 to 81.5 feet).

Soil Moisture and Groundwater

Soils encountered in test pits were moist to very moist on October 6, 7, 8, 2020. Perched groundwater seepage was encountered in test pit TP-1 at a depth of 12 feet. Discharge was visually estimated at approximately 1/4 gallon per minute. Mud rotary methods utilized during drilling inhibited the observation of groundwater conditions. Regional groundwater mapping indicates static groundwater is present at a depth of 120 to 280 feet below the existing ground surface (Snyder, 2008). Experience has shown that temporary perched storm-related groundwater conditions often occur within the surface soils over fine-grained native deposits such as those beneath the site, particularly during the wet season. It is anticipated that groundwater conditions will vary depending on the season, local subsurface conditions, changes in site utilization, and other factors.

INFILTRATION TESTING

Soil infiltration testing was performed using the open hole infiltration method in test pits TP-1, TP-3, TP-7, and TP-9 at depths of 15, 19, and 20 feet. The soil was pre-saturated for a period of over 3

hours. The water level was measured to the nearest tenth of an inch every fifteen minutes to half hour with reference to the ground surface. Table 3 presents the results of our falling head infiltration testing.

Table 3. Summary of Infiltration Test Results

Test Pit	Depth (feet)	Soil Type	Infiltration Rate (in/hr)	Hydraulic Head Range (inches)
TP-1	20	Sandy SILT (ML)	0	27-28
TP-3	20	Sandy SILT (ML), trace clay	0	28-29
TP-7	19	Weathered BASALT, trace silt to clay matrix	0	15
TP-9	15	Weathered BASALT, trace silt to clay matrix	0	9

Slope Stability

The subject site is designated as being within a Geohazard Zone by the City of Oregon City (OCWebMaps, 2021). Slopes exceeding 25% grade are mapped along the southwest facing central portion of the site and along the tributary drainages in the southern and western portions of the site. Landslide areas and their associated 200 foot buffer zones are mapped in the northwestern portion of the site.

For the purpose of evaluating slope stability, we reviewed 1:24,000 scale topographic mapping by the U.S. Geological Survey (Figure 1), Lidar based high resolution digital elevation maps (Figure 2), and 1:720 scale topographic mapping provided by AKS Engineering and Forestry, LLC. (Figure 3), reviewed published geologic mapping and the Oregon Department of Geology and Mineral Industries (DOGAMI) Landslide Database (Figure 2), performed a field reconnaissance, and explored subsurface conditions at the site with twenty four exploratory test pits and five exploratory borings, the locations of which are presented on Figure 3.

Landslide inventory mapping of the Oregon City Quadrangle and the statewide landslide database indicate three mapped landslides are present at the site (Madin and Burns, 2006; Burns and Madin, 2009; Madin, 2009; Burns and Mickelson, 2010; DOGAMI Slido, 2021). Two prehistoric (greater than 150 years old) landslides are mapped along a tributary drainage of Tour Creek in the western portion of the site, as presented on Figure 2 (Madin and Burns, 2006; Burns and Madin, 2009; Madin, 2009; Burns and Mickelson, 2010; DOGAMI Slido, 2021). This landslide complex is identified as Oregon_City_272 and 290 and are both classified as being earth slide rotational slides with an earth flow component, and having a failure depth of 25 and 35 feet (DOGAMI Slido, 2021). Another smaller earth flow type slide (identified as Oregon_City_274) that is considered to be historic in age (with movement in the last 150 years) is present along the Tour Creek tributary drainage to the southwest of the larger landslide (DOGAMI Slido, 2021). DOGAMI estimates the slide to be shallow with a failure depth of 7 feet; however, our explorations indicate a failure depth of 20 feet. We observed that the downslope portion of this landslide has experienced relatively recent reactivation, as evidenced by a scarp about 4 feet tall and approximately 40 feet across near the bottom of the east side of the drainage (Figure 3). Our observations indicate that erosion has been occurring at the toe of this landslide and that the landslide is marginally stable at best.

On the slopes of the northwest drainage, we observed many signs of slope creep and instability even outside of the areas of existing landslides. We observed many leaning and bowed trees. We also observed that several of the drainages leading down the western slopes to the bottom of the larger drainage were incised by erosion.

Our reconnaissance and review of Lidar based high resolution digital elevation maps (DOGAMI, 2021) indicate slopes on either side of the Tour Creek tributary drainage exhibit geomorphology indicative of prior, shallow instability and slope creep. We observed the presence of a previously unmapped landslide on the west side of the drainage. This landslide appears to extend all the way down to the bottom of the drainage. The approximate location of this previously unmapped landslide is shown on Figure 3. A small tributary drainage to Abernethy Creek is located in the southern portion of the site and some evidence of shallow slope creep was observed along the drainage. Elsewhere on the property, away from the drainages, topography is smooth and uniform. In these areas, away from the drainages, no evidence of recent movement (ground cracks, scarps, or hummocky topography) was observed during our reconnaissance.

Subsurface exploration indicates that the ground surface in the portions of the site above an elevation of 360 feet mean sea level is underlain by residual soil and basalt rock of the Boring Lava Formation. Topography in Boring Lava areas is flat to moderately sloping with grades up to 20 percent. Pocket penetrometer measurements of the residual soil of the Boring Lava Formation indicate an approximate unconfined compressive strength of 1.5 to 4.5 tons/ft^2 which correlates to a stiff to very stiff consistency. The residual soil of the Boring Lava was underlain by weathered, basalt bedrock in test pits TP-4 through TP-14 to the maximum depth of exploration (15 to 25 feet). Boring Lava Formation materials are considered to have moderate to high shear strength and a moderate to high resistance to slope instability along moderately steep slopes.

The moderately sloping, southwest facing slope in the central portion of the site is underlain by soils belonging to the Springwater Formation. Slope areas exceeding 25% grade are present in the central portion of the site (OCWebMaps, 2021). The fluvial depositional nature of this formation result in variable soil types consisting of silt, clay, gravel conglomerate, highly weathered volcanic rock, and sand. Fine grained soils encountered in explorations were medium stiff to very stiff with some soft to medium stiff soil zones encountered at depth. Granular materials were medium dense to dense. Two wetland areas were observed to the south of test pit TP-24 indicating the presence of perched groundwater conditions. The Springwater Formation is considered to have a moderate shear strength and moderate resistance to slope instability along moderate slopes.

The Troutdale Formation, which underlies the site at depth, includes a thick sequence of weak sedimentary strata that are prone to instability on moderate to steep slopes. Regionally, many large landslides are mapped within the Troutdale Formation primarily on the side slopes of drainages where stream erosion has deeply incised the formation and created oversteepened slopes (Schlicker and Finlayson, 1979; Madin, 1994; Madin and Burns, 2006). In areas where the Troutdale Formation is capped by Boring Lava, these landslides are known to propagate upslope by undermining large blocks of Boring Lava Formation. At the Park Place Subdivision, the Troutdale and Boring Lava Formations are separated by an intermediary Springwater Formation material; however the large landslide mass in the along the northwestern tributary drainage likely resulted from failure of steeply sloping exposures of the Troutdale Formation.

Surficial soils in the southwestern portion of the site are underlain by silt belonging to the Willamette Formation. These materials are moisture sensitive and become medium stiff as moisture levels increase and soft soils were encountered in several explorations adjacent to the

tributary drainages (test pit TP-1 and soil borings B-1, B-3, and B-5). Willamette Formation soils are considered moderately resistant to slope instability on gentle slopes.

In our opinion, the slope instability hazard at the majority of the subject site, away from incised drainages, is low. Underlying geologic conditions are suitable for development providing our recommendations in this report are followed. Existing Boring Lava and Springwater Formation materials underlying sloping areas are stiff to very stiff or medium dense to dense. Willamette Formation materials on gently sloping areas are medium stiff to very stiff. No evidence of recent landslide movement was observed outside drainage areas. It is our opinion that the potential instability from neighboring properties will have a low probability to negatively impact the proposed development.

CONCLUSIONS AND RECOMMENDATIONS

Our investigation indicates that the proposed development is geotechnically feasible, provided that the recommendations of this report are incorporated into the design and construction phases of the project. The most significant geotechnical issues are as follows:

1) The presence of existing landslides and soft soils, and evidence of slope creep, in the drainage in the northwest portion of the site. We confirmed the presence of mapped landslide Oregon_City_272, 290, and 274 and landslide debris was encountered in test pits TP-20 and TP-21 to depths of 20 and 24 feet. Recent reactivation was observed at the toe of Oregon_City_274 and a previously unmapped landslide was observed on the west side of the drainage. Signs of soil creep and instability including leaning and bowed trees were observed along the northwest drainage outside previously mapped slide areas. Active erosion is occurring along the western slope of the drainage, which may be caused by soft soils underlying the slope. Very soft to soft soils were encountered in borings B-3 and B-5 located adjacent to the drainage.

   Our quantitative slope stability analysis indicates adequate factors of safety can be maintained with slope setbacks for residences and fill placement adjacent to the northwest drainage.

   Slope stabilization systems for the planned sewer utility crossing the drainage will be necessary since existing slopes do not have adequate factors of safety for slope stability in their existing conditions. Proposed stabilization measures include cantilevered soldier pile walls or soldier pile walls incorporating tiebacks. In addition to improving slope stability for the sewer alignment, these slope stabilization measures would also increase factors of safety for many lots in the vicinity of B-3. We understand that plans for the sewer alignment in the northwest drainage may include a bridge.

2) Slopes in the drainage in the southeast portion of the site are marginally stable in their existing condition. Unless remedial measures are implemented, setback distances for fill placement and for residences should be maintained.

3) The presence of soft soils near the drainage in the southeast portion of the site.

4) The presence of large boulders in the native Boring Lava Formation in the central and northeastern portions of the site. Weathered basalt bedrock was encountered throughout the site at elevations above 350 feet msl. Basalt was first encountered at depths of 3 to 5 feet and practical refusal was achieved with a large excavator on

medium hard (R3) to hard (R4) basalt boulders at depths of 19 and 21 feet in test pits TP-7 and TP-14, respectively. Difficult excavating conditions should be expected at depth.

5) Low permeability soils. The results of our infiltration testing indicate on site soils exhibit low permeability with a high probability of silting up over time.

6) The potential to encounter highly expansive, fat clay soils. Fat clay soils were encountered in test pits TP-2, TP-20, TP-21, TP-23, and TP-24. Laboratory testing of the fat clay from test pit TP-2 indicates the soil has a very high expansion potential; however, areas of highly expansive soils may be encountered in other areas of the site. If encountered, the recommendations for fat clay soils determined to be highly expansive in structural areas are as follows: (1) remove the material and replace it with low to medium expansivity soil/engineered fill, (2) separate footings from the expansive soils by ensuring there is at least 5 feet of engineered fill and/or native, low to medium expansivity soil overlying the highly expansive clay, (3) chemically stabilize the soils with hydrated lime or alternate chemical additives such as Condor SS, or (4) blend with low expansivity soils. Expansive soils can remain beneath flexible pavement areas and backyards where expansion will have a minor impact on improvements.

Areas of the site may require additional study to evaluate proposed grading, bridge abutments, stormwater ponds, retaining walls, and the sewer connection on the eastern side of the northwest drainage.

Slope Stability

A reconnaissance of the site was performed on October 6-8, 2020. The subject site generally slopes to the southwest, towards a tributary drainage to Tour Creek, which is located along the western property line (Figures 1 and 2). A tributary drainage to Abernethy Creek is located in the southern portion of the stie. Slope geomorphology is characterized by gently to moderately sloping topography with grades of about 5 to 25 percent with short slopes up to approximately 50 percent grade adjacent to the drainages. A wetland area indicating the potential presence of a spring was observed in the central portion of the site to the south of test pit TP-24.

Three landslides are mapped by DOGAMI in the northwestern portion of the site (Figure 2). Subsurface explorations indicate that the landslides have failure depths of 20 to 24 feet where explored in test pits TP-20 and TP-21. Slope geomorphology observed in the tributary drainage included arcuate shaped scarps, subtle benches, and slightly hummocky topography indicative of prior slope movement that had not been previously mapped.

Explorations conducted in the northeastern portion of the site above an elevation of 360 feet msl encountered weathered basalt rock belonging to the Boring Lava Formation, which have a moderate to high resistance to slope instability (Figure 2). The moderately sloping central portion of the site is underlain by Springwater Formation material, which has a moderate resistance to slope instability along moderately sloping topography. The low lying western portion of the site is underlain by Willamette Formation soils that are moderately resistant to slope instability along gentle slopes. Visual reconnaissance and review of Lidar based high resolution digital elevation maps (Figure 2) of the areas of the site away from drainages indicate slopes are generally smooth and uniform (DOGAMI, 2021).

It is our opinion that areas mapped as slope hazard zones (and the buffer areas can safely be constructed). Our slope stability analysis indicates adequate factors of safety can be maintained around landslide areas by maintaining a setback for structures and fill placement.

Quantitative Slope Stability Modeling

Quantitative slope stability modeling and analyses were performed to evaluate slope stability on the sides of the drainages in the northwest and southwest portions of the site using the SLOPE/W computer program developed by Geo-Slope International of Calgary, Canada. This numerical analysis program utilizes a two-dimensional limiting equilibrium method to calculate the factor of safety of a potential slip surface and incorporates search routines to identify the most critical potential failure surfaces for the cases analyzed. Factors of safety were calculated using Morgenstern-Price method of analysis.

Slope topography, subsurface geometry, and other conditions modeled in the analyses are based on our subsurface explorations, geologic cross sections A-A', B-B', C-C', and D-D' and results of laboratory testing. Shear strength parameters used in the models were selected based on SPT N-value correlations, laboratory testing, and our local experience with similar soil and geologic conditions. The parameters assumed in the stability calculations including parameters for engineered fill are summarized in Table 4.

Table 4. Summary of Estimated Soil Strength Parameters

Geologic Unit	Unit Weight (pcf)	Friction Angle	Cohesion (psf)
Stiff Willamette Formation	120	28°	0
Willamette Formation	125	22°	0
Soft-Medium Stiff Springwater Formation	125	24°	0
Stiff Springwater Formation	125	36°	300
Loose Troutdale Formation	120	30°	150
Medium Dense – Very Dense Troutdale Formation	125	36°	200

Based on the results of our slopes stability analyses, our recommended setback distances for the existing conditions (without remediation) are summarized on Table 5 and shown on Figures 3 and 4.

Table 5. Recommended Setback Distances for Existing Conditions

Area of Site	Minimum Setback Distance for Residences and/or Fill Placement (ft)
Section B-B' Vicinity of Soil Boring B-3	100
Section C-C' Vicinity of Soil Boring B-4 and Landslide Oregon_City_274	80
Section D-D' Vicinity of Soil Boring B-5	60
Vicinity of Landslides Oregon_City_272 and _290	100

With the implementation of slope stabilizations measures, the setback distances can be decreased. It is our understanding that soldier pile retaining walls with tiebacks are proposed on the side of the northwest drainage in the vicinity of section B-B'. At this time, it is our understanding that no slope stabilization measures are proposed in the vicinities of sections A-A', C-C', or D-D'. The reduced setback distance for section B-B' after the implementation of slope stabilization measures is presented on Table 6 a and is shown on Figure 5.

Table 6. Recommended Setback Distances for Existing Conditions

Area of Site	Minimum Setback Distance for Residences and/or Fill Placement after Implementation of Slope Stabilization Measures (ft)
Section B-B' Vicinity of Soil Boring B-3	40

Slope Stabilization Systems for Sewer Utility Line and Lots Near B-3

Based on consultation with the project civil engineer, AKS Engineering & Forestry, it is our understanding that a sewer utility line is proposed across the drainage in the northwest portion of the site. The proposed sewer utility line is to cross the drainage and connect to an existing sewer line in an existing development to the east of the drainage.

Since the slopes of the drainage in the northwest portion of the site do not have adequate factors of safety for slope stability in their existing condition, slope stabilization systems are necessary to support the installation of the sewer utility line. Permanent soldiers pile retaining walls are recommended to provide adequate factors of safety for the proposed sewer line. As shown on Figure 5, three different soldier pile wall configurations are currently being considered. The soldier piles walls would consist of a steel I-beam installed vertically into competent native soils. For Configuration A, the soldier pile would be a cantilever wall (without tiebacks). Configurations B and C would incorporate tiebacks in order to help restrain the wall from movement and to help increase slope stability on the uphill side of the wall. Conceptual sketches of the three different soldier pile wall configurations are shown on Figure 6.

The utilization of slope stabilization systems to support the installation of the sewer utility line would also sufficiently increase the factor of safety for slope stability on many lots in the vicinity of soil boring B-3. The adjusted slope setback line is shown on Figure 5.

Site Preparation

Areas of proposed buildings, streets, and areas to receive fill should be cleared of vegetation and any organic and inorganic debris. Encountered undocumented fills and any subsurface structures (dry wells, drainage tiles, old utility lines, septic leach fields, etc.) should be removed and the excavations backfilled with engineered fill. Undocumented fill was not encountered in our test pit explorations; however, areas of fill may be present outside our explorations, especially in the vicinity of the existing access driveways.

Organic-rich topsoil should then be stripped from native soil areas of the site. The estimated depth range necessary for removal of topsoil in cut and fill areas is approximately 6 to 9 inches, respectively. Greater stripping depths may be necessary in the southern portion of the site, which was formerly densely treed. The final depth of soil removal will be determined on the basis of a site inspection after the stripping/ excavation has been performed. Stripped topsoil should preferably be removed from the site due to the high density of the proposed development. Any remaining topsoil should be stockpiled only in designated areas and stripping operations should be observed and documented by the geotechnical engineer or his representative.

Once topsoil stripping and removal of organic and inorganic debris and undocumented fill soils are approved in a particular area, the area must be ripped or tilled to a depth of 12 inches, moisture conditioned, root-picked, and compacted in-place prior to the placement of engineered fill or crushed aggregate base for pavement. Exposed subgrade soils should be evaluated by the geotechnical engineer. For large areas, this evaluation is normally performed by proof-rolling the exposed subgrade with a fully loaded scraper or dump truck. For smaller areas where access is restricted, the subgrade should be evaluated by probing the soil with a steel probe. Soft/loose soils identified during subgrade preparation should be compacted to a firm and unyielding condition, over-excavated and replaced with engineered fill (as described below), or stabilized with rock prior to placement of engineered fill. The depth of overexcavation, if required, should be evaluated by the geotechnical engineer at the time of construction.

Engineered Fill

In general, we anticipate that soils from planned cuts and utility trench excavations will be suitable for use as engineered fill provided they are adequately moisture conditioned prior to compacting. All grading for the proposed construction should be performed as engineered grading in accordance with the applicable building code at time of construction with the exceptions and additions noted herein. Proper test frequency and earthwork documentation usually requires daily observation and testing during stripping, rough grading, and placement of engineered fill. Imported fill material must be approved by the geotechnical engineer prior to being imported to the site. Oversize material greater than 6 inches in size should not be used within 3 feet of foundation footings, and material greater than 12 inches in diameter should not be used in engineered fill.

Engineered fill should be compacted in horizontal lifts not exceeding 8 inches using standard compaction equipment. We recommend that engineered fill be compacted to at least 95% of the maximum dry density determined by ASTM D698 (Standard Proctor) or equivalent. Field density testing should conform to ASTM D2922 and D3017, or D1556. All engineered fill should be observed and tested by the project geotechnical engineer or his representative. Typically, one

density test is performed for at least every 2 vertical feet of fill placed or every 500 yd^3, whichever requires more testing. Because testing is performed on an on-call basis, we recommend that the earthwork contractor be held contractually responsible for test scheduling and frequency.

Site earthwork will be impacted by soil moisture and shallow groundwater conditions. Earthwork in wet weather would likely require extensive use of cement or lime treatment, or other special measures, at considerable additional cost compared to earthwork performed under dry-weather conditions.

Excavating Conditions and Utility Trenches

We anticipate that on-site soils can be excavated using conventional heavy equipment such as scrapers and trackhoes. The Boring Lava Formation is known for large, hard boulders that may hamper deep excavations such as utility trenching. Highly weathered basalt bedrock was encountered in test pits above an elevation of 360 feet msl at depths of 3 to 5 feet. The large excavator utilized for test pits TP-4 through TP-14 was able to achieve depths of 24 to 25 feet; however, practical refusal was encountered on medium hard (R3) to hard (R4) basalt boulders at depths of 19 and 21 feet in test pits TP-7 and TP-14, respectively. Difficult excavating conditions should be expected.

All temporary cuts in excess of 4 feet in height should be sloped in accordance with U.S. Occupational Safety and Health Administration (OSHA) regulations (29 CFR Part 1926) or be shored. The existing native, near surface soils are classified as Type B Soils and temporary excavation side slope inclinations as steep as 1.5H:1V may be assumed for planning purposes. This cut slope inclination is applicable to excavations above groundwater seepage zones only. Maintenance of safe working conditions, including temporary excavation stability, is the responsibility of the contractor. Actual slope inclinations at the time of construction should be determined based on safety requirements and actual soil and groundwater conditions.

Medium stiff, sandy silt that was very moist was encountered in Willamette Formation soils (test pits TP-1, TP-16 through TP-19, TP-22, and TP-23 and soil borings B-1 and B-5) and caving of the test pit walls was observed. Adequate shoring should be maintained. Soft, saturated soils and groundwater may be encountered in utility trenches, particularly during the wet season. We anticipate that dewatering systems consisting of ditches, sumps and pumps would be adequate for control of perched groundwater. Regardless of the dewatering system used, it should be installed and operated such that in-place soils are prevented from being removed along with the groundwater. Trench bottom stabilization, such as one to two feet of compacted crushed aggregate base, may be necessary in deeper trenches.

Vibrations created by traffic and construction equipment may cause some caving and raveling of excavation walls. In such an event, lateral support for the excavation walls should be provided by the contractor to prevent loss of ground support and possible distress to existing or previously constructed structural improvements.

PVC pipe should be installed in accordance with the procedures specified in ASTM D2321. We recommend that trench backfill be compacted to at least 95% of the maximum dry density determined by ASTM D1557 (Modified Proctor) or equivalent. Initial backfill lift thickness for a ¾"-0 crushed aggregate base may need to be as great as 4 feet to reduce the risk of flattening underlying flexible pipe. Subsequent lift thickness should not exceed 1 foot. If imported granular fill material is used, then the lifts for large vibrating plate-compaction equipment (e.g. hoe compactor attachments) may be up to 2 feet, provided that proper compaction is being achieved

and each lift is tested. Use of large vibrating compaction equipment should be carefully monitored near existing structures and improvements due to the potential for vibration-induced damage.

Adequate density testing should be performed during construction to verify that the recommended relative compaction is achieved. Typically, one density test is taken for every 4 vertical feet of backfill on each 200-lineal-foot section of trench.

Erosion Control Considerations

During our field exploration program, we did not observe soil types that would be considered highly susceptible to erosion except in areas of moderately to steeply sloping topography. In our opinion, the primary concern regarding erosion potential will occur during construction, in areas that have been stripped of vegetation. Erosion at the site during construction can be minimized by implementing the project erosion control plan, which should include judicious use of straw wattles and silt fences. If used, these erosion control devices should be in place and remain in place throughout site preparation and construction.

Erosion and sedimentation of exposed soils can also be minimized by quickly re-vegetating exposed areas of soil, and by staging construction such that large areas of the project site are not denuded and exposed at the same time. Areas of exposed soil requiring immediate and/or temporary protection against exposure should be covered with either mulch or erosion control netting/blankets. Areas of exposed soil requiring permanent stabilization should be seeded with an approved grass seed mixture, or hydroseeded with an approved seed-mulch-fertilizer mixture.

Wet Weather Earthwork

Soils underlying the site are likely to be moisture sensitive and may be difficult to handle or traverse with construction equipment during periods of wet weather. Earthwork is typically most economical when performed under dry weather conditions. Earthwork performed during the wet-weather season will probably require expensive measures such as cement treatment or imported granular material to compact fill to the recommended engineering specifications. If earthwork is to be performed or fill is to be placed in wet weather or under wet conditions when soil moisture content is difficult to control, the following recommendations should be incorporated into the contract specifications.

- Earthwork should be performed in small areas to minimize exposure to wet weather. Excavation or the removal of unsuitable soils should be followed promptly by the placement and compaction of clean engineered fill. The size and type of construction equipment used may have to be limited to prevent soil disturbance. Under some circumstances, it may be necessary to excavate soils with a backhoe to minimize subgrade disturbance caused by equipment traffic;
- The ground surface within the construction area should be graded to promote run-off of surface water and to prevent the ponding of water;
- Material used as engineered fill should consist of clean, granular soil containing less than 5 percent fines. The fines should be non-plastic. Alternatively, cement treatment of on-site soils may be performed to facilitate wet weather placement;
- The ground surface within the construction area should be sealed by a smooth drum vibratory roller, or equivalent, and under no circumstances should be left uncompacted and exposed to moisture. Soils which become too wet for compaction should be removed and replaced with clean granular materials;

- Excavation and placement of fill should be observed by the geotechnical engineer to verify that all unsuitable materials are removed and suitable compaction and site drainage is achieved; and
- Straw wattles and/or geotextile silt fences should be strategically located to control erosion.

If cement or lime treatment is used to facilitate wet weather construction, GeoPacific should be contacted to provide additional recommendations and field monitoring.

Spread Foundations

Slope setbacks of are necessary to maintain adequate factors of safety under static and pseudostatic conditions for home construction in the western portion of the site, as previously discussed. The proposed residential structures may likely be supported on shallow foundations bearing on competent undisturbed, native low expansivity soils and/or engineered fill, appropriately designed and constructed as recommended in this report. Very highly expansive soils were encountered at depths below 8 to 16 feet in test pits TP-2, TP-20, TP-21, TP-23 and TP-24. If encountered, the recommendations for fat clay soils determined to be highly expansive in structural areas are as follows: (1) remove the material and replace it with low to medium expansivity soil/engineered fill, (2) separate footings from the expansive soils by ensuring there is at least 5 feet of engineered fill and/or native, low to medium expansivity soil overlying the highly expansive clay, (3) chemically stabilize the soils with hydrated lime or alternate chemical additives such as Condor SS, or (4) blend with low expansivity soils. Expansive soils can remain beneath flexible pavement areas and backyards where expansion will have a minor impact on improvements.

Foundation design, construction, and setback requirements should conform to the applicable building code at the time of construction. For maximization of bearing strength and protection against frost heave, spread footings should be embedded at a minimum depth of 12 inches below exterior grade. The recommended minimum widths for continuous footings supporting wood-framed walls without masonry are 12 inches for single-story, 15 inches for two-story, and 18 inches for three-story structures. Minimum foundation reinforcement should consist of a No. 4 bar at the top of the stem walls, and a No. 4 bar at the bottom of the footings. Concrete slab-on-grade reinforcement should consist of No. 4 bars placed on 24-inch centers in a grid pattern.

The anticipated allowable soil bearing pressure is 1,500 lbs/ft^2 for footings bearing on competent, nonexpansive native soil and/or engineered fill. A maximum chimney and column load of 40 kips is recommended for the site. The recommended maximum allowable bearing pressure may be increased by 1/3 for short-term transient conditions such as wind and seismic loading. For heavier loads, the geotechnical engineer should be consulted. The coefficient of friction between on-site soil and poured-in-place concrete may be taken as 0.42, which includes no factor of safety. The maximum anticipated total and differential footing movements (generally from soil expansion and/or settlement) are 1 inch and ¾ inch over a span of 20 feet, respectively. We anticipate that the majority of the estimated settlement will occur during construction, as loads are applied. Excavations near structural footings should not extend within a 1H:1V plane projected downward from the bottom edge of footings.

Footing excavations should penetrate through topsoil and any loose soil to competent subgrade that is suitable for bearing support. All footing excavations should be trimmed neat, and all loose or softened soil should be removed from the excavation bottom prior to placing reinforcing steel bars. Due to the moisture sensitivity of on-site native soils, foundations constructed during the wet weather season may require overexcavation of footings and backfill with compacted, crushed aggregate.

Our recommendations are for house construction incorporating raised wood floors and conventional spread footing foundations. If living space of the structures will incorporate basements, a geotechnical engineer should be consulted to make additional recommendations for retaining walls, water-proofing, underslab drainage and wall subdrains. After site development, a Final Soil Engineer's Report should either confirm or modify the above recommendations.

Concrete Slabs-on-Grade

Preparation of areas beneath concrete slab-on-grade floors should be performed as recommended in the *Site Preparation and Undocumented Fill Removal* section. Care should be taken during excavation for foundations and floor slabs, to avoid disturbing subgrade soils. If subgrade soils have been adversely impacted by wet weather or otherwise disturbed, the surficial soils should be scarified to a minimum depth of 8 inches, moisture conditioned to within about 3 percent of optimum moisture content, and compacted to engineered fill specifications. Alternatively, disturbed soils may be removed and the removal zone backfilled with additional crushed rock.

For evaluation of the concrete slab-on-grade floors using the beam on elastic foundation method, a modulus of subgrade reaction of 150 kcf (87 pci) should be assumed for the medium stiff native silt soils anticipated at subgrade depth. This value assumes the concrete slab system is designed and constructed as recommended herein, with a minimum thickness of crushed rock of 8 inches beneath the slab.

Interior slab-on-grade floors should be provided with an adequate moisture break. The capillary break material should consist of ODOT open graded aggregate per ODOT Standard Specifications 02630-2. The minimum recommended thickness of capillary break materials on re-compacted soil subgrade is 8 inches. The total thickness of crushed aggregate will be dependent on the subgrade conditions at the time of construction, and should be verified visually by proof-rolling. Under-slab aggregate should be compacted to at least 90% of its maximum dry density as determined by ASTM D1557 or equivalent.

In areas where moisture will be detrimental to floor coverings or equipment inside the proposed structure, appropriate vapor barrier and damp-proofing measures should be implemented. Appropriate design professionals should be consulted regarding vapor barrier and damp proofing systems, ventilation, building material selection and mold prevention issues, which are outside GeoPacific's area of expertise.

Permanent Below-Grade Walls

Lateral earth pressures against below-grade retaining walls will depend upon the inclination of any adjacent slopes, type of backfill, degree of wall restraint, method of backfill placement, degree of backfill compaction, drainage provisions, and magnitude and location of any adjacent surcharge loads. At-rest soil pressure is exerted on a retaining wall when it is restrained against rotation. In contrast, active soil pressure will be exerted on a wall if its top is allowed to rotate or yield a distance of roughly 0.001 times its height or greater.

If the subject retaining walls will be free to rotate at the top, they should be designed for an active earth pressure equivalent to that generated by a fluid weighing 35 pcf for level backfill against the wall. For restrained wall, an at-rest equivalent fluid pressure of 55 pcf should be used in design, again assuming level backfill against the wall. These values assume that drainage provisions are incorporated, free draining gravel backfill is used, and hydrostatic or expansive soil pressures are not allowed to develop against the wall.

During a seismic event, lateral earth pressures acting on below-grade structural walls will increase by an incremental amount that corresponds to the earthquake loading. Based on the Mononobe-Okabe equation and peak horizontal accelerations appropriate for the site location, seismic loading should be modeled using the active or at-rest earth pressures recommended above, plus an incremental rectangular-shaped seismic load of magnitude 6.5H, where H is the total height of the wall.

We assume relatively level ground surface below the base of the walls. As such, we recommend passive earth pressure of 320 pcf for use in design, assuming wall footings are cast against competent native soils or engineered fill. If the ground surface slopes down and away from the base of any of the walls, a lower passive earth pressure should be used and GeoPacific should be contacted for additional recommendations.

A coefficient of friction of 0.42 may be assumed along the interface between the base of the wall footing and subgrade soils. The recommended coefficient of friction and passive earth pressure values do not include a safety factor, and an appropriate safety factor should be included in design. The upper 12 inches of soil should be neglected in passive pressure computations unless it is protected by pavement or slabs on grade.

The above recommendations for lateral earth pressures assume that the backfill behind the subsurface walls will consist of properly compacted structural fill, and no adjacent surcharge loading. If the walls will be subjected to the influence of surcharge loading within a horizontal distance equal to or less than the height of the wall, the walls should be designed for the additional horizontal pressure. For uniform surcharge pressures, a uniformly distributed lateral pressure of 0.3 times the surcharge pressure should be added. Traffic surcharges may be estimated using an additional vertical load of 250 psf (2 feet of additional fill), in accordance with local practice.

The recommended equivalent fluid densities assume a free-draining condition behind the walls so that hydrostatic pressures do not build-up. This can be accomplished by placing a 12 to 18-inch wide zone of sand and gravel containing less than 5 percent passing the No. 200 sieve against the walls. A 3-inch minimum diameter perforated, plastic drain pipe should be installed at the base of the walls and connected to a suitable discharge point to remove water in this zone of sand and gravel. The drain pipe should be wrapped in filter fabric (Mirafi 140N or other as approved by the geotechnical engineer) to minimize clogging.

Wall drains are recommended to prevent detrimental effects of surface water runoff on foundations – not to dewater groundwater. Drains should not be expected to eliminate all potential sources of water entering a basement or beneath a slab-on-grade. An adequate grade to a low point outlet drain in the crawlspace is required by code. Underslab drains are sometimes added beneath the slab when placed over soils of low permeability and shallow, perched groundwater.

Water collected from the wall drains should be directed into the local storm drain system or other suitable outlet. A minimum 0.5 percent fall should be maintained throughout the drain and non-perforated pipe outlet. Down spouts and roof drains should not be connected to the wall drains in order to reduce the potential for clogging. The drains should include clean-outs to allow periodic maintenance and inspection. Grades around the proposed structure should be sloped such that surface water drains away from the building.

GeoPacific should be contacted during construction to verify subgrade strength in wall keyway excavations, to verify that backslope soils are in accordance with our assumptions, and to take density tests on the wall backfill materials.

Structures should be located a horizontal distance of at least 1.5H away from the back of the retaining wall, where H is the total height of the wall. GeoPacific should be contacted for additional foundation recommendations where structures are located closer than 1.5H to the top of any wall.

Pavement Design

For design purposes, we used an estimated resilient modulus of 7,500 for compacted native soil. Table 7 presents our recommended minimum dry-weather pavement section for light-duty public streets. For streets subjected to loading from traffic other than passenger cars and occasional emergency vehicles and delivery vehicles, GeoPacific should be consulted to provide additional recommendations.

Table 7. Recommended Minimum Dry-Weather Pavement Section for Light-Duty Streets

Material Layer	Section Thickness (in)	Compaction Standard
Asphaltic Concrete (AC)	3	92% of Rice Density AASHTO T-209
Crushed Aggregate Base ¾"-0 (leveling course)	2	95% of Modified Proctor AASHTO T-180
Crushed Aggregate Base 1½"-0	8	95% of Modified Proctor AASHTO T-180
Subgrade	12	95% of Standard Proctor AASHTO T-99 or equivalent

Any pockets of organic debris or loose fill encountered during ripping or tilling should be removed and replaced with engineered fill (see *Site Preparation* Section). In order to verify subgrade strength, we recommend proof-rolling directly on subgrade with a loaded dump truck during dry weather and on top of base course in wet weather. Soft areas that pump, rut, or weave should be stabilized prior to paving. If pavement areas are to be constructed during wet weather, the subgrade and construction plan should be reviewed by the project geotechnical engineer at the time of construction so that condition specific recommendations can be provided. The moisture sensitive subgrade soils make the site a difficult wet weather construction project.

During placement of pavement section materials, density testing should be performed to verify compliance with project specifications. Generally, one subgrade, one base course, and one asphalt compaction test is performed for every 100 to 200 linear feet of paving.

Seismic Design

The Oregon Department of Geology and Mineral Industries (DOGAMI), Oregon HazVu: 2021 Statewide GeoHazards Viewer indicates that the site is in an area where *very strong* ground shaking is anticipated during an earthquake. Structures should be designed to resist earthquake loading in accordance with the methodology described in the 2018 International Building Code (IBC) with applicable Oregon Structural Specialty Code (OSSC) revisions (current 2019). We recommend Site Class D be used for design as defined in ASCE 7, Chapter 20, Table 20.3-1. Design values determined for the site using the ATC (Applied Technology Council) *ASCE7-16 Hazards by Location online Tool* website are summarized in Table 5.

Table 8. Recommended Earthquake Ground Motion Parameters (ATC 2021)

Parameter	Value
Location (Lat, Long), degrees	45.367, -122.563
Mapped Spectral Acceleration Values (MCE):	
Peak Ground Acceleration PGA_M	0.454 g
Short Period, S_s	0.821 g
1.0 Sec Period, S_1	0.367 g
Soil Factors for Site Class D:	
F_a	1.172
F_v	1.933*
$SD_s = 2/3 \times F_a \times S_s$	0.641 g
$SD_1 = 2/3 \times F_v \times S_1$	0.473 g*
Seismic Design Category	D

* The F_v value reported in the above table is a straight-line interpolation of mapped spectral response acceleration at 1-second period, S_1 per Table 1613.2.3(2) of OSSC 2019 with the assumption that Exception 2 of ASCE 7-16 Chapter 11.4.8 is met. SD_1 is based on the F_v value. The structural engineer should evaluate exception 2 and determine whether or not the exception is met. If Exception 2 is not met, and the long-period site coefficient (F_v) is required for design, GeoPacific Engineering can be consulted to provide a site-specific procedure as per ASCE 7-16, Chapter 21.

Soil Liquefaction

Soil liquefaction is a phenomenon wherein saturated soil deposits temporarily lose strength and behave as a liquid in response to earthquake shaking. Soil liquefaction is generally limited to loose, granular soils located below the water table. The Oregon Department of Geology and Mineral Industries (DOGAMI), Oregon HazVu: 2021 Statewide GeoHazards Viewer indicates that the site is considered to not have a risk for soil liquefaction. Our explorations indicate that the soils underlying the site are not susceptible to liquefaction.

Other Potential Seismic Impacts

Other potential seismic impacts include fault rupture potential. However, based on our review of available geologic literature, we are not aware of any mapped active (demonstrating movement in the last 10,000 years) faults on the site. During our field investigation, we did not observe any evidence of surface rupture or recent faulting. Therefore, we conclude that the potential for fault rupture on site is very low.

Footing and Roof Drains

Construction should include typical measures for controlling subsurface water beneath the homes, including positive crawlspace drainage to an adequate low-point drain exiting the foundation, visqueen covering the expose ground in the crawlspace, and crawlspace ventilation (foundation vents). The homebuyers should be informed and educated that some slow flowing water in the crawlspaces is considered normal and not necessarily detrimental to the home given these other design elements incorporated into its construction. Appropriate design professionals should be

consulting regarding crawlspace ventilation, building material selection and mold prevention issues, which are outside GeoPacific's area of expertise.

Down spouts and roof drains should collect roof water in a system separate from the footing drains to reduce the potential for clogging. Roof drain water should be directed to an appropriate discharge point and storm system well away from structural foundations. Grades should be sloped downward and away from buildings to reduce the potential for ponded water near structures.

If the proposed structures will have a raised floor, and no concrete slab-on-grade floors in living spaces are used, perimeter footing drains would not be required based on soil conditions encountered at the site and experience with standard local construction practices. Where it is desired to reduce the potential for moist crawl spaces, footing drains may be installed. If concrete slab-on-grade floors are used, perimeter footing drains should be installed as recommended below.

Where necessary, perimeter footing drains should consist of 3 or 4-inch diameter, perforated plastic pipe embedded in a minimum of 1 ft^3 per lineal foot of clean, free-draining drain rock. The drain pipe and surrounding drain rock should be wrapped in non-woven geotextile (Mirafi 140N, or approved equivalent) to minimize the potential for clogging and/or ground loss due to piping. A minimum 0.5 percent fall should be maintained throughout the drain and non-perforated pipe outlet. In our opinion, footing drains may outlet at the curb, or on the back sides of lots where sufficient fall is not available to allow drainage to meet the street.

UNCERTAINTIES AND LIMITATIONS

We have prepared this report for the owner and their consultants for use in design of this project only. This report should be provided in its entirety to prospective contractors for bidding and estimating purposes; however, the conclusions and interpretations presented in this report should not be construed as a warranty of the subsurface conditions. Experience has shown that soil and groundwater conditions can vary significantly over small distances. Inconsistent conditions can occur between explorations that may not be detected by a geotechnical study. If, during future site operations, subsurface conditions are encountered which vary appreciably from those described herein, GeoPacific should be notified for review of the recommendations of this report, and revision of such if necessary.

Sufficient geotechnical monitoring, testing and consultation should be provided during construction to confirm that the conditions encountered are consistent with those indicated by explorations. The checklist attached to this report outlines recommended geotechnical observations and testing for the project. Recommendations for design changes will be provided should conditions revealed during construction differ from those anticipated, and to verify that the geotechnical aspects of construction comply with the contract plans and specifications.

Within the limitations of scope, schedule and budget, GeoPacific attempted to execute these services in accordance with generally accepted professional principles and practices in the fields of geotechnical engineering and engineering geology at the time the report was prepared. No warranty, expressed or implied, is made. The scope of our work did not include environmental assessments or evaluations regarding the presence or absence of wetlands or hazardous or toxic substances in the soil, surface water, or groundwater at this site.

We appreciate this opportunity to be of service.

Sincerely,

GEOPACIFIC ENGINEERING, INC.





Beth K. Rapp, C.E.G.
Senior Engineering Geologist

Benjamin G. Anderson, P.E.
Associate Engineer

Attachments: References
Figure 1 – Vicinity Map
Figure 2 – Lidar Based Vicinity Map – With Mapped Landslides
Figure 3 – Site Plan, Geologic Map, and Exploration Locations
Figure 4 – Slope Setbacks for Northwest Drainage – Existing Conditions
Figure 5 – Slope Setbacks for Northwest Drainage – Proposed Conditions
Figure 6 – Soldier Pile Retaining Walls – Conceptual Sketches
Test Pit Logs (TP-1 through TP-24)
Boring Logs (B-1 through B-5)
Laboratory Test Results – Expansion Index of Soils
Slope Stability Analyses – Graphical Plots

REFERENCES

Applied Technology Council (ATC), 2021, Hazards by Location Online Tool, https://hazards.atcouncil.org/#/seismic

Atwater, B.F., 1992, Geologic evidence for earthquakes during the past 2,000 years along the Copalis River, southern coastal Washington: Journal of Geophysical Research, v. 97, p. 1901-1919.

Burns, W.J. and Madin, I.P., 2009, Landslide Inventory Map of the Northwest Quarter of the Oregon City Quadrangle, Clackamas County, Oregon: Oregon Department of Geology and Mineral Industries, IMS-26, scale 1:8,000, 1 plate.

Burns, W.J. and Mickelson, K.A., 2010, Landslide Inventory Maps of the Oregon City Quadrangle, Clackamas County, Oregon: Oregon Department of Geology and Mineral Industries, IMS-30, scale 1:8,000, 4 plates.

Carver, G.A., 1992, Late Cenozoic tectonics of coastal northern California: American Association of Petroleum Geologists-SEPM Field Trip Guidebook, May, 1992.

CH2M Hill and Tola, Beeson and Associates, 1991, Phase I geologic studies at Grant Butte Reservoir: Report prepared for the city of Gresham, Oregon.

Cornforth and Geomatrix Consultants, 1992, Seismic hazard evaluation, Bull run dam sites near Sandy, Oregon: unpublished report to City of Portland Bureau of Water Works.

Geomatrix Consultants, 1995, Seismic Design Mapping, State of Oregon: unpublished report prepared for Oregon Department of Transportation, Personal Services Contract 11688, January 1995.

Goldfinger, C., Kulm, L.D., Yeats, R.S., Appelgate, B, MacKay, M.E., and Cochrane, G.R., 1996, Active strike-slip faulting and folding of the Cascadia Subduction-Zone plate boundary and forearc in central and northern Oregon: in Assessing earthquake hazards and reducing risk in the Pacific Northwest, v. 1: U.S. Geological Survey Professional Paper 1560, P. 223-256.

Lite, K.E., Jr., 1992, Deformation in the southeast part of the Portland Basin (abs): Geological Society of America Abstracts with Programs, v. 24, no. 5, p. 64.

Madin, I.P., 1990, Earthquake hazard geology maps of the Portland metropolitan area, Oregon: Oregon Department of Geology and Mineral Industries Open-File Report 0-90-2, scale 1:24,000, 22 p.

Madin, I.P., 1992, Quaternary deformation in the Portland Basin, Damascus Quadrangle (abs): Geological Society of America Abstracts with Programs, v. 24, no. 5, p.67.

Madin, I.P., 1994, Geology of the Damascus Quadrangle, Clackamas and Multnomah Counties, Oregon: Oregon Department of Geology and Mineral Industries GMS-60.

Madin, I.P., 2009, Geologic map of the Oregon City 7.5' Quadrangle, Clackamas County, Oregon: Oregon Department of Geology and Mineral Industries GMS-119.

Madin, I.P. and Burns, W.J., 2006, Map of the landslide geomorphology of Oregon City, Oregon, and vicinity interpreted from lidar imagery and aerial photographs: Oregon Department of Geology and Mineral Industries Open File Report O-06-27.

City of Oregon City, 2021, OCWebMaps: http://orcity.org/maps/ocwebmaps

Oregon Department of Geology and Mineral Industries, 2021, DOGAMI Lidar Viewer: https://gis.dogami.oregon.gov/lidarviewer/.

Oregon Department of Geology and Mineral Industries, 2021, Oregon Hazvu: Statewide Geohazards Viewer: https://gis.dogami.oregon.gov/hazvu/

Oregon Department of Geology and Mineral Industries, 2021, SLIDO: Statewide Landslide Information Database for Oregon: https://gis.dogami.oregon.gov/slido/

Peterson, C.D., Darioenzo, M.E., Burns, S.F., and Burris, W.K., 1993, Field trip guide to Cascadia paleoseismic evidence along the northern California coast: evidence of subduction zone seismicity in the central Cascadia margin: Oregon Geology, v. 55, p. 99-144.

Phillips W. M., 1987, Geologic map of the Vancouver Quadrangle, Washington and Oregon: Washington Division of Geology and Natural Resources, Open File Report 87-10, 32 p., map scale 1:100,000.

Schlicker, H.G. and Finlayson, C.T., 1979, Geology and Geologic Hazards of northwestern Clackamas County, Oregon: Oregon Department of Geology and Mineral Industries, Bulletin No. 99, 79 p., scale 1:24,000.

Snyder, D.T., 2008, Estimated Depth to Ground Water and Configuration of the Water Table in the Portland, Oregon Area: U.S. Geological Survey Scientific Investigations Report 2008–5059, 41 p., 3 plates.

Trimble, D.E., 1963, Geology of Portland, Oregon and adjacent areas: U.S. Geological Survey Bulletin 1119, 119p., 1 plate, scale 1:62,500.

Unruh, J.R., Wong, I.G., Bott, J.D., Silva, W.J., and Lettis, W.R., 1994, Seismotectonic evaluation: Scoggins Dam, Tualatin Project, Northwest Oregon: unpublished report by William Lettis and Associates and Woodward Clyde Federal Services, Oakland, CA, for U. S. Bureau of Reclamation, Denver CO (in Geomatrix Consultants, 1995).

Werner, K.S., Nabelek, J., Yeats, R.S., Malone, S., 1992, The Mount Angel fault: implications of seismic-reflection data and the Woodburn, Oregon, earthquake sequence of August, 1990: Oregon Geology, v. 54, p. 112-117.

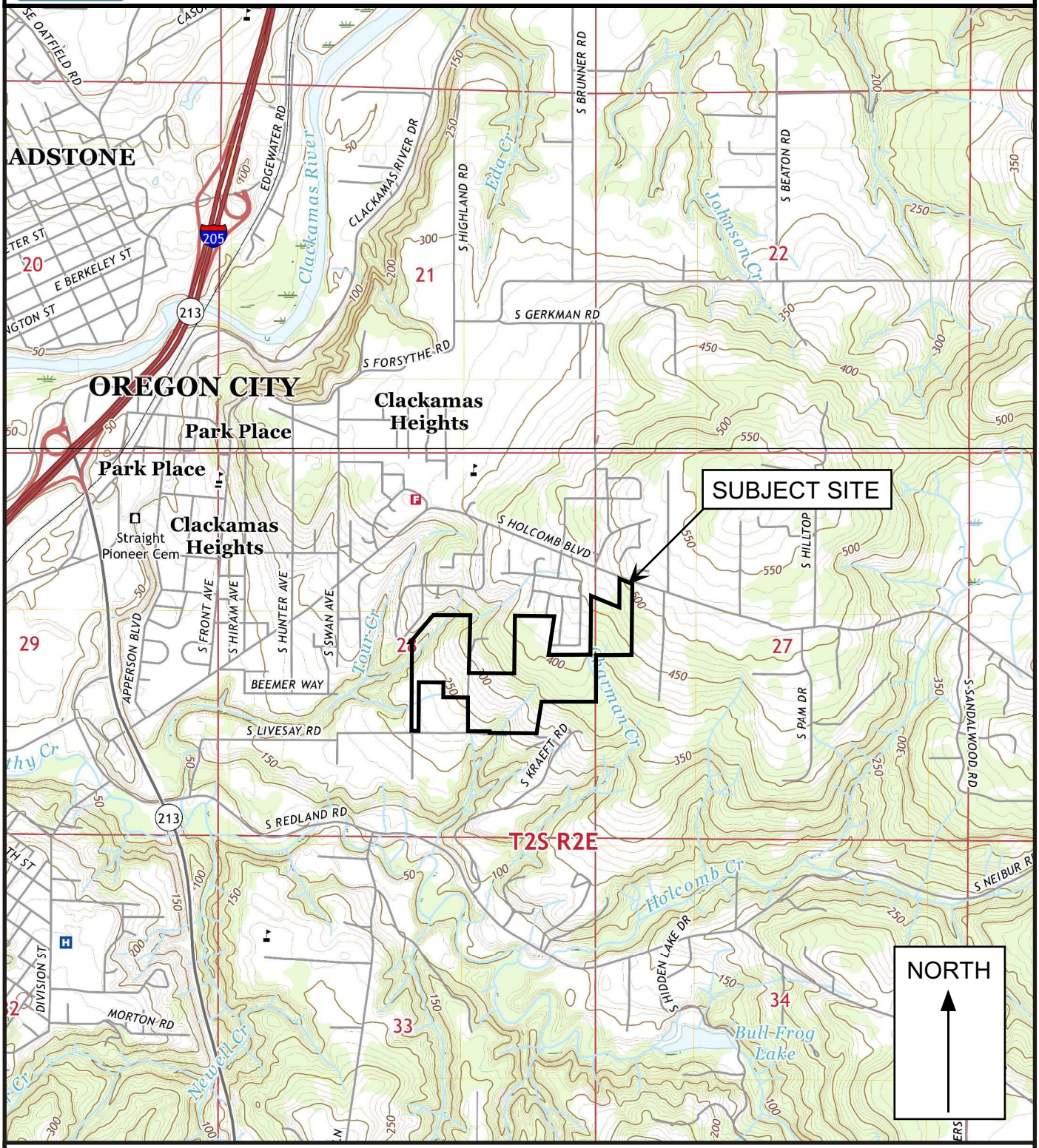
Wong, I. Silva, W., Bott, J., Wright, D., Thomas, P., Gregor, N., Li., S., Mabey, M., Sojourner, A., and Wang, Y., 2000, Earthquake Scenario and Probabilistic Ground Shaking Maps for the Portland, Oregon, Metropolitan Area; State of Oregon Department of Geology and Mineral Industries; Interpretative Map Series IMS-16.

Yeats, R.S., Graven, E.P., Werner, K.S., Goldfinger, C., and Popowski, T., 1996, Tectonics of the Willamette Valley, Oregon: in Assessing earthquake hazards and reducing risk in the Pacific Northwest, v. 1: U.S. Geological Survey Professional Paper 1560, P. 183-222, 5 plates, scale 1:100,000.

Yelin, T.S., 1992, An earthquake swarm in the north Portland Hills (Oregon): More speculations on the seismotectonics of the Portland Basin: Geological Society of America, Programs with Abstracts, v. 24, no. 5, p. 92

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VICINITY MAP



Legend

Approximate Scale 1 in = 2,000 feet

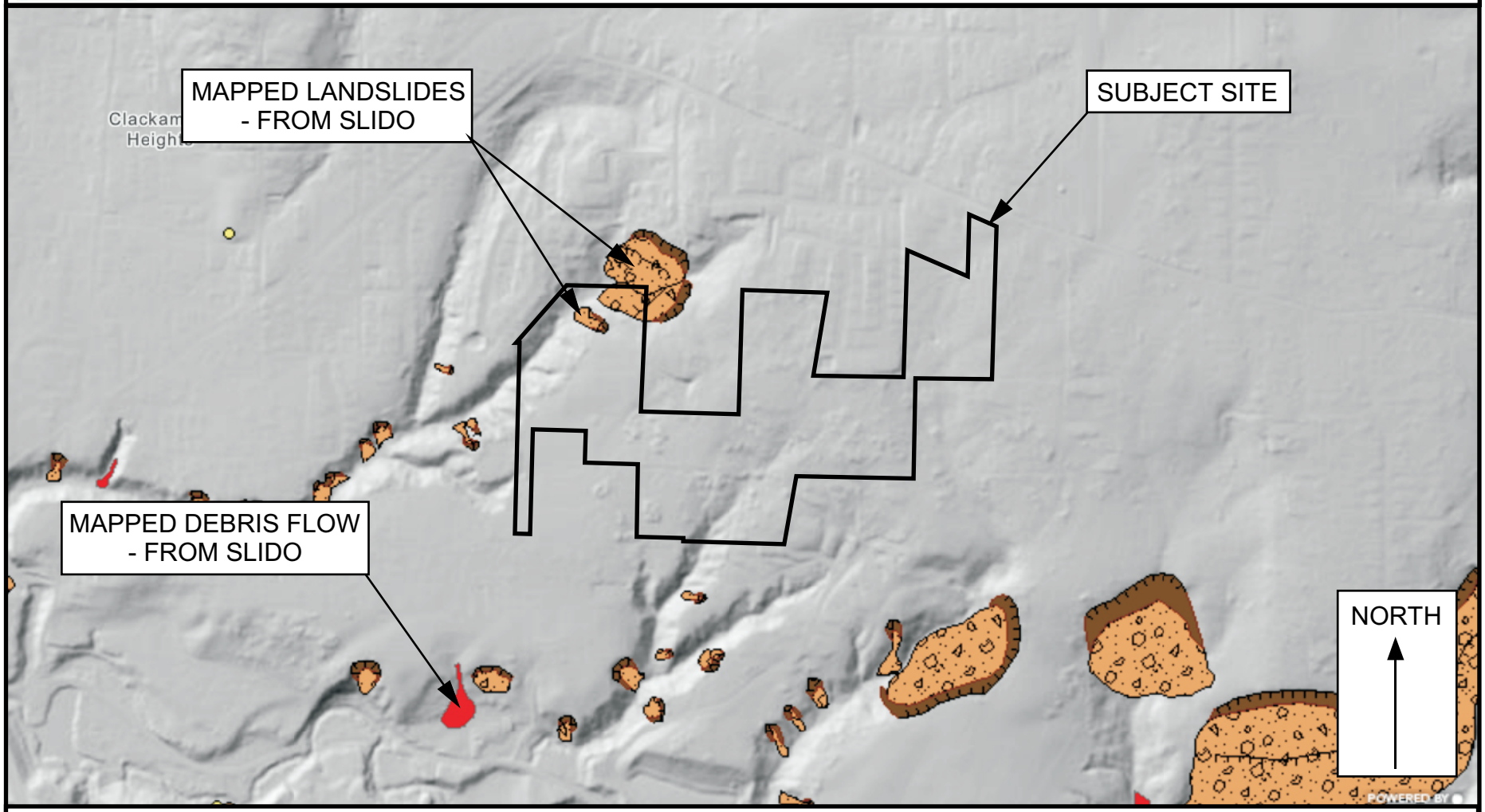
Date: 5/28/2021
Drawn by: EKR

Base map: U.S. Geological Survey 7.5 minute Topographic Map Series, Gladstone, Oregon Quadrangle, 2020 and Oregon City, Oregon Quadrangle, 2020.

Project: Park Place Oregon City, Oregon	Project No. 20-5600	FIGURE 1

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LIDAR BASED VICINITY MAP - WITH MAPPED LANDSLIDES



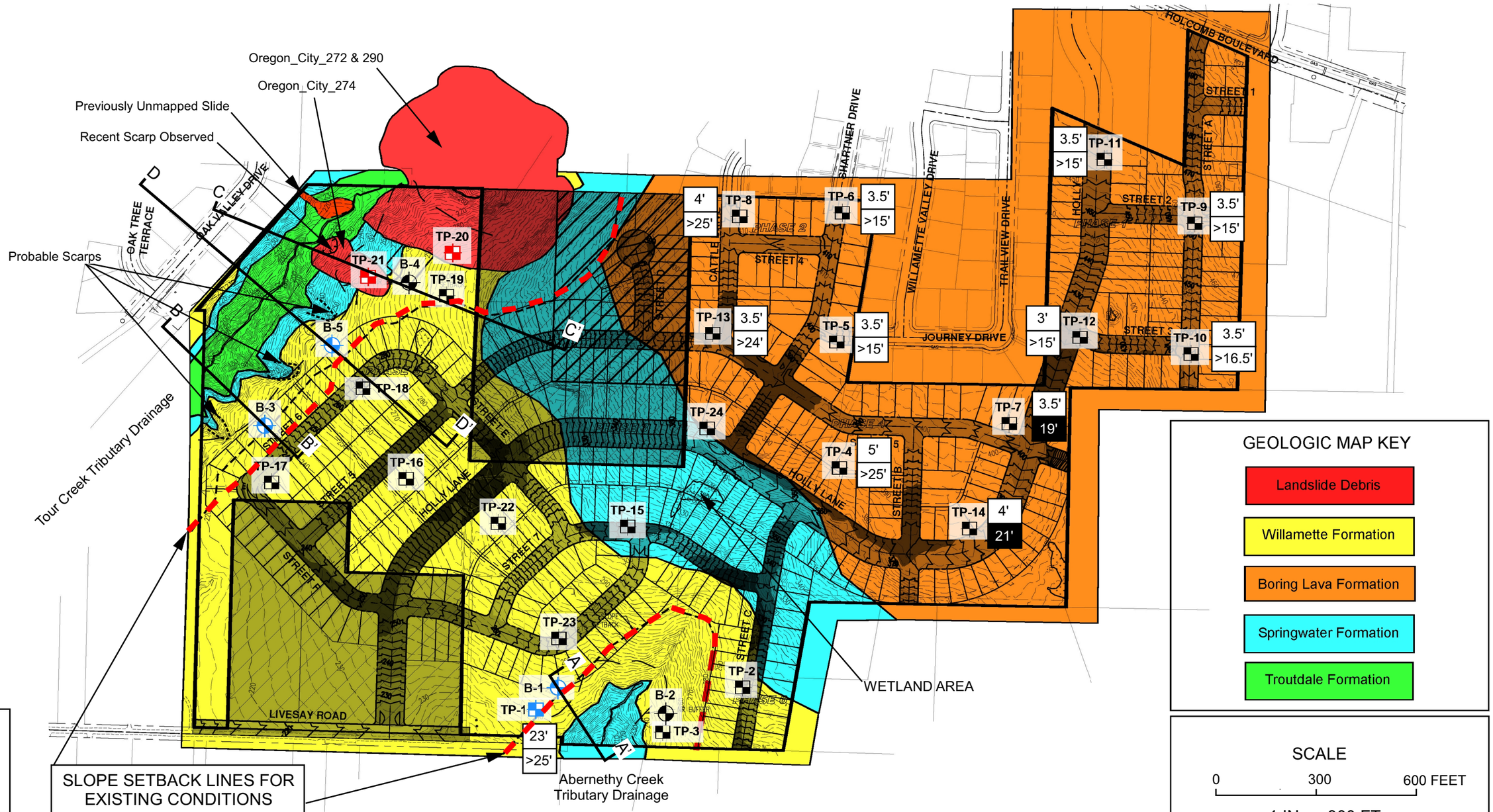
Legend

Approximate Scale 1 in = 1,000 ft

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Drawn by: EKR

Base map: Oregon Department of Geology and Mineral Industries, 2021, Statewide Landslide Information Database for Oregon (SLIDO): https://gis.dogami.oregon.gov/maps/slido/

Project: Park Place Oregon City, Oregon	Project No. 20-5600	FIGURE 2



Legend

TP-1 Test Pit Designation and Approximate Location

B-1 Boring Designation and Approximate Location

Landslide Debris Encountered

Soft Soils Encountered

Note: Location of all geotechnical information is approximate.

3.5' = Depth at Which Rock is First Encountered

15.5' = Depth of Practical Refusal on Rock

>25'= Depth is Beyond Maximum Exploration Depth

19' = Depth of Practical Refusal on Boulder

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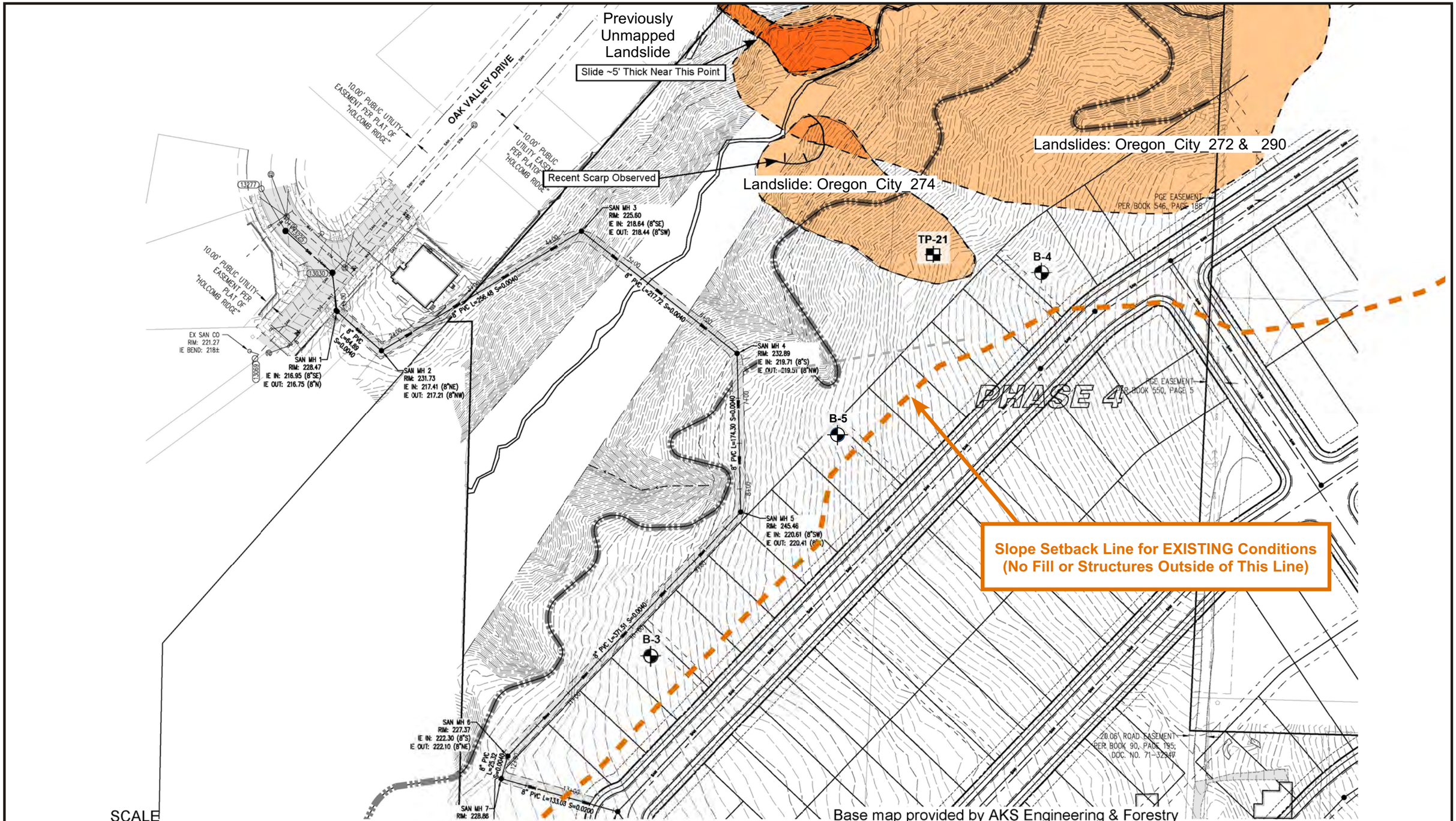
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SITE PLAN, GEOLOGIC MAP, AND EXPLORATION LOCATIONS

Project: Park Place
Oregon City, Oregon

Project No. 20-5600

FIGURE 3



SCALE

0 100 200 FEET

1 IN = 100 FT

Note: Location of all geotechnical information is approximate.

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SLOPE SETBACKS FOR NORTHWEST DRAINAGE - EXISTING CONDITIONS

Project: Park Place Subdivision, Oregon City, Oregon	Project No. 20-5600	Drawn By: BGA	FIGURE 4

CONFIGURATION A
Cantilever Soldier Piles to Provide Short Permanent Retaining Wall on Upslope Side of Access Road

CONFIGURATION B
Skinnier Soldier Piles with Tiebacks

CONFIGURATION C
Strong Soldier Piles with Tiebacks

Bridge Abutments

Previously Unmapped Landslide

Landslides: Oregon_City_272 & _290

Landslide: Oregon_City_274

TP-21

B-4

B-5

B-3

PHASE 4

Slope Setback Line for PROPOSED Conditions (No Fill or Structures Inside of This Line)

Developable Area Gained by Use of Configuration C

10.00' PUBLIC UTILITY EASEMENT PER PLAT OF "HOLCOMB RIDGE"

PGE EASEMENT PER BOOK 546, PAGE 188

PGE EASEMENT PER BOOK 550, PAGE 5

20.06' ROAD EASEMENT PER BOOK 90, PAGE 195; DOC. NO. 71-32347

SAN MH 1 RIM: 228.47 IE IN: 216.95 (8"SE) IE OUT: 216.75 (8"N)

SAN MH 2 RIM: 231.73 IE IN: 217.41 (8"NE) IE OUT: 217.21 (8"NW)

SAN MH 3 RIM: 225.60 IE IN: 218.64 (8"SE) IE OUT: 218.44 (8"SW)

SAN MH 4 RIM: 232.89 IE IN: 219.71 (8"S) IE OUT: 219.51 (8"NW)

SAN MH 5 RIM: 245.46 IE IN: 220.61 (8"SW) IE OUT: 220.41 (8"N)

SAN MH 6 RIM: 227.37 IE IN: 222.30 (8"S) IE OUT: 222.10 (8"NE)

SAN MH 8 RIM: 236.08 IE IN: 225.46 (8"SE) IE OUT: 225.26 (8"W)

EX SAN CO RIM: 221.27 IE BEND: 218±

8" PVC L=256.48 S=0.0040

8" PVC L=217.72 S=0.0040

8" PVC L=64.89 S=0.0040

8" PVC L=174.30 S=0.0040

8" PVC L=271.51 S=0.0040

8" PVC L=135.03 S=0.0200

SCALE: 1"=50 FEET

SCALE
0 100 200 FEET
1 IN = 100 FT

Note: Location of all geotechnical information is approximate.

Base map provided by AKS Engineering & Forestry

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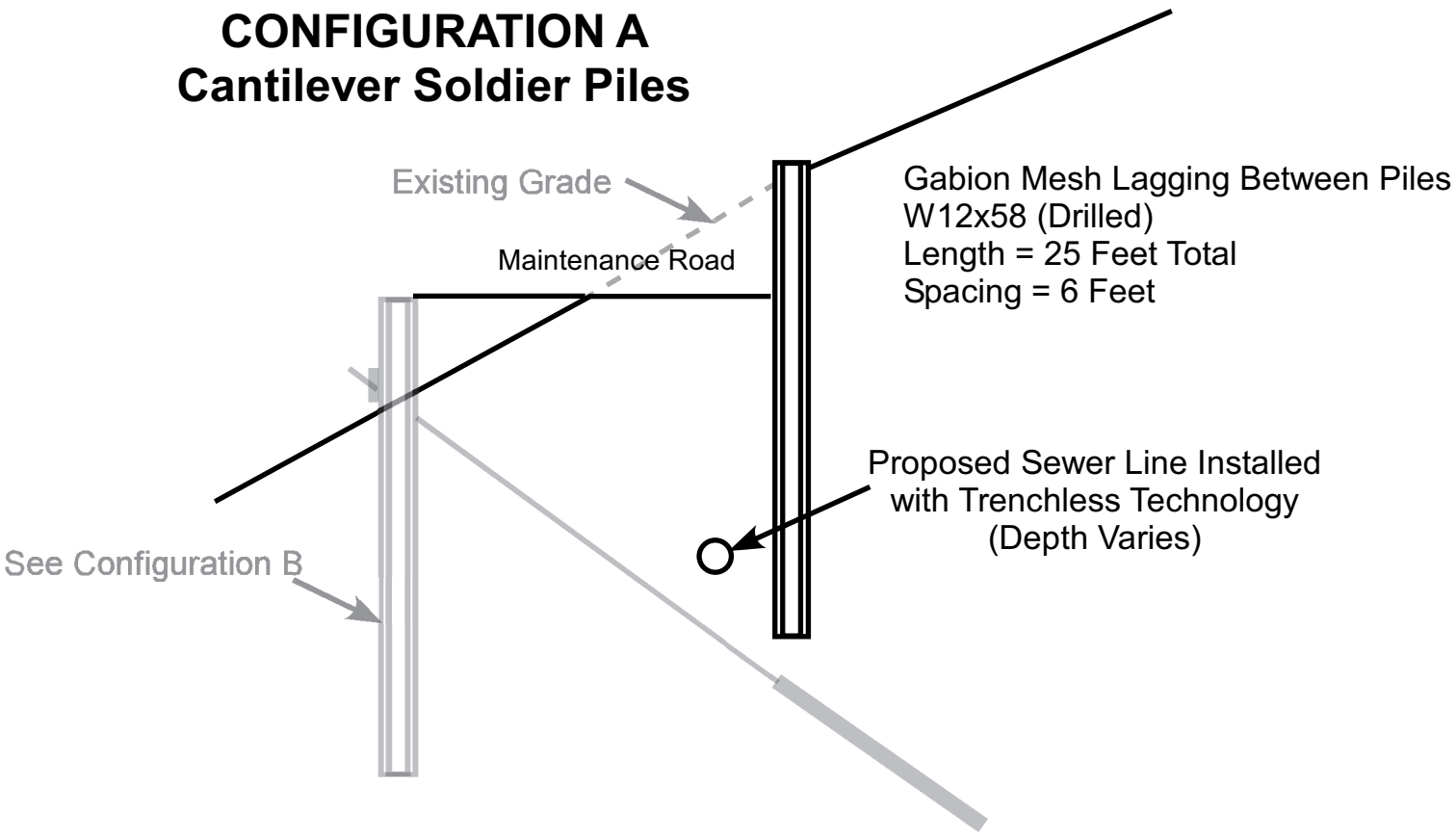
SLOPE SETBACKS FOR NORTHWEST DRAINAGE - PROPOSED CONDITIONS

Project: Park Place Subdivision, Oregon City, Oregon	Project No. 20-5600	Drawn By: BGA	FIGURE 5

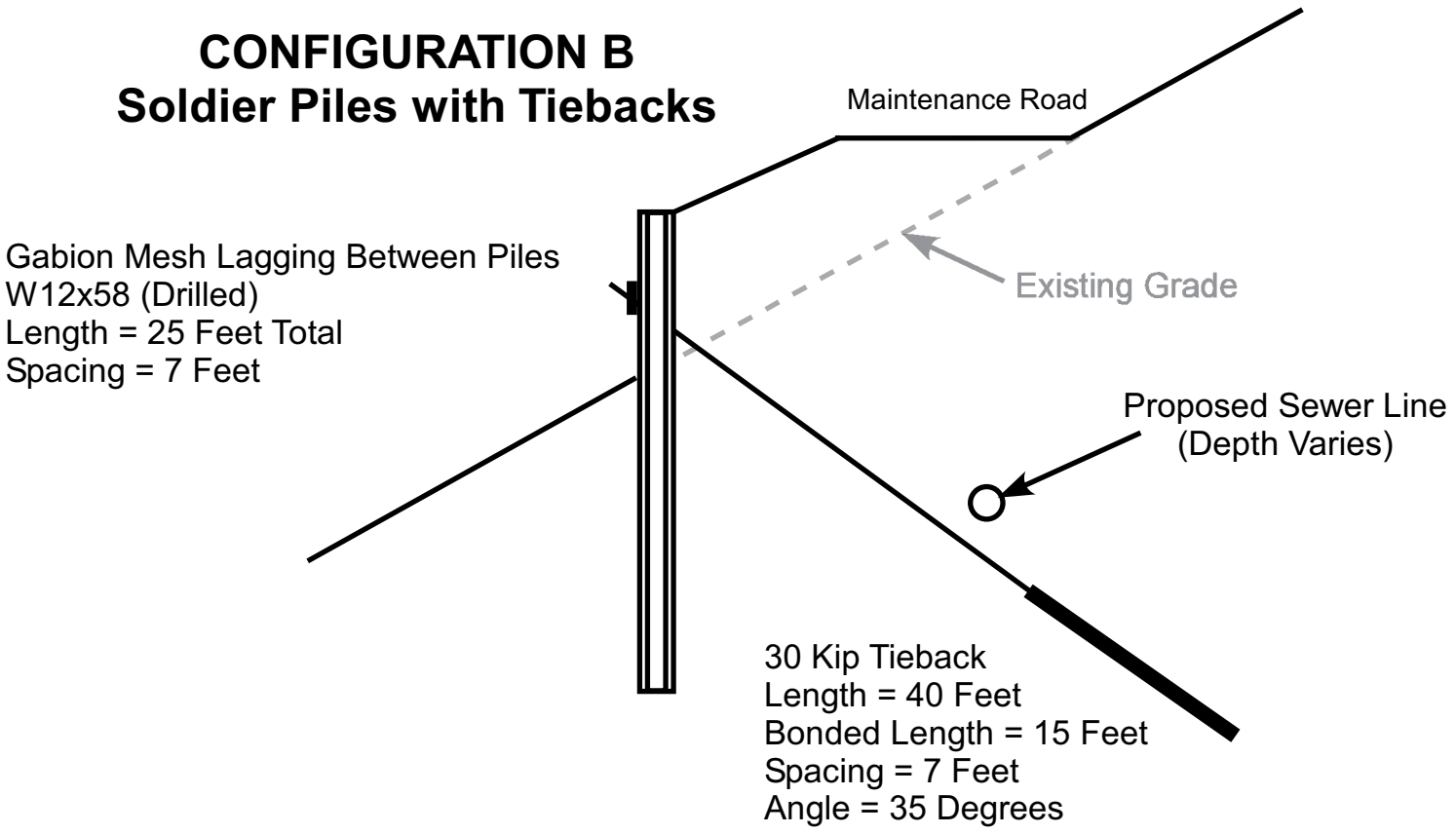
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SOLDIER PILE RETAINING WALLS
CONCEPTUAL SKETCHES

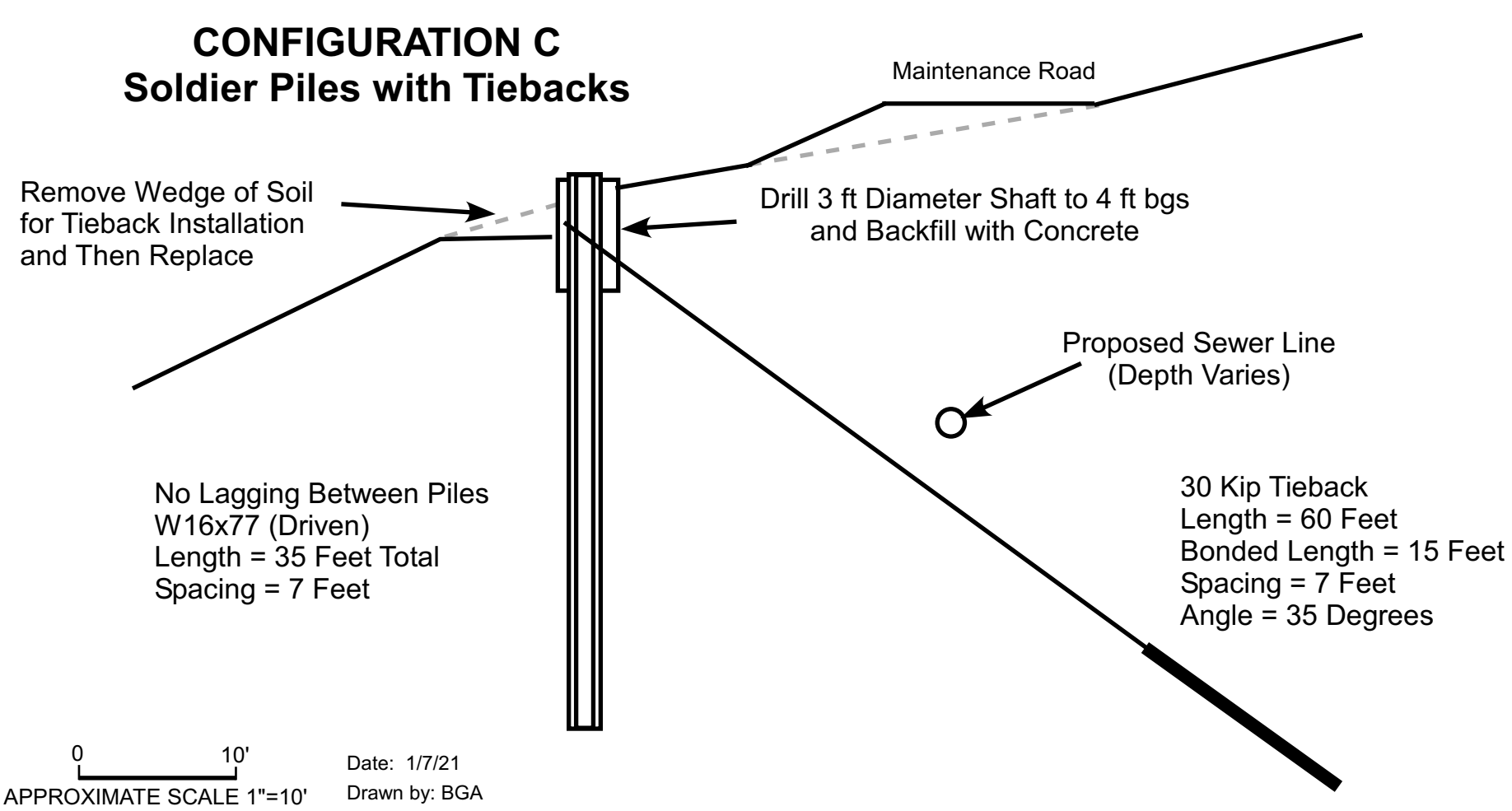
CONFIGURATION A
Cantilever Soldier Piles



CONFIGURATION B
Soldier Piles with Tiebacks



CONFIGURATION C
Soldier Piles with Tiebacks



0 10'
APPROXIMATE SCALE 1"=10'

Date: 1/7/21
Drawn by: BGA

Project: Park Place Subdivision, Oregon City, Oregon	Project No. 20-5600	FIGURE 6

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TEST PIT LOG

Project: Park Place Oregon City, Oregon	Project No. 20-5600	Test Pit No. **TP-1**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1	4.5					Moderately organic, SILT (OL-ML), dark brown, trace roots throughout, loose, moist (Topsoil Horizon)
2	4.0					Stiff to very stiff, clayey SILT (ML), light brown, micaceous, strong orange and gray mottling, trace black staining, moist (Willamette Formation)
3	4.0					
4	4.5					
5						Medium stiff to very stiff, sandy SILT (ML), light brown, micaceous, subtle orange and gray mottling, trace black staining, moist to very moist (Willamette Formation)
6						
7						
8						
9						
10						
11						
12						Moderate sidewall caving below 12 feet.
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						Blue gray below 22 feet.
23						Very soft (R1) to soft (R2), GRAVEL CONGLOMERATE, with siltstone and sandstone matrix, yellow brown, strong orange and gray mottling, cobbles up to 6 inches in diameter, trace black staining, moist (Springwater Formation)
24						
25						Test Pit Terminated at 25 Feet.
26						
27						Note: Perched groundwater seepage encountered at 12 feet. Discharge visually estimated at 1/4 gallon per minute.
28						
29						
30						

LEGEND



Bag Sample



Bucket Sample


Shelby Tube Sample


Seepage


Water Bearing Zone


Water Level at Abandonment

Date Excavated: 10/6-8/2020

Logged By: B. Rapp

Surface Elevation:

GEOPACIFIC
14835 SW 72nd Avenue
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 941-9281

TEST PIT LOG

Project: Park Place Oregon City, Oregon	Project No. 20-5600	Test Pit No. **TP-2**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1	0.5					Moderately organic, SILT (OL-ML), brown, trace roots throughout, loose, damp (Topsoil Horizon)
2	3.0					
3	3.0					
4	4.5					
5						Medium stiff to very stiff, clayey SILT (ML), light brown, micaceous, strong orange and gray mottling, trace black staining, moist (Willamette Formation)
6						
7						
8						
9						
10						
11						
12						
13						Stiff, FAT CLAY (CH), light brown, sticky, strong orange mottling, trace black staining, damp to moist (Springwater Formation-Very Highly Expansive)
14						
15						
16						Test Pit Terminated at 15 Feet.
17						
18						Note: No seepage or groundwater encountered.
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

LEGEND



Bag Sample



Bucket Sample


Shelby Tube Sample


Seepage


Water Bearing Zone


Water Level at Abandonment

Date Excavated: 10/6-8/2020

Logged By: B. Rapp

Surface Elevation:

GEOPACIFIC
14835 SW 72nd Avenue
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 941-9281

TEST PIT LOG

Project: Park Place Oregon City, Oregon	Project No. 20-5600	Test Pit No. **TP-3**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1						Moderately organic, SILT (OL-ML), dark brown, trace roots throughout, loose, moist (Topsoil Horizon)
2–14						Medium stiff to very stiff, sandy SILT (ML), light brown, micaceous, subtle orange and gray mottling, trace black staining, moist to very moist (Willamette Formation)
15–17						Stiff, FAT CLAY (CH), light brown, sticky, strong orange mottling, trace black staining, with ash fragments, moist (Springwater Formation-Likely Very Highly Expansive)
18–21						Stiff to very stiff, sandy SILT (ML), trace clay, light brown, strong orange and gray mottling, sugary texture, massive, micaceous, moist (Highly Weathered Springwater Formation)
22–23						Extremely soft (R0) to very soft (R1), SILTSTONE, yellow brown, horizontal bedding planes preserved, black mineralization, moist (Springwater Formation)
24–28						Stiff, clayey SILT (ML), gray brown, subtle orange and gray mottling, massive, micaceous, moist (Springwater Formation)
29						Test Pit Terminated at 29 Feet.
30						Note: No groundwater or seepage encountered.

LEGEND



Bag Sample



Bucket Sample


Shelby Tube Sample


Seepage


Water Bearing Zone


Water Level at Abandonment

Date Excavated: 10/6-8/2020

Logged By: B. Rapp

Surface Elevation:

GEOPACIFIC
14835 SW 72nd Avenue
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 941-9281

TEST PIT LOG

Project: Park Place Oregon City, Oregon	Project No. 20-5600	Test Pit No. **TP-4**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1	4.5					Moderately organic, SILT (OL-ML), with gravel, brown, trace roots throughout, loose, damp to moist (Topsoil Horizon)
2	4.5					
3	4.5					Medium dense to dense, BOULDERS (GM), with light reddish brown silty clay to clayey silt matrix, gray to brown, trace black staining, boulders are soft (R2) to medium hard (R3) and up to 3 foot diameter, moist (Residual Soil)
4	4.5					
5						
6						
7						
8						
9						Dense to very dense, very soft (R1) to soft (R2), BASALT, trace reddish brown silty clay to clayey silt matrix, gray brown to red, with medium hard (R3) boulders up to 5 feet diameter, difficult excavating conditions due to large boulders, trace black staining, moist (Boring Lava Formation)
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						Test Pit Terminated at 25 Feet.
26						
27						Note: No seepage or groundwater encountered.
28						
29						
30						

LEGEND



Bag Sample



Bucket Sample


Shelby Tube Sample


Seepage


Water Bearing Zone


Water Level at Abandonment

Date Excavated: 10/6-8/2020

Logged By: B. Rapp

Surface Elevation:

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Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 941-9281

TEST PIT LOG

Project: Park Place Oregon City, Oregon	Project No. 20-5600	Test Pit No. **TP-5**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1	3.5					Moderately organic, SILT (OL-ML), brown, roots throughout, loose, damp (Topsoil Horizon)
2	4.5					Stiff to very stiff, silty CLAY (CL) to clayey SILT (ML), with gravel, light reddish brown, trace black staining, trace roots, moist (Residual Soil)
3	4.5					
4	4.5					
5–14						Stiff to very stiff, extremely soft (R0) to very soft (R1), BASALT, trace reddish brown silty clay to clayey silt matrix, gray to brown, with soft (R2) to medium hard (R3) boulders, trace black staining, moist (Boring Lava Formation)
15						Test Pit Terminated at 15 Feet.
16–30						Note: No seepage or groundwater encountered.

LEGEND



Bag Sample



Bucket Sample


Shelby Tube Sample


Seepage


Water Bearing Zone


Water Level at Abandonment

Date Excavated: 10/6-8/2020

Logged By: B. Rapp

Surface Elevation:

GEOPACIFIC
14835 SW 72nd Avenue
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 941-9281

TEST PIT LOG

Project: Park Place Oregon City, Oregon	Project No. 20-5600	Test Pit No. **TP-6**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1	3.0					Moderately organic, SILT (OL-ML), brown, roots throughout, loose, damp (Topsoil Horizon)
2	3.5					Stiff to very stiff, silty CLAY (CL) to clayey SILT (ML), with gravel, light reddish brown, trace black staining, trace roots, moist (Residual Soil)
3	4.5					
4	4.5					
5–14						Stiff to very stiff, extremely soft (R0) to very soft (R1), BASALT, trace reddish brown silty clay to clayey silt matrix, trace sand, gray to brown, trace black staining, moist (Boring Lava Formation)
15						Test Pit Terminated at 15 Feet.
16–30						Note: No seepage or groundwater encountered.

LEGEND



Bag Sample



Bucket Sample


Shelby Tube Sample


Seepage


Water Bearing Zone


Water Level at Abandonment

Date Excavated: 10/6-8/2020

Logged By: B. Rapp

Surface Elevation:

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Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 941-9281

TEST PIT LOG

Project: Park Place Oregon City, Oregon	Project No. 20-5600	Test Pit No. **TP-7**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1						Moderately to highly organic, SILT (OL-ML), with gravel, brown, trace roots throughout, loose, moist (Topsoil Horizon)
2	4.0					Stiff to very stiff, silty CLAY (CL) to clayey SILT (ML), with gravel, light reddish brown, trace black staining, trace roots, moist (Residual Soil)
3	1.5					
4	4.5					Dense to very dense, extremely soft (R0) to very soft (R1), BASALT, trace reddish brown silty clay to clayey silt matrix, gray brown to red, trace black staining, moist (Boring Lava Formation)
5						
6						
7						
8						Dense to very dense, very soft (R1) to soft (R2), BASALT, trace reddish brown silty clay to clayey silt matrix, gray brown to red, with medium hard (R3) boulders up to 3 feet diameter, difficult excavating conditions due to large boulders, trace black staining, moist (Boring Lava Formation)
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						Practical Refusal on Medium Hard (R3) Boulder at 19 Feet.
21						
22						Note: No seepage or groundwater encountered.
23						
24						
25						
26						
27						
28						
29						
30						

LEGEND



Bag Sample



Bucket Sample


Shelby Tube Sample


Seepage


Water Bearing Zone


Water Level at Abandonment

Date Excavated: 10/6-8/2020

Logged By: B. Rapp

Surface Elevation:

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Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 941-9281

TEST PIT LOG

Project: Park Place Oregon City, Oregon	Project No. 20-5600	Test Pit No. **TP-8**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1	1.5					Moderately organic, SILT (OL-ML), with gravel, brown, trace roots throughout, loose, moist (Topsoil Horizon)
2	2.0					Stiff to very stiff, silty CLAY (CL) to clayey SILT (ML), with gravel, light reddish brown, trace black staining, trace roots, moist (Residual Soil)
3	4.5					
4	4.5					
5						Dense to very dense, extremely soft (R0) to very soft (R1), BASALT, trace reddish brown silty clay to clayey silt matrix, gray brown to red, trace black staining, moist (Boring Lava Formation)
6						
7						
8						
9						
10						With medium hard (R3) boulders up to 3 feet diameter below 10 feet.
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						Dense to very dense, very soft (R1) to soft (R2), BASALT, trace reddish brown silty clay to clayey silt matrix, gray brown to red, with medium hard (R3) boulders, moist (Boring Lava Formation)
24						
25						Test Pit Terminated at 25 Feet.
26						
27						Note: No seepage or groundwater encountered.
28						
29						
30						

LEGEND



Bag Sample | Bucket Sample | Shelby Tube Sample | Seepage | Water Bearing Zone | Water Level at Abandonment

Date Excavated: 10/6-8/2020

Logged By: B. Rapp

Surface Elevation:

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TEST PIT LOG

Project: Park Place Oregon City, Oregon	Project No. 20-5600	Test Pit No. **TP-9**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1	2.5					Moderately organic, SILT (OL-ML), with gravel, brown, trace roots throughout, loose, moist (Topsoil Horizon)
2	2.5					Stiff to very stiff, silty CLAY (CL) to clayey SILT (ML), with gravel, light reddish brown, trace black staining, trace roots, moist (Residual Soil)
3	4.5					
4–14						Dense to very dense, extremely soft (R0) to very soft (R1), BASALT, with soft (R2) to medium hard (R3) boulders up to 2 feet diameter, trace reddish brown silty clay to clayey silt matrix, trace black staining, moist (Boring Lava Formation)
15						Test Pit Terminated at 15 Feet.
16–30						Note: No seepage or groundwater encountered.

LEGEND

Bag Sample (100 to 1,000 g) | Bucket Sample (5 Gal. Bucket) | Shelby Tube Sample | Seepage | Water Bearing Zone | Water Level at Abandonment

Date Excavated: 10/6-8/2020

Logged By: B. Rapp

Surface Elevation:

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Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 941-9281

TEST PIT LOG

Project: Park Place Oregon City, Oregon	Project No. 20-5600	Test Pit No. **TP-10**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1	4.5					Moderately to highly organic, SILT (OL-ML), with gravel, brown, trace roots throughout, loose, moist (Topsoil Horizon)
2	4.5					Stiff to very stiff, silty CLAY (CL) to clayey SILT (ML), with gravel, light reddish brown, trace black staining, moist (Residual Soil)
3	4.5					
4	4.5					
5						Dense to very dense, extremely soft (R0) to very soft (R1), BASALT, with soft (R2) to medium hard (R3) boulders up to 2 feet diameter, trace reddish brown silty clay to clayey silt matrix, trace black staining, moist (Boring Lava Formation)
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						Test Pit Terminated at 16.5 Feet.
18						
19						Note: No seepage or groundwater encountered.
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

LEGEND



Bag Sample



Bucket Sample


Shelby Tube Sample


Seepage


Water Bearing Zone


Water Level at Abandonment

Date Excavated: 10/6-8/2020

Logged By: B. Rapp

Surface Elevation:

GEOPACIFIC
14835 SW 72nd Avenue
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 941-9281

TEST PIT LOG

Project: Park Place Oregon City, Oregon	Project No. 20-5600	Test Pit No. **TP-11**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1	2.0					Moderately organic, SILT (OL-ML), with gravel, brown, trace roots throughout, loose, moist (Topsoil Horizon)
2	2.5					Stiff to very stiff, silty CLAY (CL) to clayey SILT (ML), with gravel, light reddish brown, trace black staining, trace roots, moist (Residual Soil)
3	4.0					
4–9						Dense to very dense, extremely soft (R0) to very soft (R1), BASALT, with soft (R2) to medium hard (R3) boulders up to 1.5 feet diameter, trace reddish brown silty clay to clayey silt matrix, trace black staining, moist (Boring Lava Formation)
10–14						Very soft (R1) to soft (R2) below 10 feet.
15						Test Pit Terminated at 15 Feet. Note: No seepage or groundwater encountered.
16–30						

LEGEND

Bag Sample (100 to 1,000 g) | Bucket Sample (5 Gal. Bucket) | Shelby Tube Sample | Seepage | Water Bearing Zone | Water Level at Abandonment

Date Excavated: 10/6-8/2020

Logged By: B. Rapp

Surface Elevation:

GEOPACIFIC
14835 SW 72nd Avenue
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 941-9281

TEST PIT LOG

Project: Park Place Oregon City, Oregon	Project No. 20-5600	Test Pit No. **TP-12**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1	1.5					Moderately organic, SILT (OL-ML), with gravel, brown, trace roots throughout, loose, moist (Topsoil Horizon)
2	4.5					Stiff to very stiff, silty CLAY (CL) to clayey SILT (ML), with gravel, light reddish brown, trace black staining, trace roots, moist (Residual Soil)
3	4.5					
4–14						Dense to very dense, extremely soft (R0) to very soft (R1), BASALT, with soft (R2) boulders up to 1.5 feet diameter, trace reddish brown silty clay to clayey silt matrix, trace black staining, moist (Boring Lava Formation)
15						Test Pit Terminated at 15 Feet. Note: No seepage or groundwater encountered.
16–30						

LEGEND



Bag Sample



Bucket Sample


Shelby Tube Sample


Seepage


Water Bearing Zone


Water Level at Abandonment

Date Excavated: 10/6-8/2020

Logged By: B. Rapp

Surface Elevation:

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Tel: (503) 598-8445 Fax: (503) 941-9281

TEST PIT LOG

Project: Park Place Oregon City, Oregon	Project No. 20-5600	Test Pit No. **TP-13**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1	2.0					Moderately organic, SILT (OL-ML), with gravel, brown, trace roots throughout, loose, moist (Topsoil Horizon)
2	4.5					Stiff to very stiff, silty CLAY (CL) to clayey SILT (ML), with gravel, light reddish brown, trace black staining, trace roots, moist (Residual Soil)
3	4.5					
4	4.5					
5						Dense to very dense, extremely soft (R0) to very soft (R1), BASALT, with soft (R2) to medium hard (R3) boulders up to 3 feet diameter, trace reddish brown silty clay to clayey silt matrix, trace black staining, moist (Boring Lava Formation)
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						Test Pit Terminated at 24 Feet.
25						
26						Note: No seepage or groundwater encountered.
27						
28						
29						
30						

LEGEND



Bag Sample



Bucket Sample


Shelby Tube Sample


Seepage


Water Bearing Zone


Water Level at Abandonment

Date Excavated: 10/6-8/2020

Logged By: B. Rapp

Surface Elevation:

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Tel: (503) 598-8445 Fax: (503) 941-9281

TEST PIT LOG

Project: Park Place Oregon City, Oregon	Project No. 20-5600	Test Pit No. **TP-14**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1	4.5					Moderately organic, SILT (OL-ML), with gravel, brown, trace roots throughout, loose, moist (Topsoil Horizon)
2	4.5					Stiff to very stiff, silty CLAY (CL) to clayey SILT (ML), with gravel up to 2 feet, light reddish brown, trace black staining, damp to moist (Residual Soil)
3	4.5					
4	4.5					
5–20						Dense to very dense, extremely soft (R0) to very soft (R1), BASALT, with soft (R2) to medium hard (R3) boulders up to 4 feet diameter, trace reddish brown silty clay to clayey silt matrix, trace black staining, damp to moist (Boring Lava Formation)
21						Practical Refusal on Large Medium Hard (R3) to Hard (R4) Boulder at 21 Feet.
						Note: No seepage or groundwater encountered.

LEGEND

Bag Sample (100 to 1,000 g) | Bucket Sample (5 Gal. Bucket) | Shelby Tube Sample | Seepage | Water Bearing Zone | Water Level at Abandonment

Date Excavated: 10/6-8/2020

Logged By: B. Rapp

Surface Elevation:

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TEST PIT LOG

Project: Park Place Oregon City, Oregon	Project No. 20-5600	Test Pit No. **TP-15**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1	3.0					Low to moderately organic, SILT (OL-ML), brown, trace roots throughout, loose, damp (Topsoil Horizon)
2	4.5					Stiff to very stiff, clayey SILT (ML), with gravel, light brown, subtle orange and gray mottling, moist (Springwater Formation)
3	4.5					
4	4.5					
5–13						Medium dense to dense, silty GRAVEL (GM), with silty clay to clayey silt matrix, with sand, yellow brown, gravel is subrounded and up to 6 inches in diameter, trace black staining, moist (Springwater Formation)
14–15						Stiff, clayey SILT (ML) to silty CLAY (CL), light brown to gray, bedding planes preserved, micaceous, soapy texture, moist (Springwater Formation)
16						Test Pit Terminated at 16 Feet.
						Note: No seepage or groundwater encountered.

LEGEND



Bag Sample



Bucket Sample


Shelby Tube Sample


Seepage


Water Bearing Zone


Water Level at Abandonment

Date Excavated: 10/6-8/2020

Logged By: B. Rapp

Surface Elevation:

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TEST PIT LOG

Project: Park Place Oregon City, Oregon	Project No. 20-5600	Test Pit No. **TP-16**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1	4.0					Low to moderately organic, SILT (OL-ML), brown, trace roots throughout, loose, moist (Topsoil Horizon)
2	4.5					Stiff to very stiff, clayey SILT (ML) to silty CLAY (CL), gray, micaceous, strong orange and gray mottling, trace black staining, moist (Willamette Formation)
3	4.5					
4	3.5					
5						
6						Stiff to very stiff, sandy SILT (ML), light brown, micaceous, subtle orange and gray mottling, trace black staining, moist (Willamette Formation)
7						
8						
9						
10						Medium stiff and very moist below 10 feet.
11						
12						
13						
14						
15						
16						Test Pit Terminated at 15.5 Feet.
17						
18						Note: No seepage or groundwater encountered.
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

LEGEND



Bag Sample



Bucket Sample


Shelby Tube Sample


Seepage


Water Bearing Zone


Water Level at Abandonment

Date Excavated: 10/6-8/2020

Logged By: B. Rapp

Surface Elevation:

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TEST PIT LOG

Project: Park Place Oregon City, Oregon	Project No. 20-5600	Test Pit No. **TP-17**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1	3.5					Low to moderately organic, SILT (OL-ML), brown, trace roots throughout, loose, moist (Topsoil Horizon)
2	3.0					Stiff to very stiff, clayey SILT (ML), light brown to gray, micaceous, strong orange and gray mottling, trace black staining, trace fine roots, damp to moist (Willamette Formation)
3	4.5					
4	4.5					
5						
6						Stiff, sandy SILT (ML), brown, micaceous, subtle orange and gray mottling, trace black staining, moist (Willamette Formation)
7						
8						
9						
10						Medium stiff and very moist below 10 feet.
11						
12						
13						
14						
15						
16						Test Pit Terminated at 15.5 Feet.
17						
18						Note: No seepage or groundwater encountered.
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

LEGEND



Bag Sample



Bucket Sample


Shelby Tube Sample


Seepage


Water Bearing Zone


Water Level at Abandonment

Date Excavated: 10/6-8/2020

Logged By: B. Rapp

Surface Elevation:

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TEST PIT LOG

Project: Park Place Oregon City, Oregon	Project No. 20-5600	Test Pit No. **TP-18**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1	2.0					Moderately organic, SILT (OL-ML), brown, trace roots throughout, loose, moist (Topsoil Horizon)
2	4.0					Stiff to very stiff, clayey SILT (ML), light brown to gray, micaceous, strong orange and gray mottling, trace black staining, moist (Willamette Formation)
3	4.5					
4	3.5					
5						
6						Stiff, sandy SILT (ML), brown, micaceous, subtle orange and gray mottling, trace black staining, moist (Willamette Formation)
7						
8						
9						
10						
11						
12						Medium stiff and very moist below 12 feet.
13						
14						
15						
16						Test Pit Terminated at 15 Feet.
17						
18						Note: No seepage or groundwater encountered.
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

LEGEND



Bag Sample



Bucket Sample


Shelby Tube Sample


Seepage


Water Bearing Zone


Water Level at Abandonment

Date Excavated: 10/6-8/2020

Logged By: B. Rapp

Surface Elevation:

GEOPACIFIC
14835 SW 72nd Avenue
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 941-9281

TEST PIT LOG

Project: Park Place
Oregon City, Oregon

Project No. 20-5600

Test Pit No. **TP-19**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1	3.0					Low to moderately organic, SILT (OL-ML), brown, trace roots throughout, loose, moist (Topsoil Horizon)
2	4.5					Stiff to very stiff, clayey SILT (ML), gray, micaceous, strong orange and gray mottling, trace black staining, damp to moist (Willamette Formation)
3	4.5					
4	4.5					
5						
6						Stiff to very stiff, sandy SILT (ML), light brown, micaceous, subtle to strong orange and gray mottling, trace black staining, moist (Willamette Formation)
7						
8						
9						
10						
11						
12						
13						Stiff to very stiff, silty CLAY (CL), gray, micaceous, massive, with ash fragments, moist (Springwater Formation)
14						
15						
16						Test Pit Terminated at 15.5 Feet.
17						
18						Note: No seepage or groundwater encountered.
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

LEGEND



Bag Sample



Bucket Sample


Shelby Tube Sample


Seepage


Water Bearing Zone


Water Level at Abandonment

Date Excavated: 10/6-8/2020

Logged By: B. Rapp

Surface Elevation:

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Portland, Oregon 97224
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TEST PIT LOG

Project: Park Place Oregon City, Oregon	Project No. 20-5600	Test Pit No. **TP-20**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1	0.5					Moderately organic, SILT (OL-ML), brown, trace roots throughout, loose, moist (Topsoil Horizon)
2	3.5					Medium stiff, clayey SILT (ML), light brown, fractured texture, moist (Landslide Debris)
3	4.5					Stiff, clayey SILT (ML), gray brown, strong mottling, moist (Landslide Debris)
4	4.0					Medium stiff to stiff, clayey SILT (ML), light brown, minor spalling of sidewall, micaceous, moist (Landslide Debris)
12						Stiff, FAT CLAY (CH), light brown, sticky, strong orange mottling, trace black staining, moist (Landslide Debris-Likely Very Highly Expansive)
16						Medium stiff, silty CLAY (CL), trace subrounded gravel, gray, highly fractured texture/crumbly, strong orange and gray mottling, moist (Landslide Debris)
24						Stiff to very stiff, clayey SILT (ML), trace sand, light brown, micaceous, massive, moist (Springwater Formation)
25						Test Pit Terminated at 25 Feet. Note: No seepage or groundwater encountered.

LEGEND

Bag Sample (100 to 1,000 g) | Bucket Sample (5 Gal. Bucket) | Shelby Tube Sample | Seepage | Water Bearing Zone | Water Level at Abandonment

Date Excavated: 10/6-8/2020

Logged By: B. Rapp

Surface Elevation:

GEOPACIFIC
14835 SW 72nd Avenue
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 941-9281

TEST PIT LOG

Project: Park Place
Oregon City, Oregon

Project No. 20-5600

Test Pit No. **TP-21**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1	1.5					Moderately organic, SILT (OL-ML), brown, trace roots throughout, loose, moist (Topsoil Horizon)
2	1.5					Medium stiff, clayey SILT (ML), light brown, fractured texture, strong orange and gray mottling, micaceous, moist (Landslide Debris)
3	4.5					
4	4.5					
5						Stiff, SILT (ML), trace sand, light brown, subtle orange and gray mottling, micaceous, moist (Landslide Debris)
6						
7						
8						
9						Stiff, sandy SILT (ML), with gravel, gray brown, strong red mottling, micaceous, moist (Landslide Debris)
10						
11						Stiff, FAT CLAY (CH), gray, sticky, strong orange mottling, with ash fragments, trace black staining, moist (Landslide Debris-Likely Very Highly Expansive)
12						
13						
14						
15						Medium stiff, silty CLAY (CL), gray, highly fractured texture/crumbly, strong orange and gray mottling, moist (Landslide Debris)
16						
17						
18						
19						
20						
21						Stiff to very stiff, silty CLAY (CL), gray, micaceous, massive, waxy texture, moist (Springwater Formation)
22						
23						Test Pit Terminated at 22 Feet.
24						
25						Note: No seepage or groundwater encountered.
26						
27						
28						
29						
30						

LEGEND



Bag Sample



Bucket Sample


Shelby Tube Sample


Seepage


Water Bearing Zone


Water Level at Abandonment

Date Excavated: 10/6-8/2020

Logged By: B. Rapp

Surface Elevation:

GEOPACIFIC
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TEST PIT LOG

Project: Park Place Oregon City, Oregon	Project No. 20-5600	Test Pit No. **TP-22**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1	1.5					Low organic, SILT (OL-ML), brown, trace roots throughout, loose, moist (Topsoil Horizon)
2	4.0					Stiff to very stiff, clayey SILT (ML), light brown to gray, micaceous, strong orange and gray mottling, trace black staining, damp to moist (Willamette Formation)
3	4.5					
4	4.5					
5						
6						Stiff, sandy SILT (ML), brown, micaceous, subtle orange and gray mottling, trace black staining, moist (Willamette Formation)
7						
8						
9						
10						
11						Medium stiff and very moist below 11 feet.
12						
13						
14						
15						
16						Test Pit Terminated at 15 Feet.
17						
18						Note: No seepage or groundwater encountered.
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

LEGEND



Bag Sample



Bucket Sample


Shelby Tube Sample


Seepage


Water Bearing Zone


Water Level at Abandonment

Date Excavated: 10/6-8/2020

Logged By: B. Rapp

Surface Elevation:

GEOPACIFIC
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Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 941-9281

TEST PIT LOG

Project: Park Place Oregon City, Oregon	Project No. 20-5600	Test Pit No. **TP-23**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1	0.5					Low organic, SILT (OL-ML), brown, trace roots throughout, loose, moist (Topsoil Horizon)
2	2.0					Stiff to very stiff, clayey SILT (ML), light brown, micaceous, strong orange and gray mottling, trace black staining, trace fine roots, moist (Willamette Formation)
3	2.5					
4	3.5					
5						
6						Stiff, sandy SILT (ML), brown, micaceous, subtle orange and gray mottling, trace black staining, moist (Willamette Formation)
7						
8						
9						
10						
11						
12						Medium stiff and very moist below 12 feet.
13						
14						
15						
16						
17						Stiff, FAT CLAY (CH), gray, sticky, strong orange mottling, trace ash fragments, trace black staining, moist (Springwater Formation-Likely Very Highly Expansive)
18						
19						Test Pit Terminated at 18 Feet.
20						
21						Note: No seepage or groundwater encountered.
22						
23						
24						
25						
26						
27						
28						
29						
30						

LEGEND



Bag Sample



Bucket Sample


Shelby Tube Sample


Seepage


Water Bearing Zone


Water Level at Abandonment

Date Excavated: 10/6-8/2020

Logged By: B. Rapp

Surface Elevation:

GEOPACIFIC
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Tel: (503) 598-8445 Fax: (503) 941-9281

TEST PIT LOG

Project: Park Place Oregon City, Oregon	Project No. 20-5600	Test Pit No. **TP-24**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1	4.5					Moderately organic, SILT (OL-ML), brown, with gravel, trace roots throughout, loose, damp (Topsoil Horizon)
2	4.5					Loose, silty GRAVEL (GM), gray, with roots, moist (Boring Lava Formation)
3	4.5					Very stiff, CLAY (CL), trace sand, gray, subtle orange and gray mottling, slight blocky texture to 3 feet, trace black staining, moist (Springwater Formation)
4	4.5					
5						
6						
7						
8						
9						Stiff, FAT CLAY (CH), light brown to gray, sticky, trace black staining, moist (Springwater Formation-Likely Very Highly Expansive)
10						
11						
12						
13						Very stiff, CLAY (CL), light brown to gray, massive, micaceous, soapy texture, damp (Springwater Formation)
14						
15						
16						FAT CLAY (CH) zone at 16 to 17 feet.
17						
18						
19						
20						
21						
22						
23						Very stiff, SILT (ML), trace sand, light brown, massive, micaceous, subtle orange and gray mottling, damp (Springwater Formation)
24						
25						
26						Test Pit Terminated at 26 Feet.
27						
28						Note: No seepage or groundwater encountered.
29						
30						

LEGEND



Bag Sample



Bucket Sample


Shelby Tube Sample


Seepage


Water Bearing Zone


Water Level at Abandonment

Date Excavated: 10/6-8/2020

Logged By: B. Rapp

Surface Elevation:

GEOPACIFIC
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BORING LOG

Project: Park Place
Oregon City, Oregon

Project No. 20-5600

Boring No. **B-1**

Depth (ft)	Sample Type	N-Value	Well Construction	Moisture Content (%)	Water Bearing Zone	Material Description
						Moderately organic, SILT (ML), brown, with roots, moist (Topsoil Horizon)
		18				Stiff to very stiff, SILT (ML), trace fine grained sand, light brown, micaceous, subtle to strong orange and gray mottling, trace black staining, moist to very moist (Willamette Formation)
5		10				
		4				
10		4				Soft to medium stiff, SILT (ML), trace fine grained sand, light brown, micaceous, subtle to strong orange and gray mottling, trace black staining, moist to very moist (Willamette Formation)
		3				
15						
		11				
20		12				Stiff to very stiff, clayey SILT (ML) to silty CLAY (CL), with zones of fine grained sand, light brown to blue gray, strong to subtle orange and gray mottling, sugary texture, micaceous, damp to moist (Highly Weathered Springwater Formation)
25		10				
30		18				
35		19				
40		26				
						Very stiff, sandy SILT (ML) to very dense silty SAND (SM), gray, sand is fine grained, damp to moist (Highly Weathered Springwater Formation)

LEGEND

Bag Sample (100 to 1,000 g) | Split-Spoon | Shelby Tube Sample | Static Water Table at Drilling | Static Water Table (10-20-99) | Water Bearing Zone

Date Drilled: 10/20-22/2020
Logged By: B. Rapp
Surface Elevation:

GEOPACIFIC
14835 SW 72nd Avenue
Portland, Oregon 97224
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BORING LOG

Project: Park Place Oregon City, Oregon	Project No. 20-5600	Boring No. **B-1**

Depth (ft)	Sample Type	N-Value	Well Construction	Moisture Content (%)	Water Bearing Zone	Material Description
45						
		47				Very stiff, sandy SILT (ML) to very dense silty SAND (SM), gray, sand is fine grained, sugary texture, damp to moist (Highly Weathered Springwater Formation)
50		50				
						Boring Terminated at 51.5 feet.
						Groundwater could not be determined due to mud rotary drilling methods.
55						
60						
65						
70						
75						
80						
85						

LEGEND

Bag Sample (100 to 1,000 g) | Split-Spoon | Shelby Tube Sample | Static Water Table at Drilling | Static Water Table (10-20-99) | Water Bearing Zone

Date Drilled: 10/20-22/2020
Logged By: B. Rapp
Surface Elevation:

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BORING LOG

Project: Park Place
Oregon City, Oregon

Project No. 20-5600

Boring No. **B-2**

Depth (ft)	Sample Type	N-Value	Well Construction	Moisture Content (%)	Water Bearing Zone	Material Description
						Moderately organic, SILT (ML), brown, with roots, moist (Topsoil Horizon)
		20				
5		17				Stiff to very stiff, SILT (ML), light brown, micaceous, subtle to strong orange and gray mottling, moist (Willamette Formation)
		9				
10		9				
		11				
15		20				Stiff to very stiff, clayey SILT (ML), trace sand, with zones of fine grained gravel, light gray brown, strong orange and gray mottling, sugary texture, trace mineralization, micaceous, moist (Highly Weathered Springwater Formation)
		8				
20		13				Stiff to very stiff, sandy SILT (ML) interbedded with loose to medium dense, silty SAND (SM), gray to brown, sand is fine to medium grained, moist to very moist (Highly Weathered Springwater Formation)
25		10				
30		12				Stiff to very stiff, clayey SILT (ML) to silty CLAY (CL), light brown to blue gray, strong to subtle orange and gray mottling, subtle bedding planes preserved, micaceous, damp to moist (Highly Weathered Springwater Formation)
35		17				
40		20				

LEGEND

Bag Sample (100 to 1,000 g) | Split-Spoon | Shelby Tube Sample | Static Water Table at Drilling | Static Water Table (10-20-99) | Water Bearing Zone

Date Drilled: 10/20-22/2020
Logged By: B. Rapp
Surface Elevation:

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BORING LOG

Project: Park Place Oregon City, Oregon	Project No. 20-5600	Boring No. **B-2**

Depth (ft)	Sample Type	N-Value	Well Construction	Moisture Content (%)	Water Bearing Zone	Material Description
45		19				Stiff to very stiff, clayey SILT (ML) to silty CLAY (CL), light brown to blue gray, strong to subtle orange and gray mottling, subtle bedding planes preserved, micaceous, damp to moist (Highly Weathered Springwater Formation)
50		45				
						Boring Terminated at 51.5 feet. Groundwater could not be determined due to mud rotary drilling methods.
55						
60						
65						
70						
75						
80						
85						

LEGEND

Bag Sample (100 to 1,000 g) | Split-Spoon | Shelby Tube Sample | Static Water Table at Drilling | Static Water Table (10-20-99) | Water Bearing Zone

Date Drilled: 10/20-22/2020
Logged By: B. Rapp
Surface Elevation:

14835 SW 72nd Avenue
Portland, Oregon 97224
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BORING LOG

Project: Park Place
Oregon City, Oregon

Project No. 20-5600

Boring No. **B-3**

Depth (ft)	Sample Type	N-Value	Well Con-struction	Moisture Content (%)	Water Bearing Zone	Material Description
						Moderately organic, SILT (ML), brown, with roots, moist (Topsoil Horizon)
		16				Very stiff, SILT (ML), trace fine grained sand, light brown, micaceous, subtle to strong orange and gray mottling, trace black staining, moist to very moist (Willamette Formation)
5		14				
		5				Soft to medium stiff, SILT (ML), trace fine grained sand, light brown, micaceous, subtle to strong orange and gray mottling, trace black staining, moist to very moist (Willamette Formation)
10		3				
		1				
15		(Shelby Tube empty)				Very soft to medium stiff, sandy SILT (ML) to very loose to loose, silty SAND (SM), light brown, micaceous, subtle mottling, moist to very moist (Willamette Formation)
		1				
20		5				
25		4				Soft to medium stiff, silty CLAY (CL), gray, subtle orange and gray mottling, trace black staining, moist (Highly Weathered Springwater Formation)
30		13				Medium dense, silty SAND (SM), trace clay, brown to red, highly decomposed volcanic rock, wet (Highly Weathered Springwater Formation)
35		9				Loose to dense, silty SAND (SM), brown, sand is fine to coarse grained, subtle cross bedding, weakly cemented zones, micaceous, damp to moist (Troutdale Formation)
40		34				

LEGEND

Bag Sample (100 to 1,000 g) | Split-Spoon | Shelby Tube Sample | Static Water Table at Drilling | Static Water Table (10-20-99) | Water Bearing Zone

Date Drilled: 10/20-22/2020
Logged By: B. Rapp
Surface Elevation:

GEOPACIFIC
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BORING LOG

Project: Park Place Oregon City, Oregon	Project No. 20-5600	Boring No. **B-3**

Depth (ft)	Sample Type	N-Value	Well Construction	Moisture Content (%)	Water Bearing Zone	Material Description
45						
		85				
50		92				Very dense, silty SAND (SM), brown to dark gray, sand is fine to coarse grained, subtle cross bedding, micaceous, damp to moist (Troutdale Formation)
55		50 for 5"				
60		90				
65		84				
70		50 for 5"				
75		50 for 5.5"				Very dense, silty SAND (SM), trace gravel, brown to dark gray, sand is fine to coarse grained, subtle cross bedding, micaceous, damp to moist (Troutdale Formation)
80		68				
85						Boring Terminated at 81.5 feet. Groundwater could not be determined due to mud rotary drilling methods.

LEGEND

Bag Sample (100 to 1,000 g) | Split-Spoon | Shelby Tube Sample | Static Water Table at Drilling | Static Water Table (10-20-99) | Water Bearing Zone

Date Drilled: 10/20-22/2020
Logged By: B. Rapp
Surface Elevation:

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BORING LOG

Project: Park Place
Oregon City, Oregon

Project No. 20-5600

Boring No. **B-4**

Depth (ft)	Sample Type	N-Value	Well Construction	Moisture Content (%)	Water Bearing Zone	Material Description
						Moderately organic, SILT (ML), brown, with roots, moist (Topsoil Horizon)
		16				Very stiff, SILT (ML), trace sand, light brown, micaceous, strong orange and gray mottling, trace black staining, moist to very moist (Willamette Formation)
5		8				
		6				
10		17				Medium stiff to very stiff, clayey SILT (ML) to silty CLAY (CL), with highly weathered volcanic gravel, trace sand, brown to gray, trace red and black staining, ashy, micaceous, moist (Highly Weathered Springwater Formation)
		24				
15		29				
		28				
20		31				
25		11				Stiff to very stiff, clayey SILT (ML) to silty CLAY (CL), with sand, light brown to gray, trace red and black staining, ashy, micaceous, subtle orange mottling, damp to moist (Highly Weathered Springwater Formation)
30		26				
35		35				
40		29				
						Very stiff, clayey SILT (ML) to silty CLAY (CL), with highly weathered volcanic gravel, brown to gray, moist (Highly Weathered Springwater Formation)

LEGEND

Bag Sample (100 to 1,000 g) | Split-Spoon | Shelby Tube Sample | Static Water Table at Drilling | Static Water Table (10-20-99) | Water Bearing Zone

Date Drilled: 10/20-22/2020
Logged By: B. Rapp
Surface Elevation:

GEOPACIFIC
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Portland, Oregon 97224
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BORING LOG

Project: Park Place Oregon City, Oregon	Project No. 20-5600	Boring No. **B-4**

Depth (ft)	Sample Type	N-Value	Well Construction	Moisture Content (%)	Water Bearing Zone	Material Description
45		50 for 5"				Very stiff, clayey SILT (ML) to silty CLAY (CL), with highly weathered volcanic gravel, trace sand, brown to gray, damp to moist (Highly Weathered Springwater Formation)
50		50 for 5.5"				
55		73				Very dense, SAND (SW), yellow brown to dark gray, sand is fine to coarse grained, well graded, trace black staining, damp to moist (Troutdale Formation)
60		50 for 5"				
65		50 for 4"				
70		50 for 5"				Boring Terminated at 70.9 feet. Groundwater could not be determined due to mud rotary drilling methods.
75						
80						
85						

LEGEND

Bag Sample (100 to 1,000 g) | Split-Spoon | Shelby Tube Sample | Static Water Table at Drilling | Static Water Table (10-20-99) | Water Bearing Zone

Date Drilled: 10/20-22/2020
Logged By: B. Rapp
Surface Elevation:

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BORING LOG

Project: Park Place
Oregon City, Oregon

Project No. 20-5600

Boring No. **B-5**

Depth (ft)	Sample Type	N-Value	Well Construction	Moisture Content (%)	Water Bearing Zone	Material Description
						Moderately organic, SILT (ML), brown, with roots, moist (Topsoil Horizon)
		11				Medium stiff to stiff, SILT (ML), light brown, micaceous, strong orange and gray mottling, trace black staining, damp to moist (Willamette Formation)
5		7				
		4				
10		2				Soft to medium stiff, clayey SILT (ML) to silty CLAY (CL), trace sand, brown to gray, trace black staining, ashy, micaceous, subtle orange and gray mottling, moist (Highly Weathered Springwater Formation)
15		8				
		8				
20		9				
25		50 for 5.5"				Stiff to very stiff, silty CLAY (CL) to clayey SILT (ML), with sand, with zones of highly weathered volcanic rock, brown to gray, sugary texture, orange and gray mottling, moist (Highly Weathered Springwater Formation)
30		26				
35		33				
40		37				Medium dense to very dense, SAND (SW), trace silt, yellow brown to dark gray, sand is fine to very coarse grained, cross bedded, trace black staining, damp to moist (Troutdale Formation)

LEGEND

100 to 1,000 g — Bag Sample
Split-Spoon
Shelby Tube Sample
Static Water Table at Drilling
10-20-99 — Static Water Table
Water Bearing Zone

Date Drilled: 10/20-22/2020
Logged By: B. Rapp
Surface Elevation:

14835 SW 72nd Avenue
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 941-9281

BORING LOG

Project: Park Place Oregon City, Oregon	Project No. 20-5600	Boring No. **B-5**

Depth (ft)	Sample Type	N-Value	Well Construction	Moisture Content (%)	Water Bearing Zone	Material Description
45						
		30				
50		43				
55		88				Medium dense to very dense, SAND (SP), trace silt, yellow brown to dark gray, sand is fine to very coarse grained, cross bedded, trace black staining, damp to moist (Troutdale Formation)
60		77				
65		50 for 6"				
70		50 for 5"				Boring Terminated at 70.4 feet. Groundwater could not be determined due to mud rotary drilling methods.
75						
80						
85						

LEGEND

Bag Sample (100 to 1,000 g) | Split-Spoon | Shelby Tube Sample | Static Water Table at Drilling | Static Water Table (10-20-99) | Water Bearing Zone

Date Drilled: 10/20-22/2020
Logged By: B. Rapp
Surface Elevation:

Project Name:	Park Place Subdivision				
Project #:	20-5600	Sample ID:	S20-249	Depth:	12'-13'
Material Type:	Fat Clay				
Material Source:	TP-2				

EXPANSION INDEX ASTM D4829

Initial Height (0.001 in.)	1.000
Initial Moisture Content (0.1%)	18.4
Initial Dry Unit Weight (0.1 lbf/cu.ft.)	82.7
Initial Degree of Saturation (50.0+/-2%)	48.0
Initial Dial Reading (0.001 in.)	0.2495
Final Dial Reading (0.001 in.)	0.1178
Final Moisture Content (0.1%)	40.8
Expansion Index	**132**

Sampled By:	EKR	Tested By:	SJC
Sample Date:	10/6/2020	Tested Date:	10/16/2020

Expansion Index, EI	Potential Expansion
0-20	Very Low
21-50	Low
51-90	Medium
91-130	High
>130	Very High

Moisture Content from Trimmings

Pan #	12	Tare Wt. =	88.65	Moist Wt. + Tare=	136.77
Moisture=	18.4			Dry Wt. + Tare=	129.3

Expansion Ring

2 inch Radius x 1 inch Height= 5.08 cm Radius x 2.54 cm Height

Volume = 205.9 cm^3

Ring Wt. (g) =	368.6	**Moist Density** (g/cm^3) =	1.6
Ring + Sample (g) =	691.5	**Dry Density** (g/cm^3) =	1.3
		Dry Unit Wt. (lb/ft^3) =	82.7

Degree of Saturation = 48.0

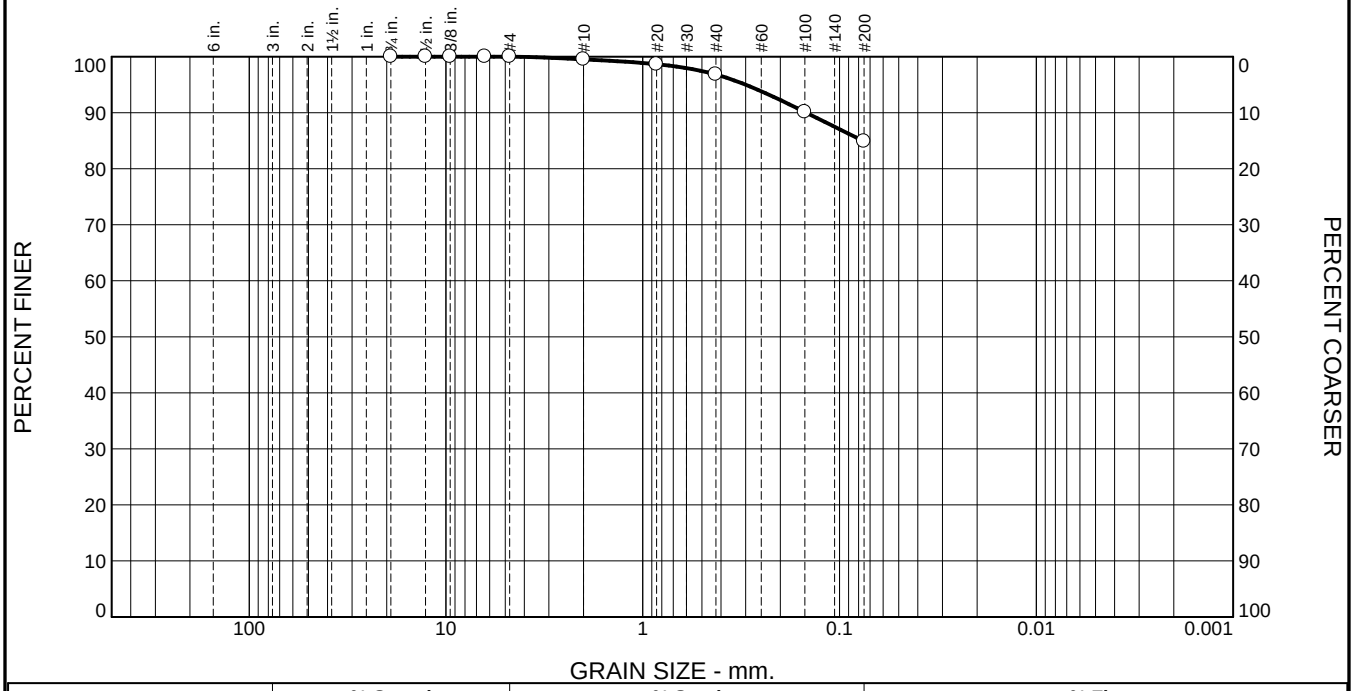
Final Moisture = 40.8

Ring + Sample after soaking (g) =	753.7
Sample after soaking (g)	385.1
Ring + Sample oven dry (g)=	642.2
Sample oven dry (g)	273.6

Expansion Index = 132

Initial Dial Reading (0.001 in.) =	0.2495
Final Dial Reading (0.001 in.) =	0.1178

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.5	2.7	11.9	84.9	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
.75	100.0		
.5	100.0		
.375	100.0		
.25	100.0		
#4	100.0		
#10	99.5		
#20	98.6		
#40	96.8		
#100	90.1		
#200	84.9		

* (no specification provided)

Material Description

Silt with Sand

Atterberg Limits (ASTM D 4318)

PL= 23.6 **LL=** 29.5 **PI=** 5.9

Classification

USCS (D 2487)= ML **AASHTO (M 145)=** A-4(5)

Coefficients

D_{90}= 0.1475 D_{85}= 0.0764 D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Remarks

Moisture 29.5%

Date Received: _____ **Date Tested:** 11/17/2020

Tested By: SJC

Checked By: _____

Title: _____

Location: B-1
Sample Number: S20-272 **Depth:** 15'

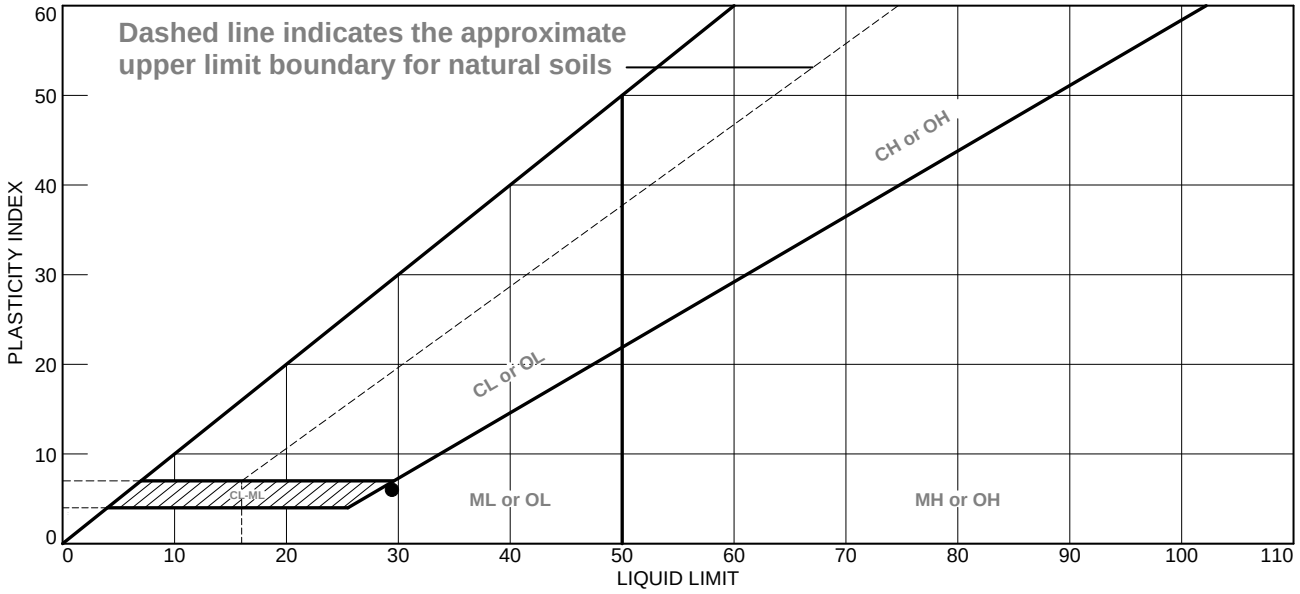
Date Sampled: 10/22/2020

GEOPACIFIC ENGINEERING, INC.

Client: Hidden Falls Development LLC
Project: Park Place Subdivision

Project No: 20-5600 **Figure**

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Silt with Sand	29.5	23.6	5.9	96.8	84.9	ML

Project No. 20-5600 **Client:** Hidden Falls Development LLC

Project: Park Place Subdivision

Location: B-1
Sample Number: S20-272 **Depth:** 15'

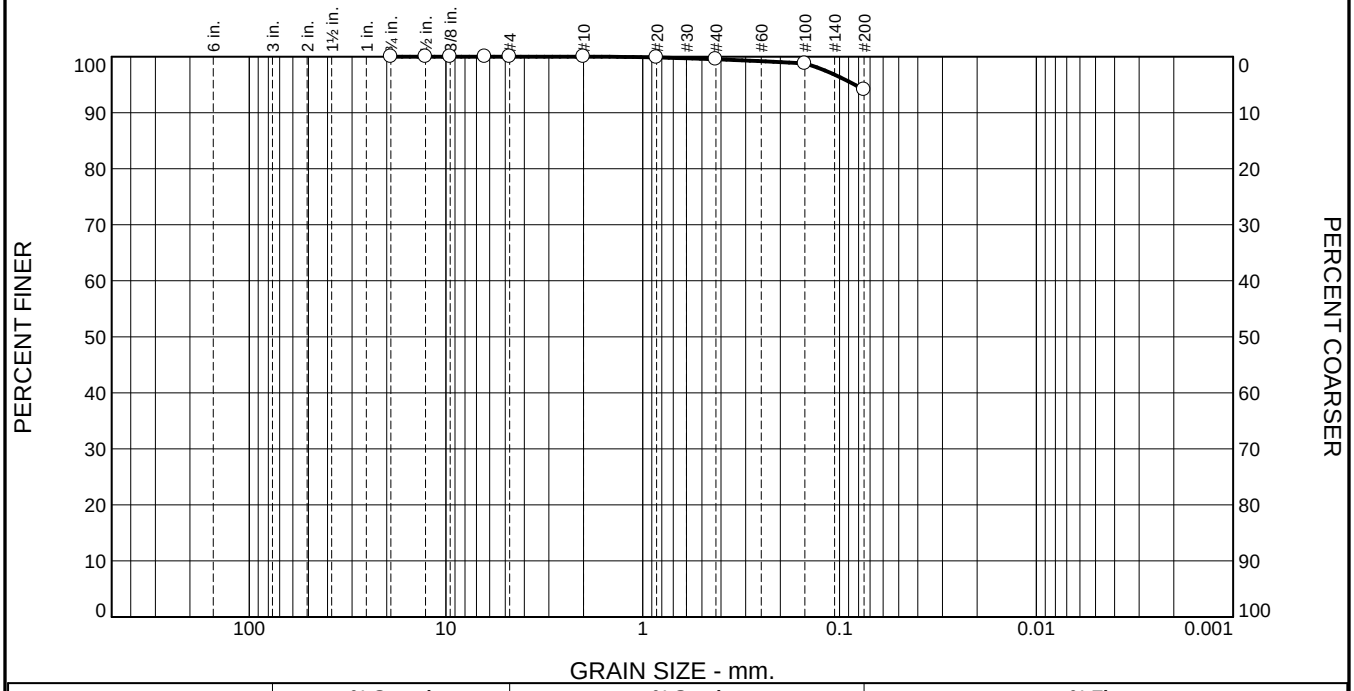
Remarks:

GEOPACIFIC ENGINEERING, INC.

Figure

Tested By: SJC

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.5	5.4	94.1	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
.75	100.0		
.5	100.0		
.375	100.0		
.25	100.0		
#4	100.0		
#10	100.0		
#20	99.9		
#40	99.5		
#100	98.8		
#200	94.1		

* (no specification provided)

Material Description

Silt

Atterberg Limits (ASTM D 4318)

PL= 29.2 **LL=** 33.5 **PI=** 4.3

Classification

USCS (D 2487)= ML **AASHTO (M 145)=** A-4(6)

Coefficients

D_{90}= D_{85}= D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Remarks

Moisture 33.4%

Date Received: **Date Tested:** 11/17/2020

Tested By: SJC

Checked By:

Title:

Location: B-5
Sample Number: S20-273 **Depth:** 12.5'

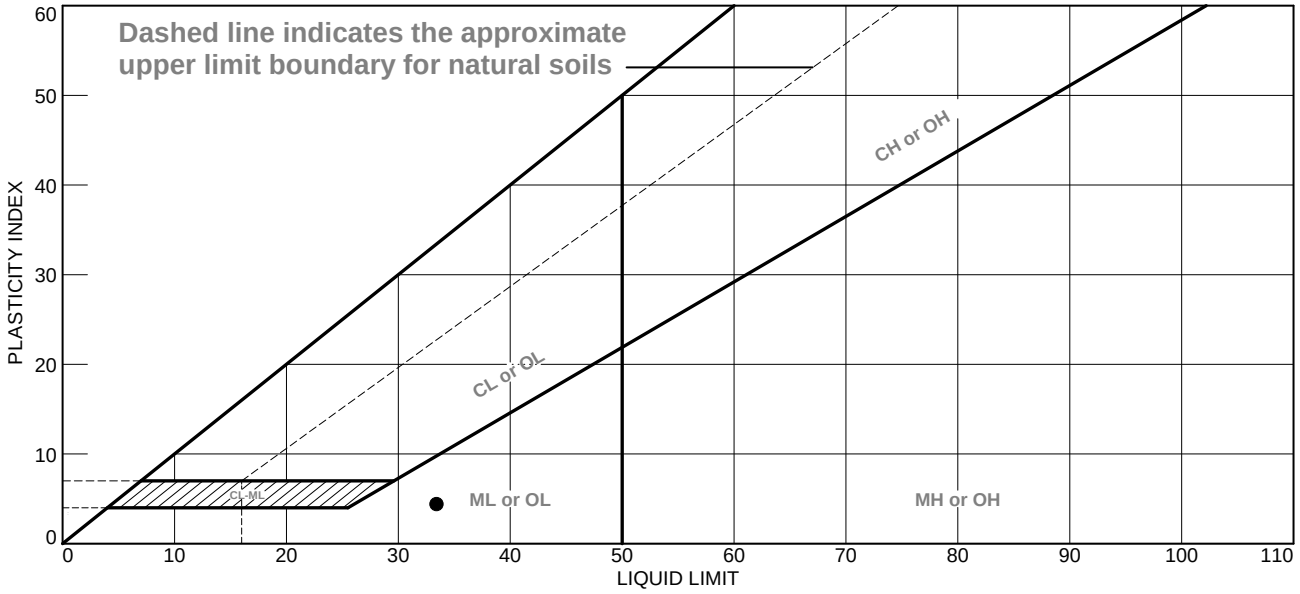
Date Sampled: 10/22/2020

GEOPACIFIC ENGINEERING, INC.

Client: Hidden Falls Development LLC
Project: Park Place Subdivision

Project No: 20-5600 **Figure**

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Silt	33.5	29.2	4.3	99.5	94.1	ML

Project No. 20-5600 **Client:** Hidden Falls Development LLC

Project: Park Place Subdivision

Location: B-5
Sample Number: S20-273 **Depth:** 12.5'

Remarks:

GEOPACIFIC ENGINEERING, INC.

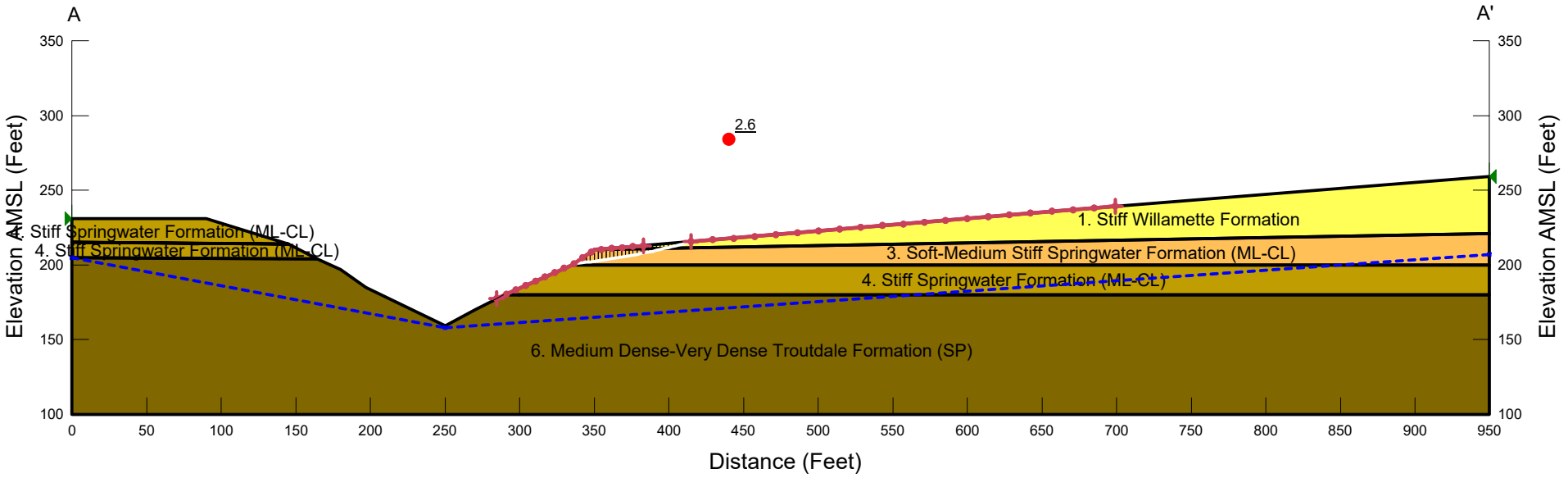
Figure

Tested By: SJC

20-5600 - Park Place Subdivision - Section A-A' - Static Slope Analysis

Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)
	1. Stiff Willamette Formation	Mohr-Coulomb	120	0	28
	3. Soft-Medium Stiff Springwater Formation (ML-CL)	Mohr-Coulomb	125	0	24
	4. Stiff Springwater Formation (ML-CL)	Mohr-Coulomb	125	300	36
	6. Medium Dense-Very Dense Troutdale Formation (SP)	Mohr-Coulomb	125	200	36

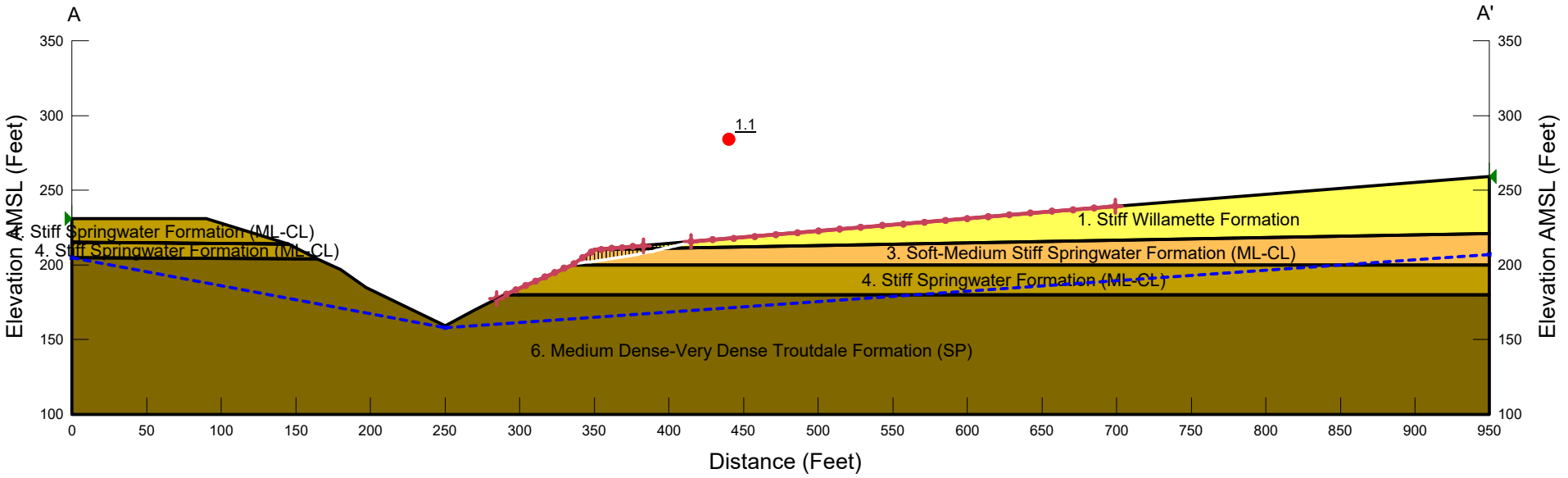
Static Factor of Safety: 2.6



20-5600 - Park Place Subdivision - Section A-A' - Seismic Slope Analysis 0.23g

Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)
	1. Stiff Willamette Formation	Mohr-Coulomb	120	0	28
	3. Soft-Medium Stiff Springwater Formation (ML-CL)	Mohr-Coulomb	125	0	24
	4. Stiff Springwater Formation (ML-CL)	Mohr-Coulomb	125	300	36
	6. Medium Dense-Very Dense Troutdale Formation (SP)	Mohr-Coulomb	125	200	36

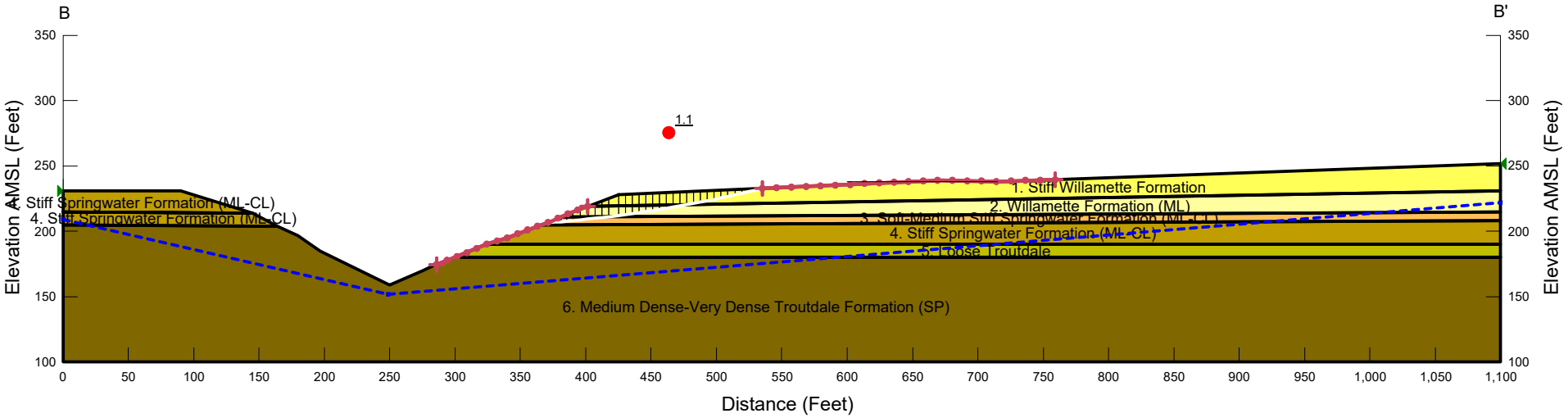
Pseudostatic Factor of Safety: 1.1



20-5600 - Park Place Subdivision - Section B-B' - Existing Conditions - Seismic Slope Analysis 0.23g

Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)
	1. Stiff Willamette Formation	Mohr-Coulomb	120	0	28
	2. Willamette Formation (ML)	Mohr-Coulomb	125	0	22
	3. Soft-Medium Stiff Springwater Formation (ML-CL)	Mohr-Coulomb	125	0	24
	4. Stiff Springwater Formation (ML-CL)	Mohr-Coulomb	125	300	36
	5. Loose Troutdale	Mohr-Coulomb	120	150	30
	6. Medium Dense-Very Dense Troutdale Formation (SP)	Mohr-Coulomb	125	200	36

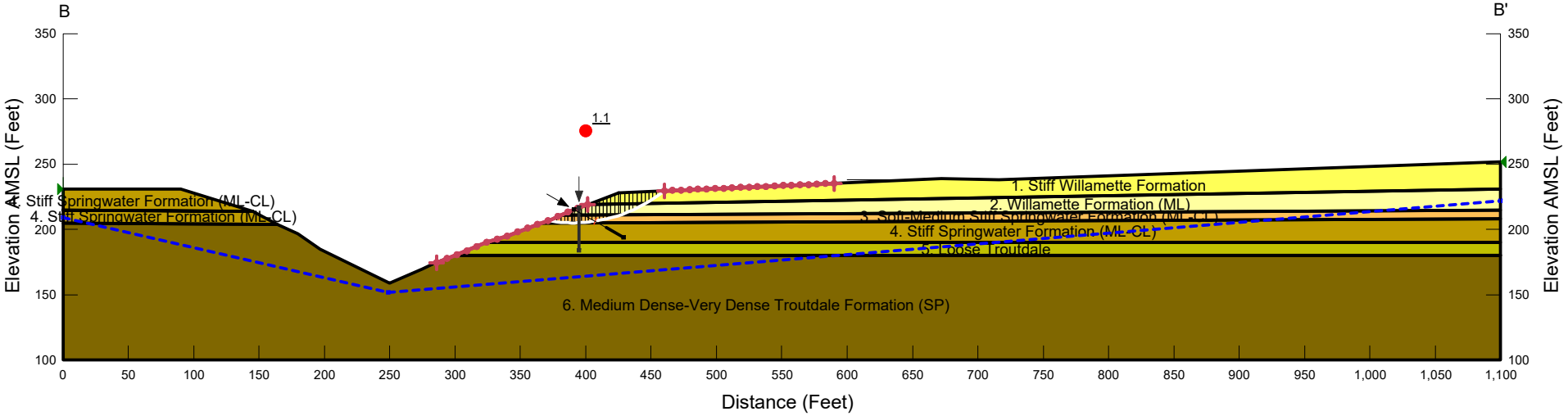
Pseudostatic Factor of Safety: 1.1



20-5600 - Park Place Subdivision - Section B-B' - Seismic Slope Analysis 0.236g

Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)
	1. Stiff Willamette Formation	Mohr-Coulomb	120	0	28
	2. Willamette Formation (ML)	Mohr-Coulomb	125	0	22
	3. Soft-Medium Stiff Springwater Formation (ML-CL)	Mohr-Coulomb	125	0	24
	4. Stiff Springwater Formation (ML-CL)	Mohr-Coulomb	125	300	36
	5. Loose Troutdale	Mohr-Coulomb	120	150	30
	6. Medium Dense-Very Dense Troutdale Formation (SP)	Mohr-Coulomb	125	200	36

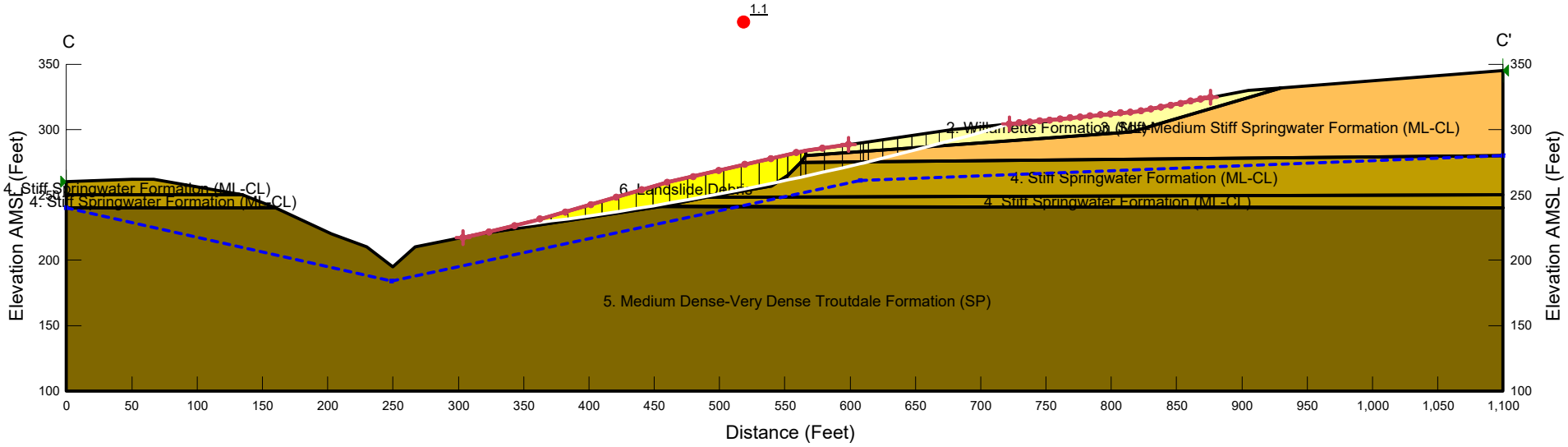
Pseudostatic Factor of Safety: 1.1



20-5600 - Park Place Subdivision - Section C-C' - Seismic Slope Analysis 0.23g

Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)
	2. Willamette Formation (ML)	Mohr-Coulomb	125	50	26
	3. Soft-Medium Stiff Springwater Formation (ML-CL)	Mohr-Coulomb	125	50	26
	4. Stiff Springwater Formation (ML-CL)	Mohr-Coulomb	125	300	36
	5. Medium Dense-Very Dense Troutdale Formation (SP)	Mohr-Coulomb	125	200	36
	6. Landslide Debris	Mohr-Coulomb	110	150	10

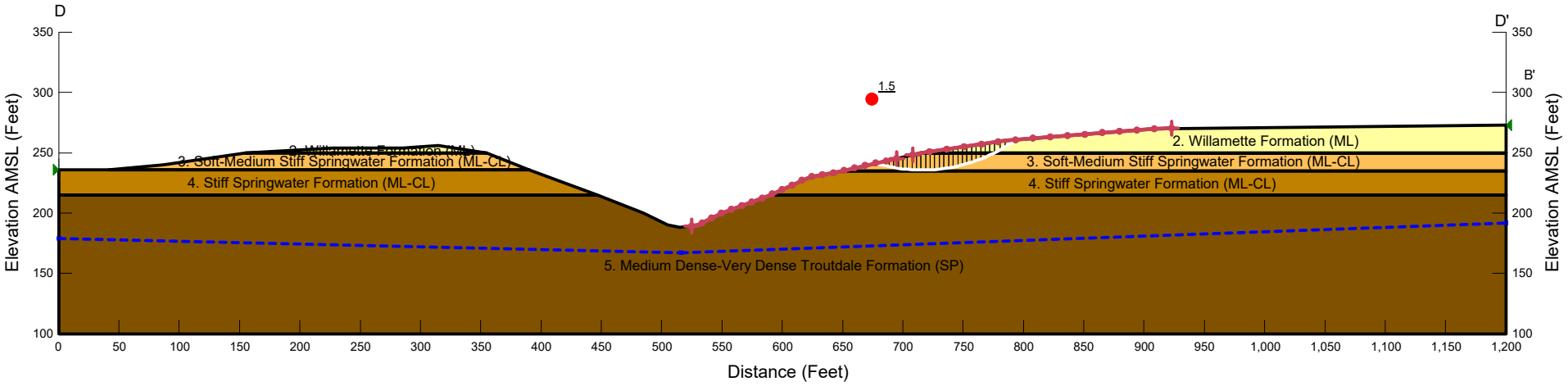
Pseudostatic Factor of Safety: 1.1



20-5600 - Park Place Subdivision - Existing Section D-D' - Seismic Slope Analysis 0.23g

Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)
	2. Willamette Formation (ML)	Mohr-Coulomb	125	50	26
	3. Soft-Medium Stiff Springwater Formation (ML-CL)	Mohr-Coulomb	125	250	20
	4. Stiff Springwater Formation (ML-CL)	Mohr-Coulomb	125	300	36
	5. Medium Dense-Very Dense Troutdale Formation (SP)	Mohr-Coulomb	125	200	36

Pseudostatic Factor of Safety: 1.5

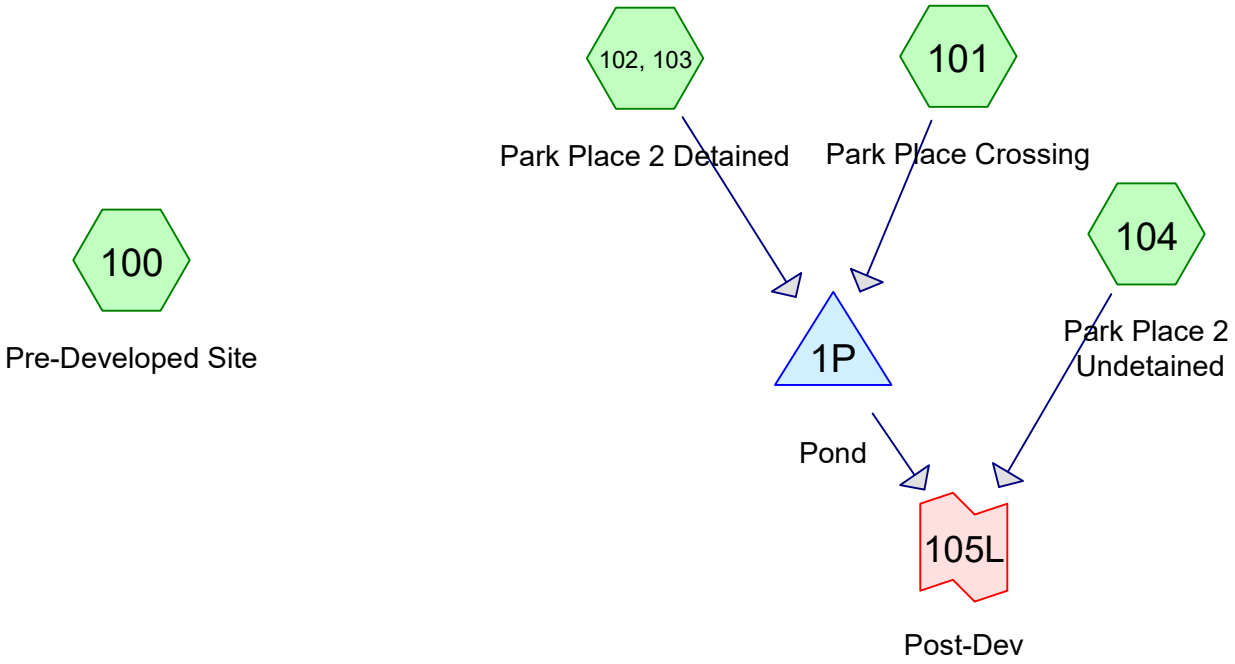


Appendix C:

Basin #	Name	Total Area SF	Total Area Acres	Number of Lots	Lot Impervious SF	ROW/Tract Imp SF	Total Impervious SF	Total Pervious (Calc'd) SF
100*	Pre-Dev	3,202,551	73.52	9	0	0	0	3,202,551
101	Park Place Crossing	485,320	11.14	53	159,000	223,553	382,553	102,767
102**	Post-Dev Park Place 2 Forest	1,546,720	35.51	190	570,000	400,519	970,519	576,201
103**	Post-Dev Park Place 2 Grass	1,024,516	23.52	85	339,762	203,643	543,405	481,111
104	Post-Dev Park Place 2 Forest Undetained	145,995	3.35	15	45,000	30,965	75,965	70,030

*All Pre-Developed areas are assumed to be 100% pervious.

** Detained Park Place 2 Basins were divided based on the pre-developed surface type.



Subcat Reach Pond Link

Routing Diagram for 0082-012 Pond Model WQ
Prepared by {enter your company name here}, Printed 9/4/2024
HydroCAD® 10.00-24 s/n 04804 © 2018 HydroCAD Software Solutions LLC

Summary for Subcatchment 100: Pre-Developed Site

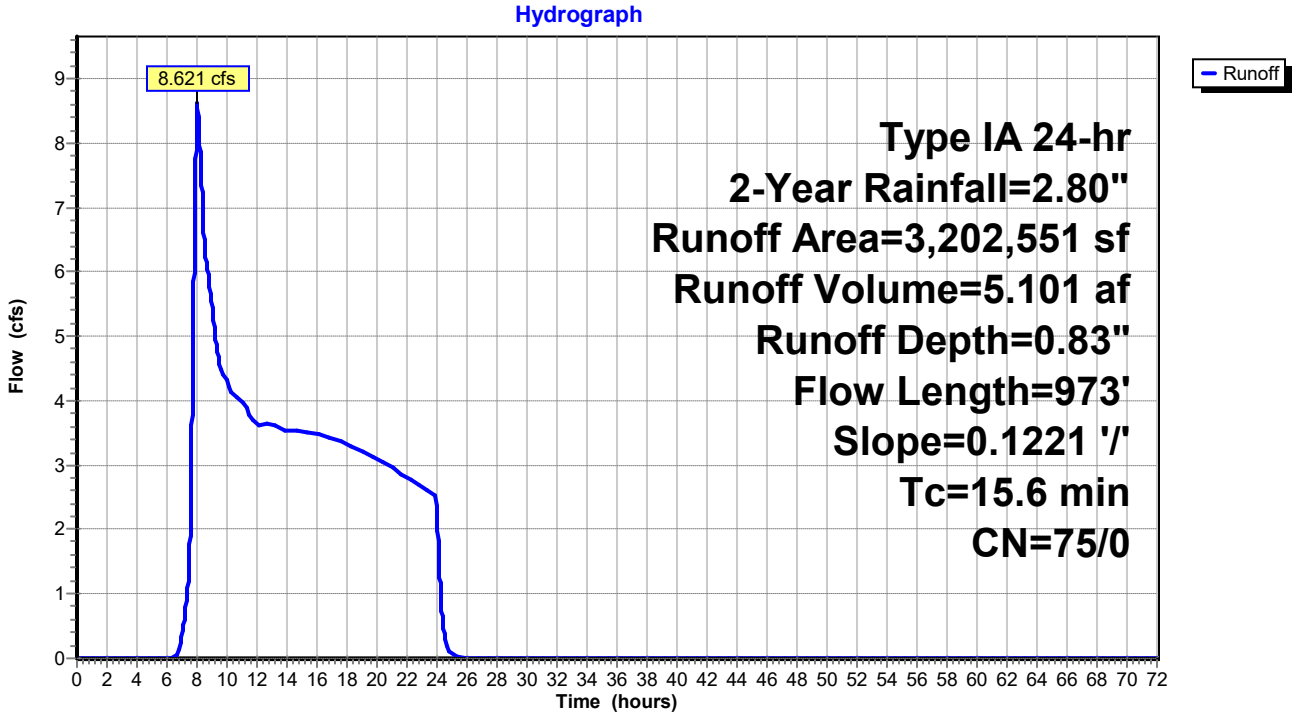
Runoff = 8.621 cfs @ 8.01 hrs, Volume= 5.101 af, Depth= 0.83"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type IA 24-hr 2-Year Rainfall=2.80"

	Area (sf)	CN	Description
*	2,182,316	73	Forest
*	1,020,235	79	Grass
	3,202,551	75	Weighted Average
	3,202,551	75	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	50	0.1221	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.50"
8.8	923	0.1221	1.75		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
15.6	973	Total			

Subcatchment 100: Pre-Developed Site



Summary for Subcatchment 101: Park Place Crossing

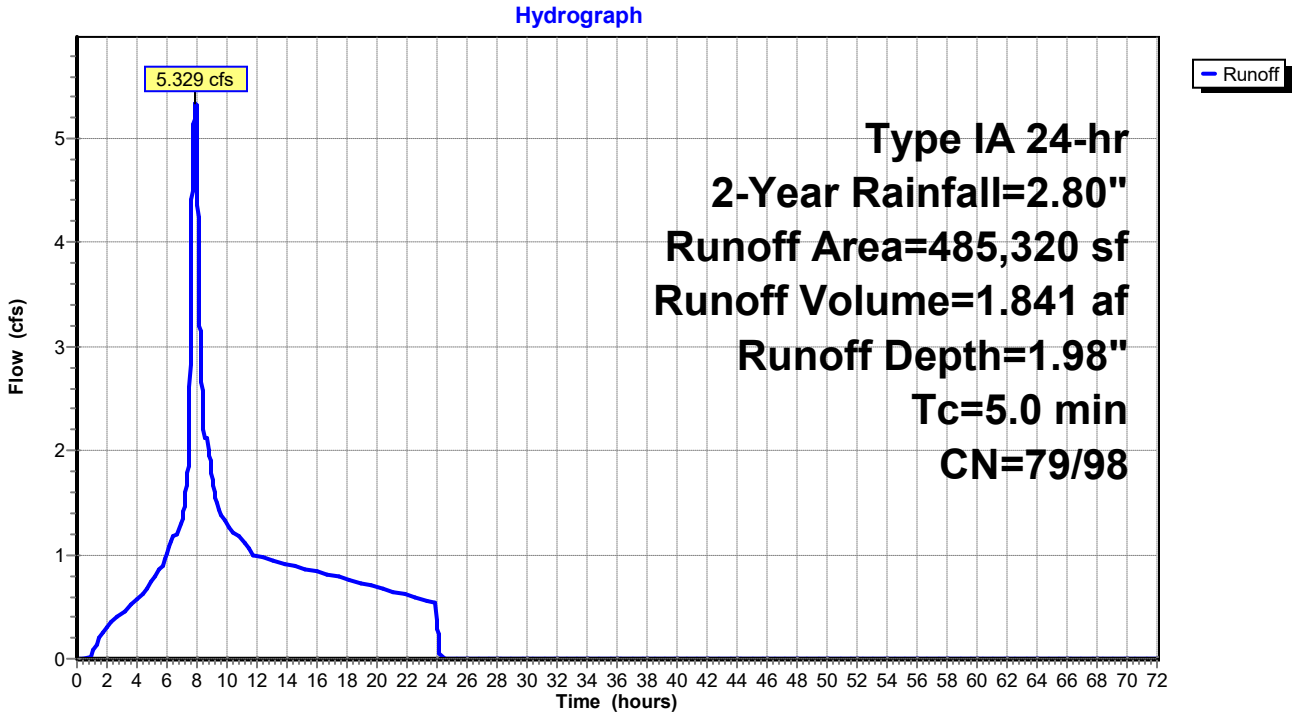
Runoff = 5.329 cfs @ 7.91 hrs, Volume= 1.841 af, Depth= 1.98"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type IA 24-hr 2-Year Rainfall=2.80"

	Area (sf)	CN	Description
*	298,578	98	Impervious
*	186,742	79	Pervious
	485,320	91	Weighted Average
	186,742	79	38.48% Pervious Area
	298,578	98	61.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 101: Park Place Crossing



Summary for Subcatchment 102, 103: Park Place 2 Detained

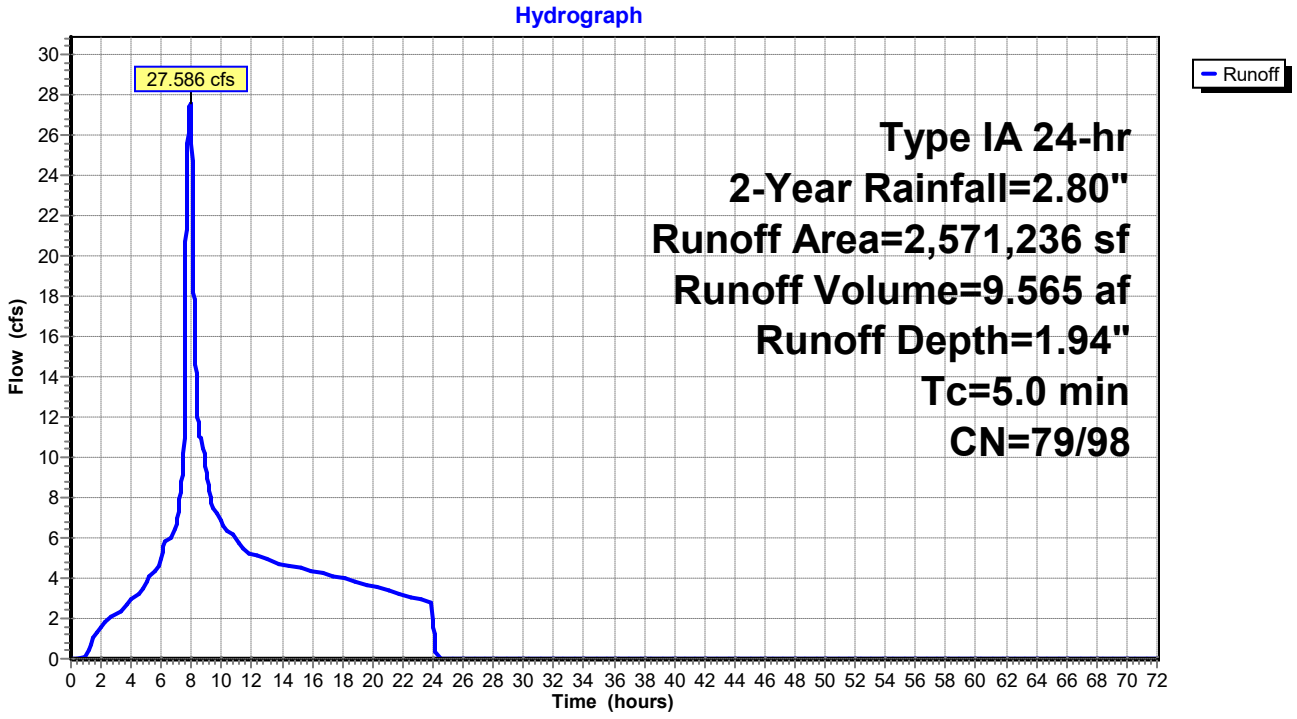
Runoff = 27.586 cfs @ 7.91 hrs, Volume= 9.565 af, Depth= 1.94"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type IA 24-hr 2-Year Rainfall=2.80"

	Area (sf)	CN	Description
*	1,517,928	98	Impervious
*	1,053,308	79	Pervious
	2,571,236	90	Weighted Average
	1,053,308	79	40.97% Pervious Area
	1,517,928	98	59.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 102, 103: Park Place 2 Detained



Summary for Subcatchment 104: Park Place 2 Undetained

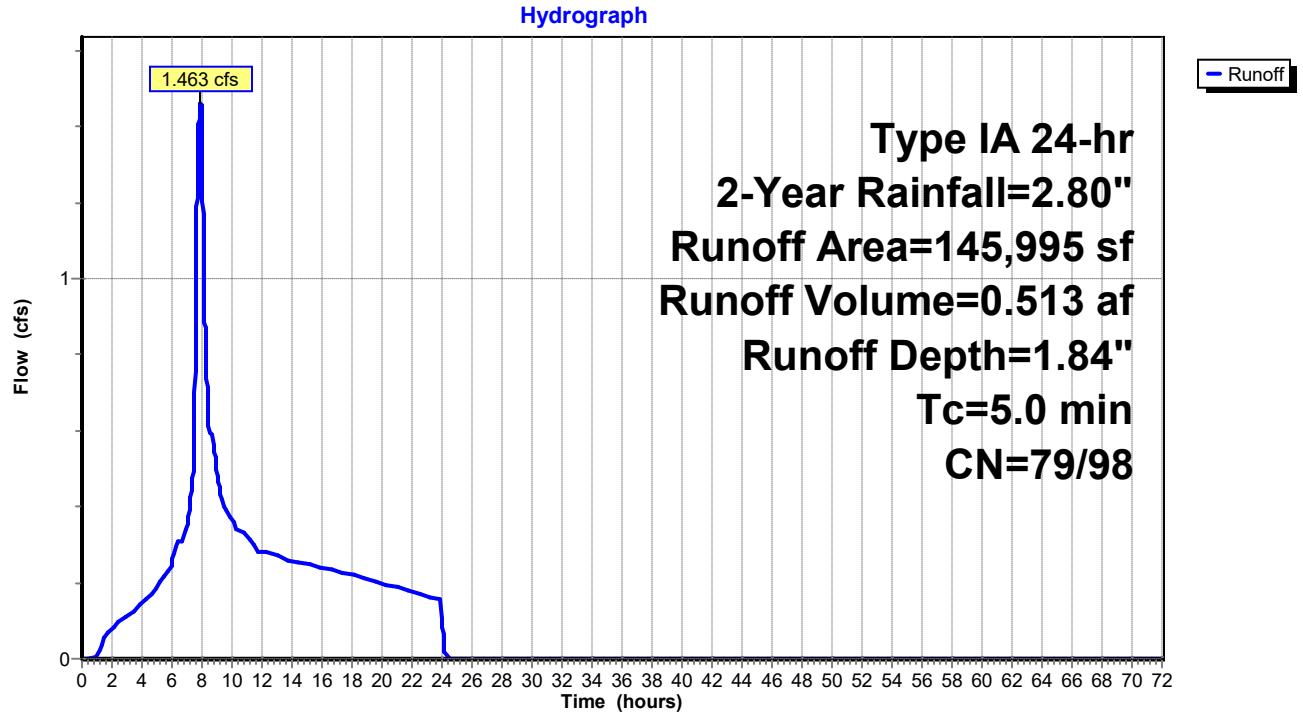
Runoff = 1.463 cfs @ 7.92 hrs, Volume= 0.513 af, Depth= 1.84"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type IA 24-hr 2-Year Rainfall=2.80"

	Area (sf)	CN	Description
*	75,965	98	Impervious
*	70,030	79	Pervious
	145,995	89	Weighted Average
	70,030	79	47.97% Pervious Area
	75,965	98	52.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 104: Park Place 2 Undetained



Summary for Pond 1P: Pond

Inflow Area = 70.169 ac, 59.43% Impervious, Inflow Depth = 1.95" for 2-Year event
Inflow = 32.915 cfs @ 7.91 hrs, Volume= 11.406 af
Outflow = 7.806 cfs @ 10.13 hrs, Volume= 11.402 af, Atten= 76%, Lag= 133.4 min
Primary = 7.806 cfs @ 10.13 hrs, Volume= 11.402 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 222.39' @ 10.13 hrs Surf.Area= 56,623 sf Storage= 147,610 cf

Plug-Flow detention time= 364.1 min calculated for 11.402 af (100% of inflow)
Center-of-Mass det. time= 363.9 min (1,070.9 - 707.0)

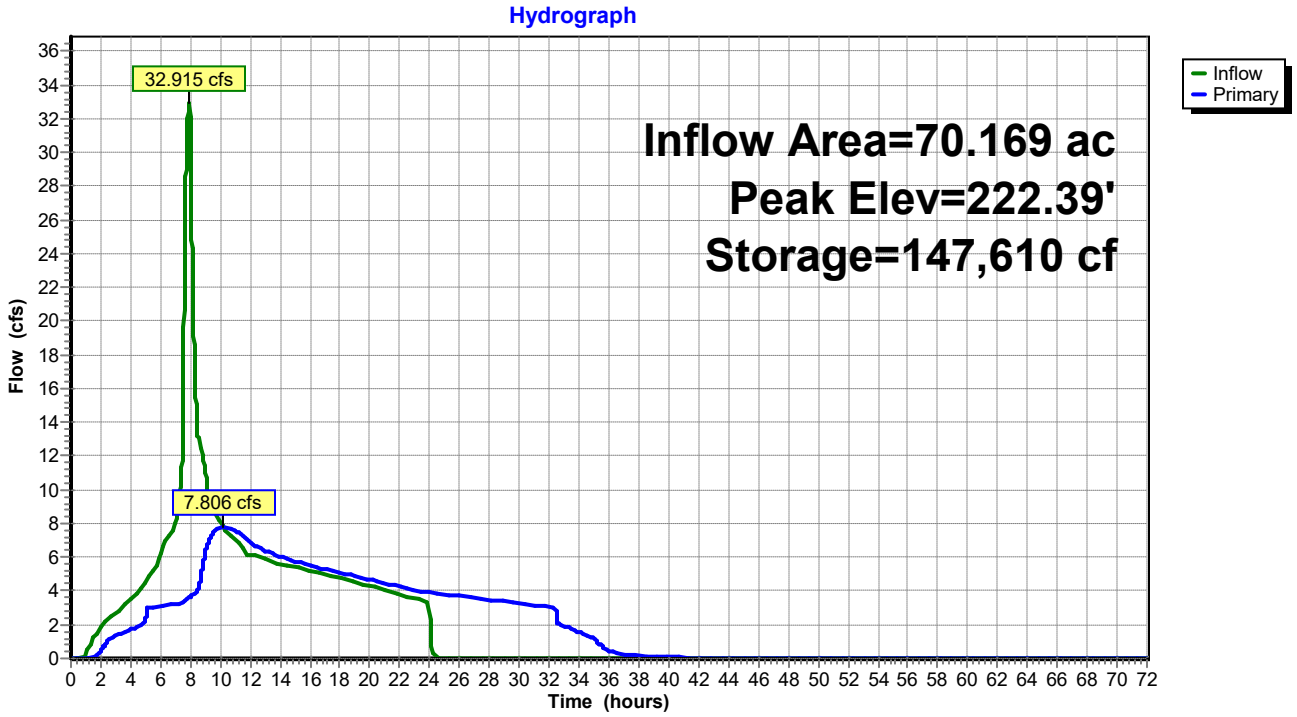
Volume	Invert	Avail.Storage	Storage Description
#1	217.00'	243,712 cf	**Pond (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
217.00	47,958	0.0	0	0
217.01	47,958	30.0	144	144
218.49	47,958	30.0	21,293	21,437
218.50	47,958	1.0	5	21,442
219.99	47,958	1.0	715	22,157
220.00	47,958	100.0	480	22,636
221.00	51,532	100.0	49,745	72,381
222.00	55,172	100.0	53,352	125,733
223.00	58,879	100.0	57,026	182,759
224.00	63,027	100.0	60,953	243,712

Device	Routing	Invert	Outlet Devices
#1	Primary	217.00'	**30.0" Round Outlet Pipe** L= 22.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.00' / 216.78' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#2	Device 1	216.00'	**8.0" Horiz. Low Orifice** C= 0.620 Limited to weir flow at low heads
#3	Device 1	222.00'	**18.0" Horiz. High Orifice** C= 0.620 Limited to weir flow at low heads
#4	Device 1	223.00'	**30.0" Horiz. Overflow** C= 0.620 Limited to weir flow at low heads

Primary OutFlow Max=7.806 cfs @ 10.13 hrs HW=222.39' (Free Discharge)
└**1=Outlet Pipe** (Passes 7.806 cfs of 48.099 cfs potential flow)
  ├**2=Low Orifice** (Orifice Controls 4.033 cfs @ 11.55 fps)
  ├**3=High Orifice** (Weir Controls 3.773 cfs @ 2.05 fps)
  └**4=Overflow** (Controls 0.000 cfs)

Pond 1P: Pond

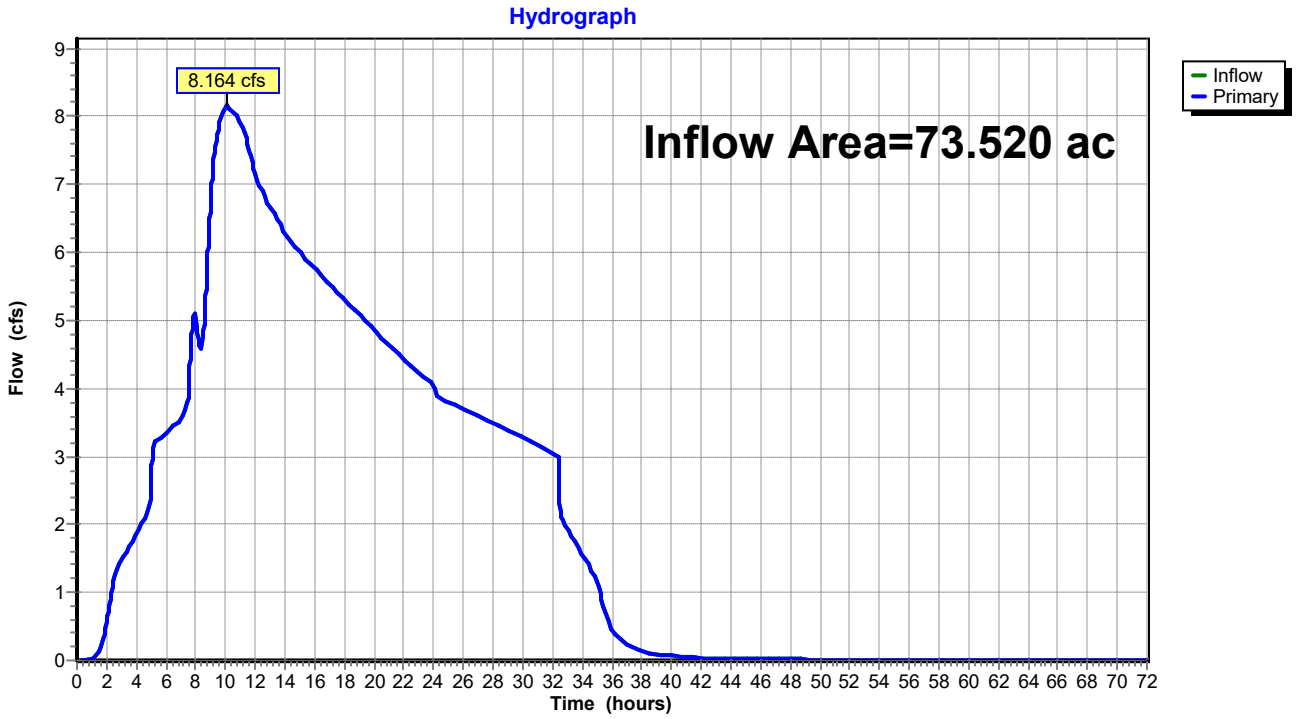

Hydrograph
Inflow
Primary
32.915 cfs
7.806 cfs
Inflow Area=70.169 ac
Peak Elev=222.39'
Storage=147,610 cf
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72

Summary for Link 105L: Post-Dev

Inflow Area = 73.520 ac, 59.09% Impervious, Inflow Depth > 1.94" for 2-Year event
Inflow = 8.164 cfs @ 10.08 hrs, Volume= 11.916 af
Primary = 8.164 cfs @ 10.08 hrs, Volume= 11.916 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 105L: Post-Dev



Summary for Subcatchment 100: Pre-Developed Site

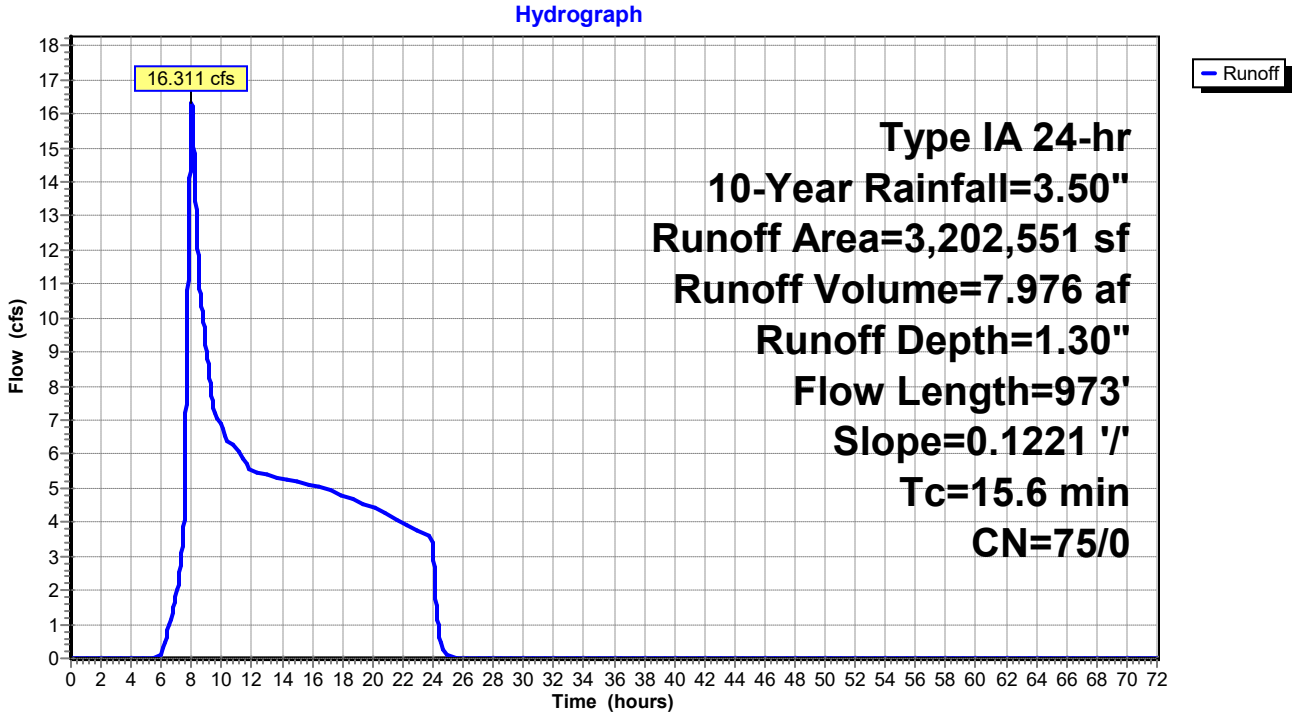
Runoff = 16.311 cfs @ 8.01 hrs, Volume= 7.976 af, Depth= 1.30"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type IA 24-hr 10-Year Rainfall=3.50"

	Area (sf)	CN	Description
*	2,182,316	73	Forest
*	1,020,235	79	Grass
	3,202,551	75	Weighted Average
	3,202,551	75	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	50	0.1221	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.50"
8.8	923	0.1221	1.75		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
15.6	973	Total			

Subcatchment 100: Pre-Developed Site



Summary for Subcatchment 101: Park Place Crossing

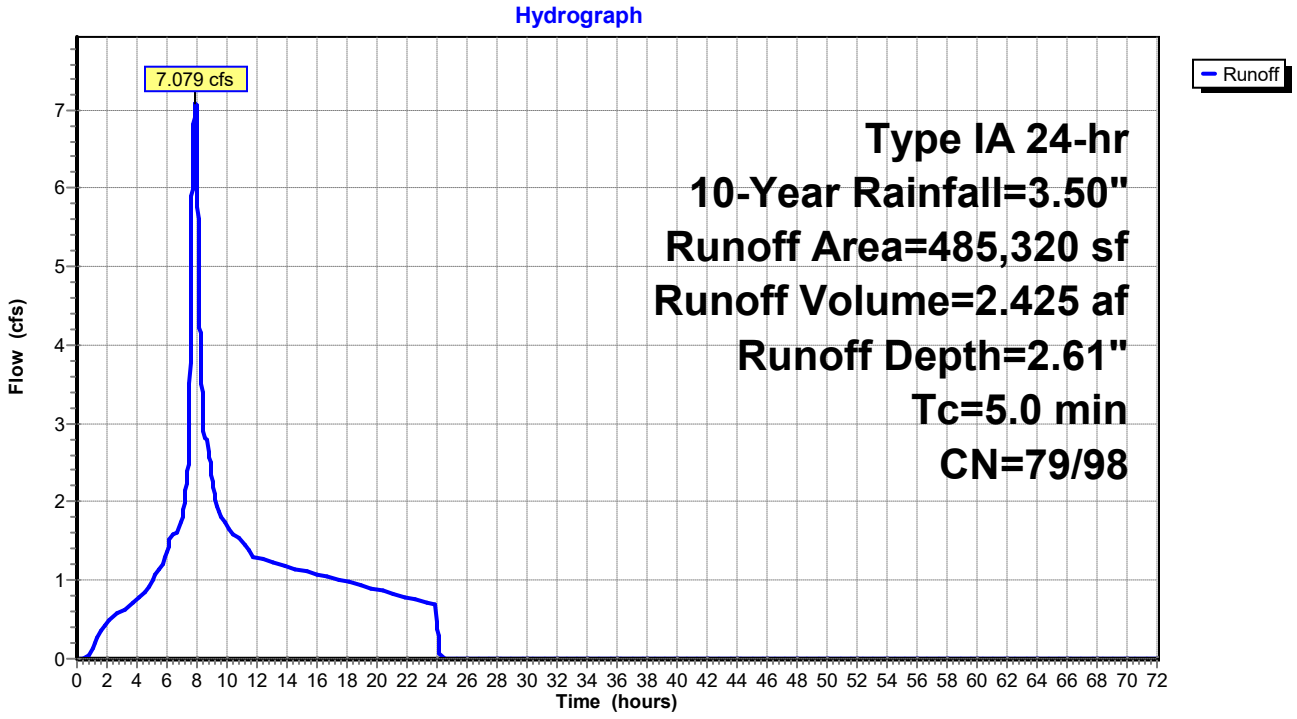
Runoff = 7.079 cfs @ 7.90 hrs, Volume= 2.425 af, Depth= 2.61"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type IA 24-hr 10-Year Rainfall=3.50"

	Area (sf)	CN	Description
*	298,578	98	Impervious
*	186,742	79	Pervious
	485,320	91	Weighted Average
	186,742	79	38.48% Pervious Area
	298,578	98	61.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 101: Park Place Crossing



Summary for Subcatchment 102, 103: Park Place 2 Detained

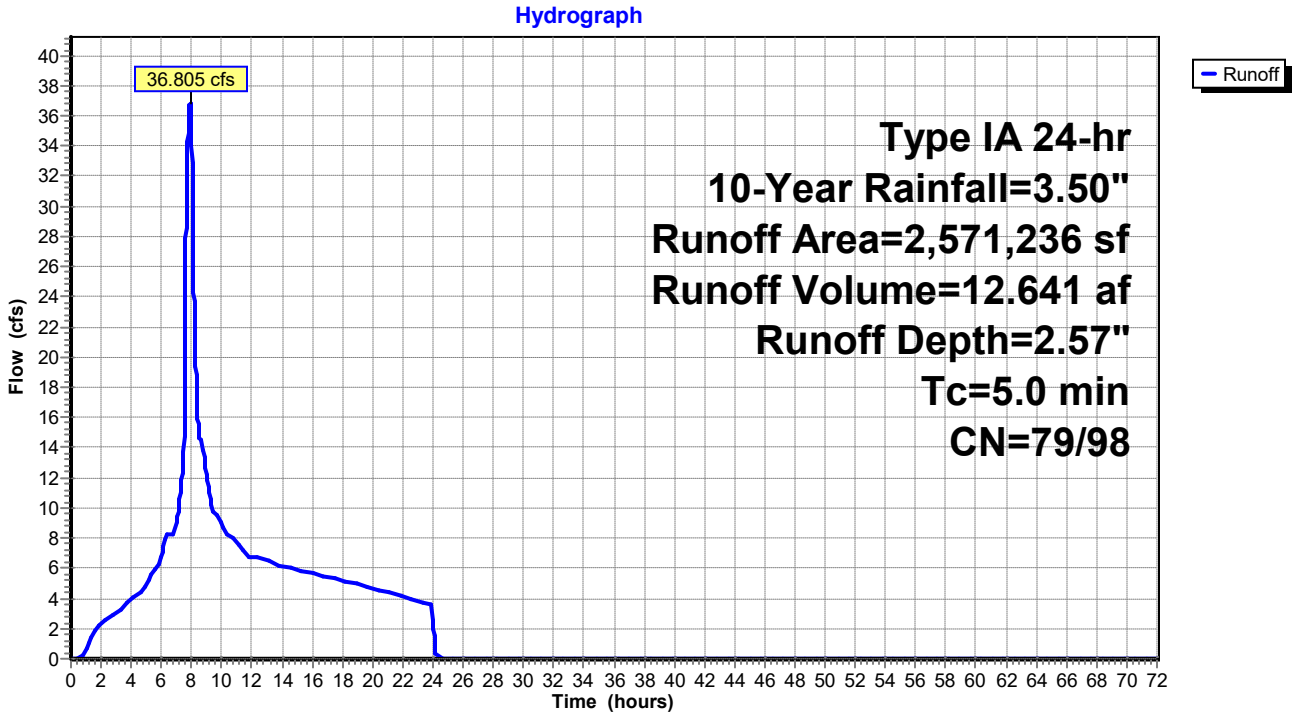
Runoff = 36.805 cfs @ 7.91 hrs, Volume= 12.641 af, Depth= 2.57"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type IA 24-hr 10-Year Rainfall=3.50"

	Area (sf)	CN	Description
*	1,517,928	98	Impervious
*	1,053,308	79	Pervious
	2,571,236	90	Weighted Average
	1,053,308	79	40.97% Pervious Area
	1,517,928	98	59.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 102, 103: Park Place 2 Detained



Summary for Subcatchment 104: Park Place 2 Undetained

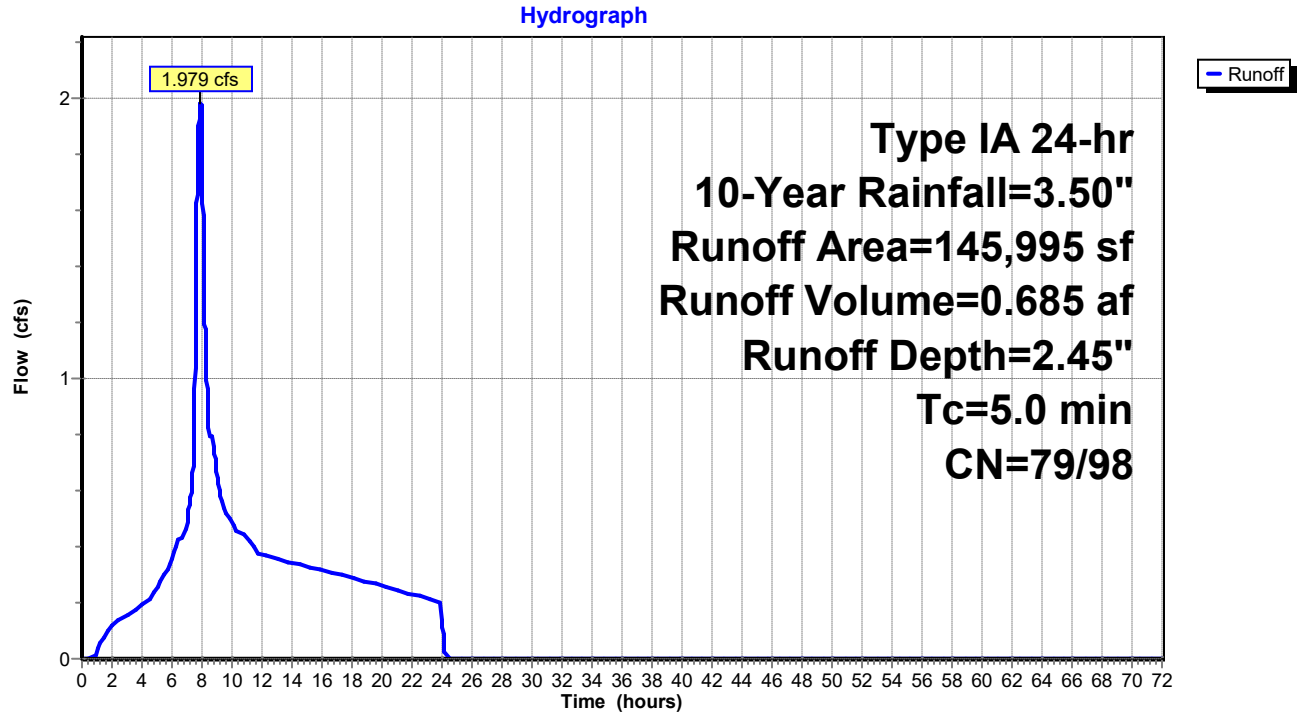
Runoff = 1.979 cfs @ 7.91 hrs, Volume= 0.685 af, Depth= 2.45"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type IA 24-hr 10-Year Rainfall=3.50"

	Area (sf)	CN	Description
*	75,965	98	Impervious
*	70,030	79	Pervious
	145,995	89	Weighted Average
	70,030	79	47.97% Pervious Area
	75,965	98	52.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 104: Park Place 2 Undetained



Summary for Pond 1P: Pond

Inflow Area = 70.169 ac, 59.43% Impervious, Inflow Depth = 2.58" for 10-Year event
Inflow = 43.884 cfs @ 7.91 hrs, Volume= 15.066 af
Outflow = 12.731 cfs @ 9.22 hrs, Volume= 15.063 af, Atten= 71%, Lag= 78.6 min
Primary = 12.731 cfs @ 9.22 hrs, Volume= 15.063 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 222.93' @ 9.22 hrs Surf.Area= 58,637 sf Storage= 178,924 cf

Plug-Flow detention time= 306.9 min calculated for 15.061 af (100% of inflow)
Center-of-Mass det. time= 307.0 min (1,008.0 - 701.0)

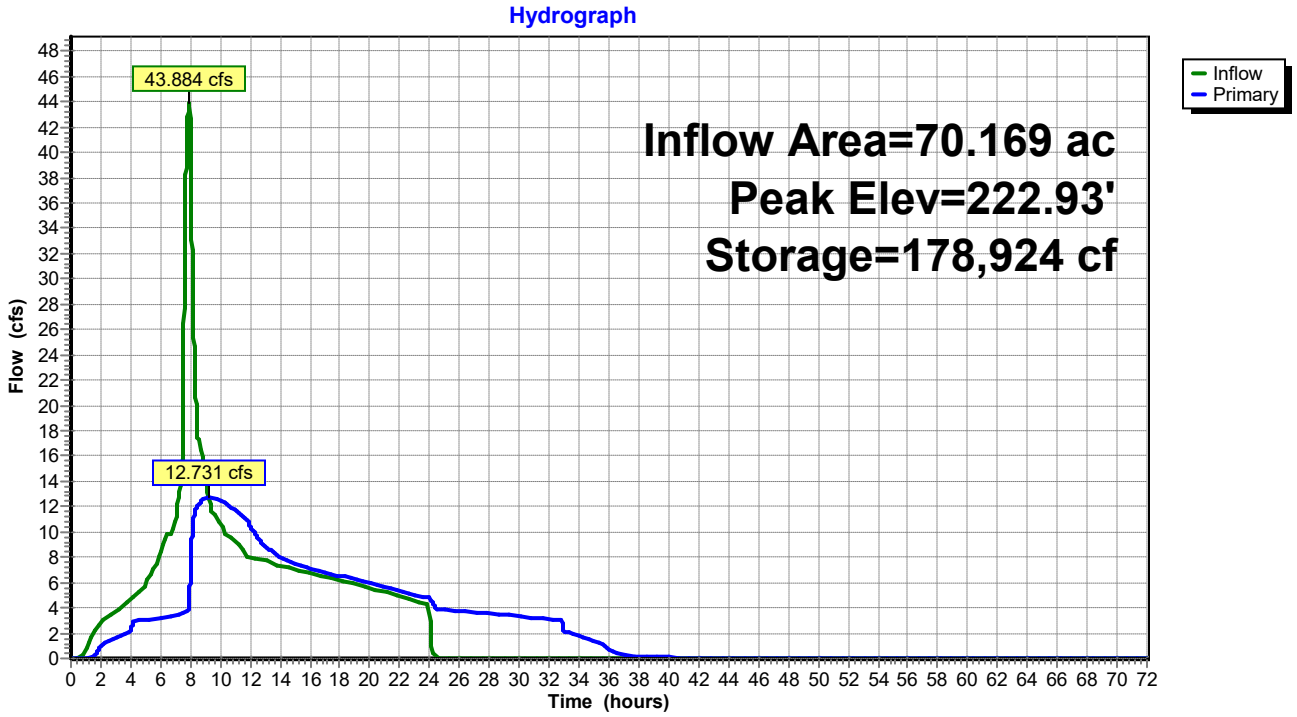
Volume	Invert	Avail.Storage	Storage Description
#1	217.00'	243,712 cf	**Pond (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
217.00	47,958	0.0	0	0
217.01	47,958	30.0	144	144
218.49	47,958	30.0	21,293	21,437
218.50	47,958	1.0	5	21,442
219.99	47,958	1.0	715	22,157
220.00	47,958	100.0	480	22,636
221.00	51,532	100.0	49,745	72,381
222.00	55,172	100.0	53,352	125,733
223.00	58,879	100.0	57,026	182,759
224.00	63,027	100.0	60,953	243,712

Device	Routing	Invert	Outlet Devices
#1	Primary	217.00'	**30.0" Round Outlet Pipe** L= 22.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.00' / 216.78' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#2	Device 1	216.00'	**8.0" Horiz. Low Orifice** C= 0.620 Limited to weir flow at low heads
#3	Device 1	222.00'	**18.0" Horiz. High Orifice** C= 0.620 Limited to weir flow at low heads
#4	Device 1	223.00'	**30.0" Horiz. Overflow** C= 0.620 Limited to weir flow at low heads

Primary OutFlow Max=12.732 cfs @ 9.22 hrs HW=222.93' (Free Discharge)
└**1=Outlet Pipe** (Passes 12.732 cfs of 51.157 cfs potential flow)
  ├**2=Low Orifice** (Orifice Controls 4.231 cfs @ 12.12 fps)
  ├**3=High Orifice** (Orifice Controls 8.501 cfs @ 4.81 fps)
  └**4=Overflow** (Controls 0.000 cfs)

Pond 1P: Pond

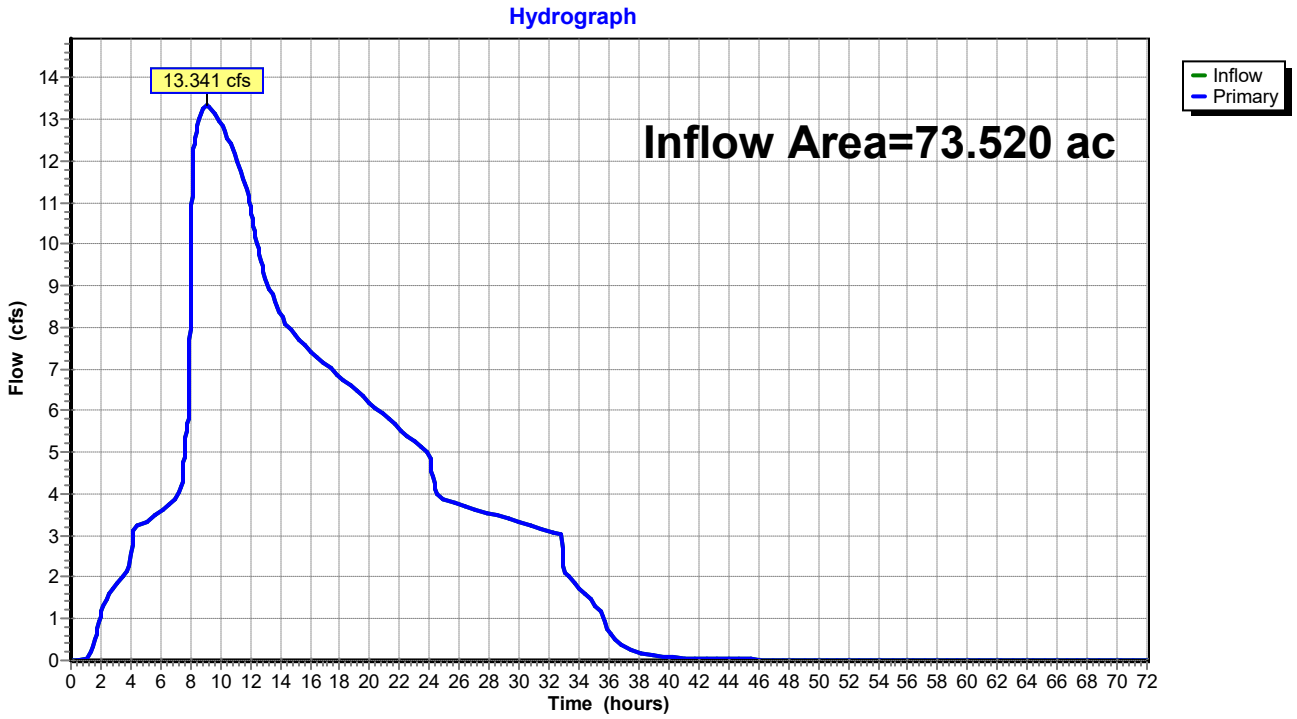

Hydrograph
43.884 cfs
12.731 cfs
Inflow Area=70.169 ac
Peak Elev=222.93'
Storage=178,924 cf
Inflow
Primary
Flow (cfs)
Time (hours)

Summary for Link 105L: Post-Dev

Inflow Area = 73.520 ac, 59.09% Impervious, Inflow Depth = 2.57" for 10-Year event
Inflow = 13.341 cfs @ 9.04 hrs, Volume= 15.747 af
Primary = 13.341 cfs @ 9.04 hrs, Volume= 15.747 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 105L: Post-Dev



Summary for Subcatchment 100: Pre-Developed Site

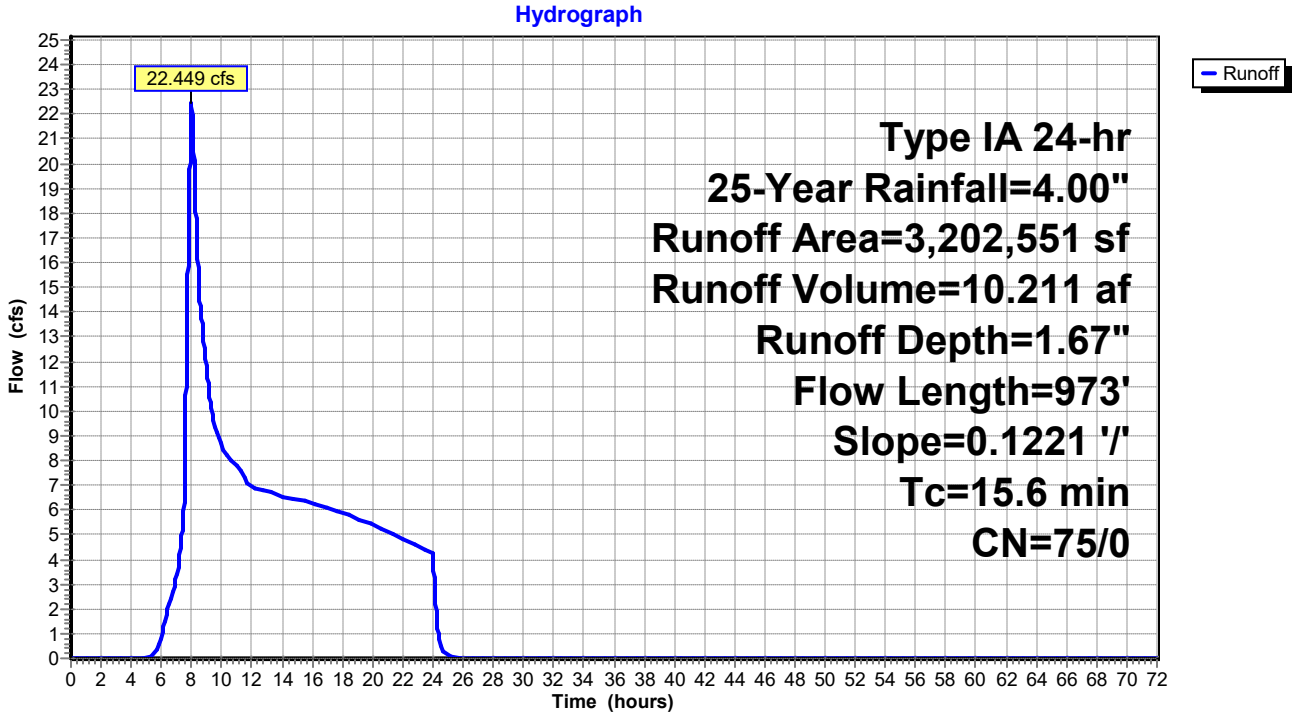
Runoff = 22.449 cfs @ 8.01 hrs, Volume= 10.211 af, Depth= 1.67"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type IA 24-hr 25-Year Rainfall=4.00"

	Area (sf)	CN	Description
*	2,182,316	73	Forest
*	1,020,235	79	Grass
	3,202,551	75	Weighted Average
	3,202,551	75	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	50	0.1221	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.50"
8.8	923	0.1221	1.75		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
15.6	973	Total			

Subcatchment 100: Pre-Developed Site



Summary for Subcatchment 101: Park Place Crossing

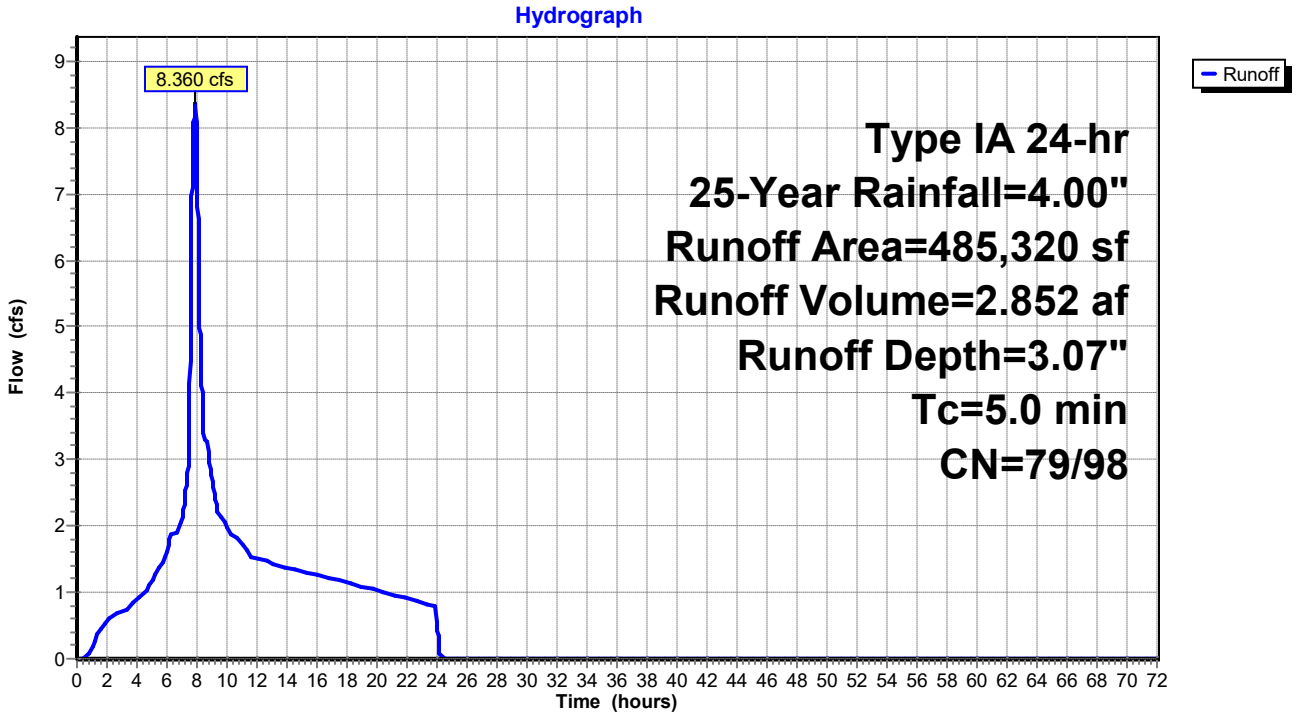
Runoff = 8.360 cfs @ 7.90 hrs, Volume= 2.852 af, Depth= 3.07"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type IA 24-hr 25-Year Rainfall=4.00"

	Area (sf)	CN	Description
*	298,578	98	Impervious
*	186,742	79	Pervious
	485,320	91	Weighted Average
	186,742	79	38.48% Pervious Area
	298,578	98	61.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 101: Park Place Crossing



Summary for Subcatchment 102, 103: Park Place 2 Detained

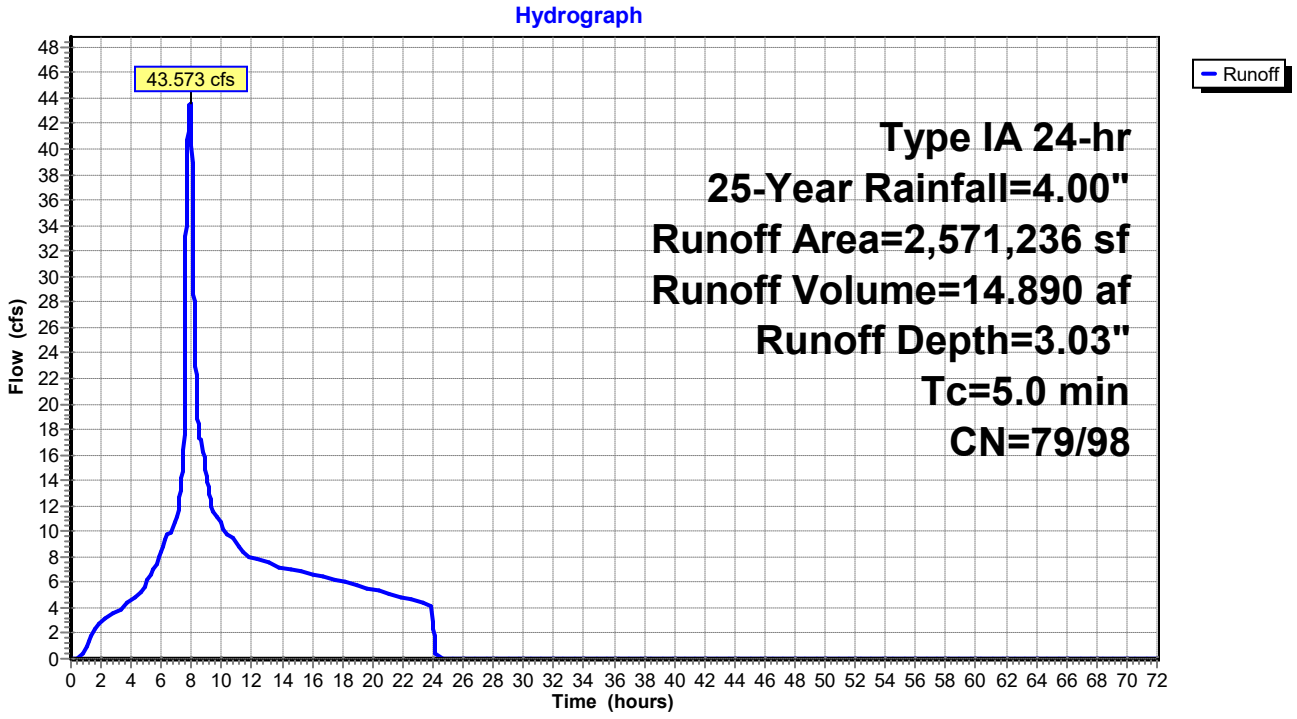
Runoff = 43.573 cfs @ 7.90 hrs, Volume= 14.890 af, Depth= 3.03"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type IA 24-hr 25-Year Rainfall=4.00"

	Area (sf)	CN	Description
*	1,517,928	98	Impervious
*	1,053,308	79	Pervious
	2,571,236	90	Weighted Average
	1,053,308	79	40.97% Pervious Area
	1,517,928	98	59.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 102, 103: Park Place 2 Detained



Summary for Subcatchment 104: Park Place 2 Undetained

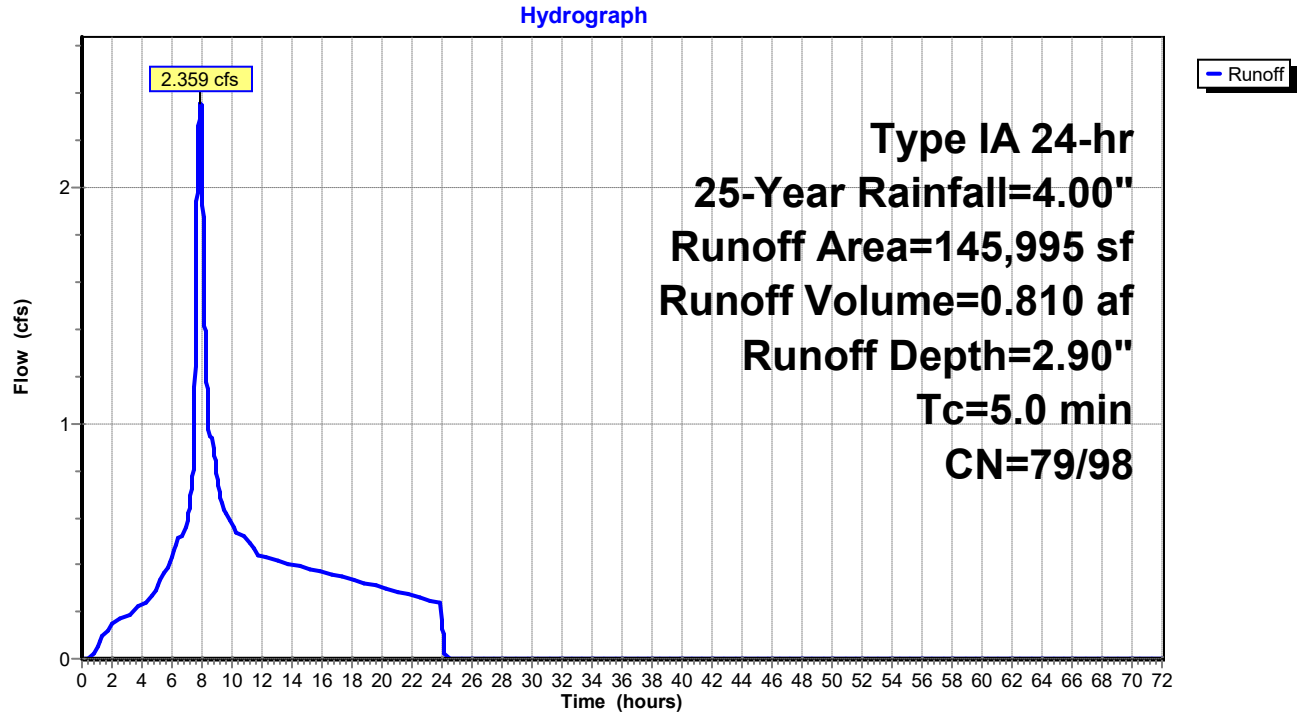
Runoff = 2.359 cfs @ 7.91 hrs, Volume= 0.810 af, Depth= 2.90"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type IA 24-hr 25-Year Rainfall=4.00"

	Area (sf)	CN	Description
*	75,965	98	Impervious
*	70,030	79	Pervious
	145,995	89	Weighted Average
	70,030	79	47.97% Pervious Area
	75,965	98	52.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 104: Park Place 2 Undetained



Summary for Pond 1P: Pond

Inflow Area = 70.169 ac, 59.43% Impervious, Inflow Depth = 3.03" for 25-Year event
Inflow = 51.934 cfs @ 7.90 hrs, Volume= 17.742 af
Outflow = 19.139 cfs @ 8.79 hrs, Volume= 17.739 af, Atten= 63%, Lag= 53.1 min
Primary = 19.139 cfs @ 8.79 hrs, Volume= 17.739 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 223.32' @ 8.79 hrs Surf.Area= 60,207 sf Storage= 201,826 cf

Plug-Flow detention time= 278.9 min calculated for 17.736 af (100% of inflow)
Center-of-Mass det. time= 279.0 min (976.3 - 697.3)

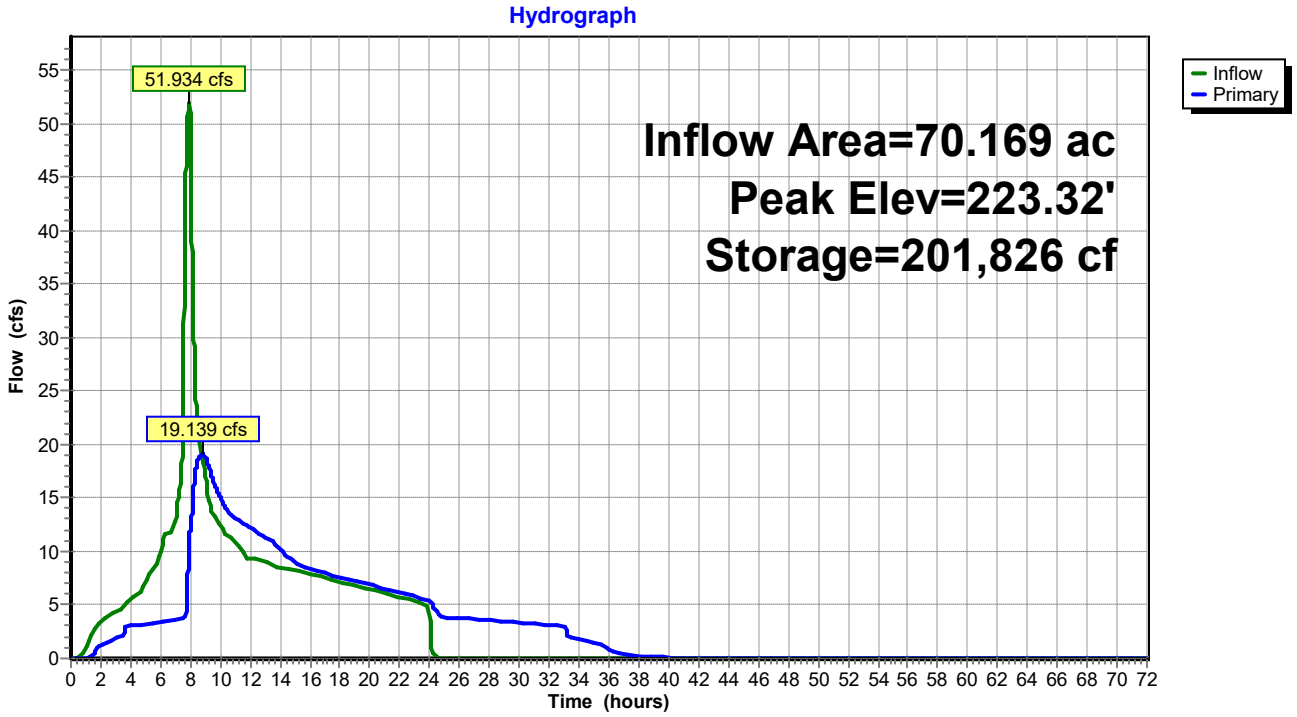
Volume	Invert	Avail.Storage	Storage Description
#1	217.00'	243,712 cf	**Pond (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
217.00	47,958	0.0	0	0
217.01	47,958	30.0	144	144
218.49	47,958	30.0	21,293	21,437
218.50	47,958	1.0	5	21,442
219.99	47,958	1.0	715	22,157
220.00	47,958	100.0	480	22,636
221.00	51,532	100.0	49,745	72,381
222.00	55,172	100.0	53,352	125,733
223.00	58,879	100.0	57,026	182,759
224.00	63,027	100.0	60,953	243,712

Device	Routing	Invert	Outlet Devices
#1	Primary	217.00'	**30.0" Round Outlet Pipe** L= 22.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.00' / 216.78' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#2	Device 1	216.00'	**8.0" Horiz. Low Orifice** C= 0.620 Limited to weir flow at low heads
#3	Device 1	222.00'	**18.0" Horiz. High Orifice** C= 0.620 Limited to weir flow at low heads
#4	Device 1	223.00'	**30.0" Horiz. Overflow** C= 0.620 Limited to weir flow at low heads

Primary OutFlow Max=19.123 cfs @ 8.79 hrs HW=223.32' (Free Discharge)
└**1=Outlet Pipe** (Passes 19.123 cfs of 53.220 cfs potential flow)
  ├**2=Low Orifice** (Orifice Controls 4.366 cfs @ 12.51 fps)
  ├**3=High Orifice** (Orifice Controls 10.103 cfs @ 5.72 fps)
  └**4=Overflow** (Weir Controls 4.654 cfs @ 1.85 fps)

Pond 1P: Pond

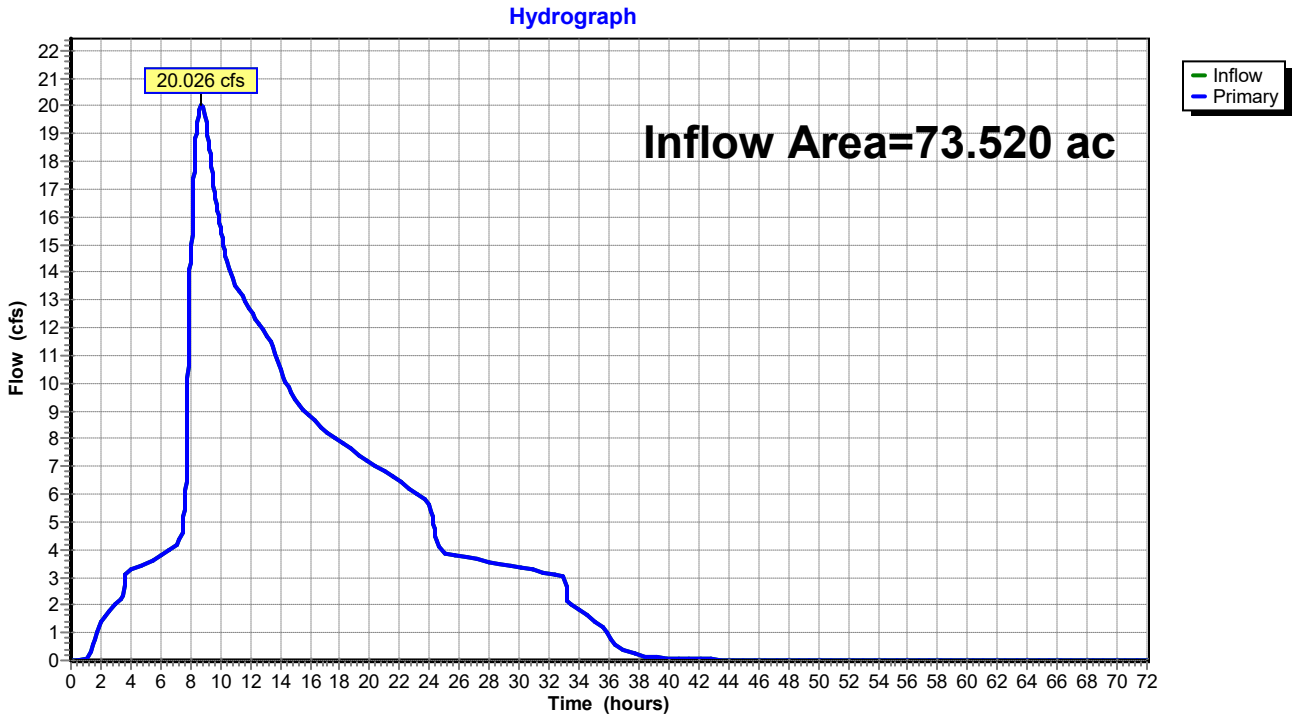

Hydrograph
Inflow Area=70.169 ac
Peak Elev=223.32'
Storage=201,826 cf
51.934 cfs
19.139 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0 5 10 15 20 25 30 35 40 45 50 55
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72

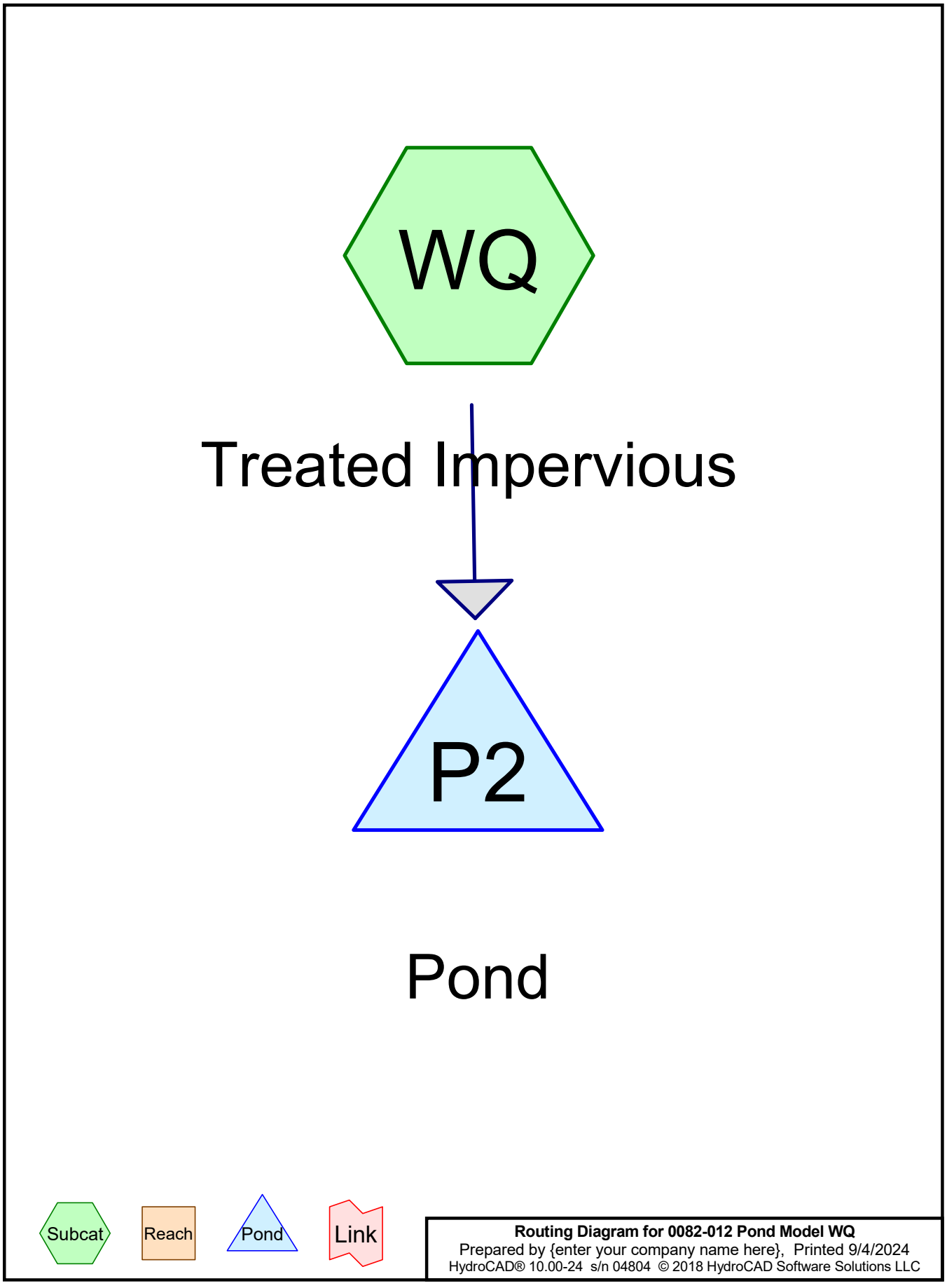
Summary for Link 105L: Post-Dev

Inflow Area = 73.520 ac, 59.09% Impervious, Inflow Depth = 3.03" for 25-Year event
Inflow = 20.026 cfs @ 8.76 hrs, Volume= 18.549 af
Primary = 20.026 cfs @ 8.76 hrs, Volume= 18.549 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 105L: Post-Dev




WQ
Treated Impervious
P2
Pond
Subcat
Reach
Pond
Link
Routing Diagram for 0082-012 Pond Model WQ
Prepared by {enter your company name here}, Printed 9/4/2024
HydroCAD® 10.00-24 s/n 04804 © 2018 HydroCAD Software Solutions LLC

Summary for Subcatchment WQ: Treated Impervious

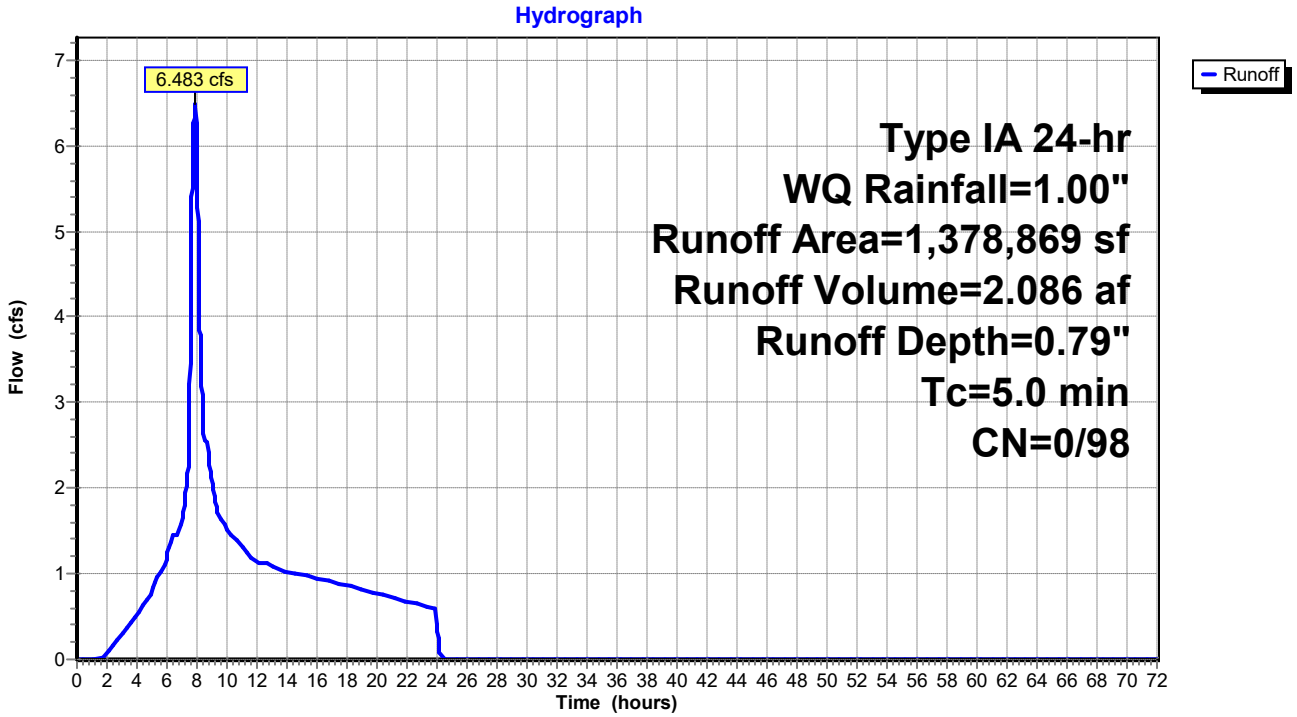
Runoff = 6.483 cfs @ 7.90 hrs, Volume= 2.086 af, Depth= 0.79"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type IA 24-hr WQ Rainfall=1.00"

	Area (sf)	CN	Description
*	1,378,869	98	Impervious
	1,378,869	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment WQ: Treated Impervious



Summary for Pond P2: Pond

Inflow Area = 31.654 ac,100.00% Impervious, Inflow Depth = 0.79" for WQ event
Inflow = 6.483 cfs @ 7.90 hrs, Volume= 2.086 af
Outflow = 2.257 cfs @ 8.87 hrs, Volume= 2.086 af, Atten= 65%, Lag= 58.2 min
Primary = 2.257 cfs @ 8.87 hrs, Volume= 2.086 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 220.22' @ 8.87 hrs Surf.Area= 48,758 sf Storage= 10,822 cf

Plug-Flow detention time= 30.9 min calculated for 2.086 af (100% of inflow)
Center-of-Mass det. time= 30.9 min (743.6 - 712.6)

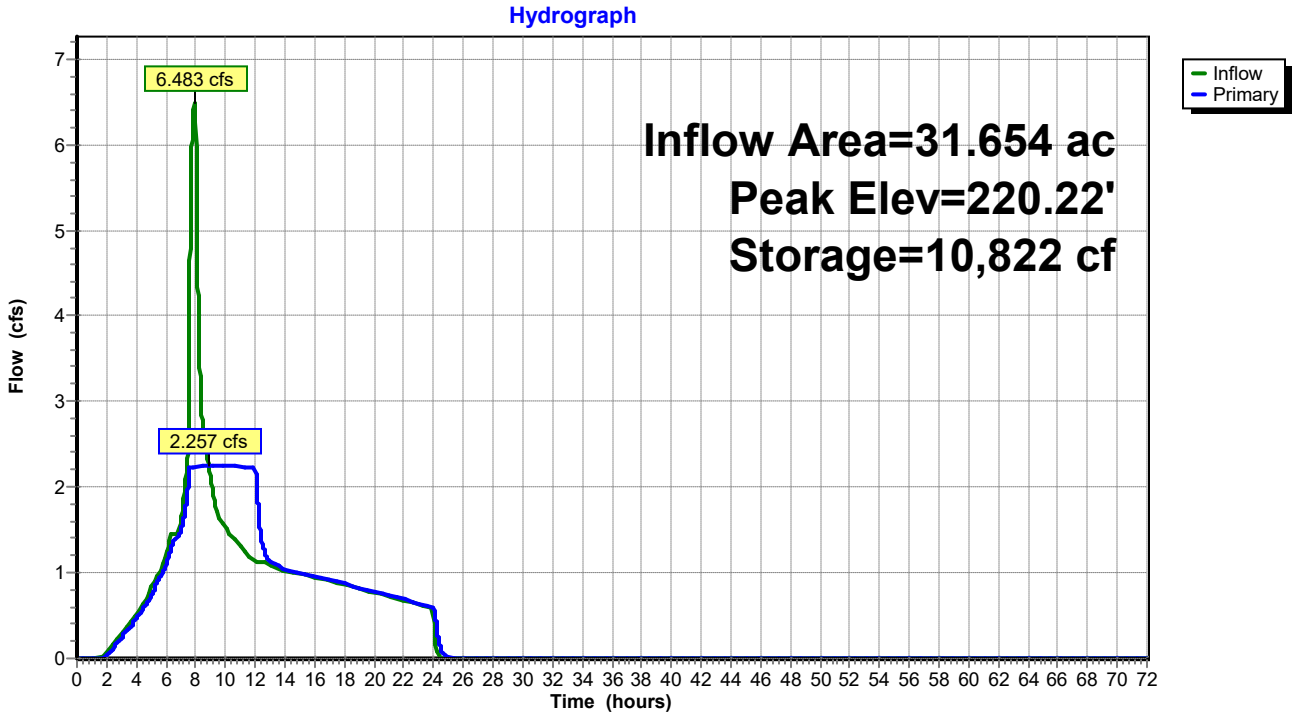
Volume	Invert	Avail.Storage	Storage Description
#1	220.00'	221,076 cf	**2220.00 (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
220.00	47,958	0	0
221.00	51,532	49,745	49,745
222.00	55,172	53,352	103,097
223.00	58,879	57,026	160,123
224.00	63,027	60,953	221,076

Device	Routing	Invert	Outlet Devices
#1	Primary	217.00'	**30.0" Round Outlet Pipe** L= 22.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.00' / 216.78' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#2	Device 3	220.25'	**60.0" Horiz. Pond Outlet** C= 0.620 Limited to weir flow at low heads
#3	Device 1	217.00'	**7.1" Horiz. Low Orifice** C= 0.620 Limited to weir flow at low heads
#4	Device 1	221.00'	**23.6" Horiz. High Orifice** C= 0.620 Limited to weir flow at low heads
#5	Device 1	223.00'	**24.0" Horiz. Overflow** C= 0.620 Limited to weir flow at low heads
#6	Device 3	220.00'	**2.000 in/hr Growing Medium Infiltration over Surface area above 217.00'** Excluded Surface area = 0 sf

Primary OutFlow Max=2.257 cfs @ 8.87 hrs HW=220.22' (Free Discharge)
- **1=Outlet Pipe** (Passes 2.257 cfs of 30.520 cfs potential flow)
  - **3=Low Orifice** (Passes 2.257 cfs of 2.456 cfs potential flow)
    - **2=Pond Outlet** (Controls 0.000 cfs)
    - **6=Growing Medium Infiltration** (Exfiltration Controls 2.257 cfs)
  - **4=High Orifice** (Controls 0.000 cfs)
  - **5=Overflow** (Controls 0.000 cfs)

Pond P2: Pond


Hydrograph
Inflow
Primary
6.483 cfs
2.257 cfs
Inflow Area=31.654 ac
Peak Elev=220.22'
Storage=10,822 cf
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72

Detention Pond						
Depth (ft)	Volume (CF)	Delta V (ft)	Delta D (ft)	Depth (ft)	Area (SF)	Discharge (cfs)
0	0	0	0	0	0	0
0.2	2,877	2877	0.2	0.2	14385	0.253
0.4	5,755	2878	0.2	0.4	14390	0.957
0.6	8,632	2877	0.2	0.6	14385	1.345
0.8	11,510	2878	0.2	0.8	14390	1.553
1	14,387	2877	0.2	1	14385	1.737
1.2	17,265	2878	0.2	1.2	14390	1.903
1.4	20,142	2877	0.2	1.4	14385	2.055
1.6	21,490	1348	0.2	1.6	6740	2.197
1.8	21,586	96	0.2	1.8	480	2.33
2	21,682	96	0.2	2	480	2.456
2.2	21,778	96	0.2	2.2	480	2.576
2.4	21,874	96	0.2	2.4	480	2.691
2.6	21,970	96	0.2	2.6	480	2.8
2.8	22,065	95	0.2	2.8	475	2.906
3	22,636	571	0.2	3	2855	3.008
3.2	32,299	9663	0.2	3.2	48315	3.107
3.4	42,105	9806	0.2	3.4	49030	3.202
3.6	52,054	9949	0.2	3.6	49745	3.295
3.8	62,146	10092	0.2	3.8	50460	3.386
4	72,381	10235	0.2	4	51175	3.474
4.2	82,760	10379	0.2	4.2	51895	3.559
4.4	93,285	10525	0.2	4.4	52625	3.643
4.6	103,956	10671	0.2	4.6	53355	3.725
4.8	114,772	10816	0.2	4.8	54080	3.805
5	125,733	10961	0.2	5	54805	3.884
5.2	136,842	11109	0.2	5.2	55545	5.339
5.4	148,099	11257	0.2	5.4	56285	7.934
5.6	159,504	11405	0.2	5.6	57025	10.921
5.8	171,057	11553	0.2	5.8	57765	12.047
6	182,759	11702	0.2	6	58510	13.047
6.2	194,617	11858	0.2	6.2	59290	16.253
6.4	206,642	12025	0.2	6.4	60125	21.294
6.6	218,833	12191	0.2	6.6	60955	27.52
6.8	231,189	12356	0.2	6.8	61780	34.702
7	243,712	12523	0.2	7	62615	41.453

WES BMP Sizing Software Version 1.6.0.2, May 2018

WES BMP Sizing Report

Project Information

Project Name	Park Place 2
Project Type	Subdivision
Location	
Stormwater Management Area	3202551
Project Applicant	ICON Construction & Development
Jurisdiction	OutofDistrict

Drainage Management Area

Name	Area (sq-ft)	Pre-Project Cover	Post-Project Cover	DMA Soil Type	BMP
Park Place Crossing Impervious	382,553	Forested	ConventionalConcrete	C	Park Place Crossing WQ Planter
Park Place Crossing Pervious	102,767	Forested	Grass	C	Pond
Park Place 2 Impervious 1 (Forest)	835,464	Forested	ConventionalConcrete	C	Pond
Park Place 2 Pervious (Forest)	576,201	Forested	Grass	C	Pond
Park Place 2 Impervious (Grass)	543,405	Grass	Roofs	C	Pond
Park Place 2 Pervious (Grass)	481,111	Grass	Grass	C	Pond
Park Place 2 - Planter 2	20,380	Forested	ConventionalConcrete	C	Planter 2
Park Place 2 - Planter 1	24,259	Forested	ConventionalConcrete	C	Planter 1
Park Place 2 - Planter 3	26,388	Forested	ConventionalConcrete	C	Planter 3
Park Place 2 - Planter 4	22,978	Forested	ConventionalConcrete	C	Planter 4
Park Place 2 - Planter 5	12,121	Forested	ConventionalConcrete	C	Planter 5

Park Place 2 - Planter 6	10,247	Forested	ConventionalConcrete	C	Planter 6
Park Place 2 - Planter 7	12,682	Forested	ConventionalConcrete	C	Planter 7
Park Place 2 - Planter 8	6,000	Forested	Roofs	C	Planter 8
Park Place 2 - Planter 9	31,858	Forested	ConventionalConcrete	C	Planter 9
Park Place 2 - Planter 10	8,313	Forested	ConventionalConcrete	C	Planter 10
Park Place 2 - Planter 11	3,623	Forested	ConventionalConcrete	C	Planter 11
Park Place 2 - Planter 12	4,002	Forested	ConventionalConcrete	C	Planter 12
Park Place 2 - Planter 13	4,981	Forested	ConventionalConcrete	C	Planter 13
Park Place 2 - Planter 14	6,476	Forested	ConventionalConcrete	C	Planter 14

LID Facility Sizing Details

LID ID	Design Criteria	BMP Type	Facility Soil Type	Minimum Area (sq-ft)	Planned Areas (sq-ft)	Orifice Diameter (in)
Planter 1	WaterQuality	Stormwater Planter - Filtration	Lined	363.9	448.0	0.9
Park Place Crossing WQ Planter	WaterQuality	Stormwater Planter - Filtration	Lined	5,738.3	5,739.0	3.4
Planter 2	WaterQuality	Stormwater Planter - Filtration	Lined	305.7	316.0	0.8
Planter 3	WaterQuality	Stormwater Planter - Filtration	Lined	395.8	405.0	0.9
Planter 4	WaterQuality	Stormwater Planter - Filtration	Lined	344.7	345.0	0.8
Planter 5	WaterQuality	Stormwater Planter - Filtration	Lined	181.8	189.0	0.6
Planter 6	WaterQuality	Stormwater Planter - Filtration	Lined	153.7	213.0	0.6
Planter 7	WaterQuality	Stormwater Planter - Filtration	Lined	190.2	214.0	0.6

Planter 8	WaterQuality	Stormwater Planter - Filtration	Lined	90.0	135.0	0.4
Planter 9	WaterQuality	Stormwater Planter - Filtration	Lined	477.9	528.0	1.0
Planter 10	WaterQuality	Stormwater Planter - Filtration	Lined	124.7	130.0	0.5
Planter 11	WaterQuality	Stormwater Planter - Filtration	Lined	54.3	107.0	0.3
Planter 12	WaterQuality	Stormwater Planter - Filtration	Lined	60.0	88.0	0.4
Planter 13	WaterQuality	Stormwater Planter - Filtration	Lined	74.7	104.0	0.4
Planter 14	WaterQuality	Stormwater Planter - Filtration	Lined	97.1	144.0	0.4

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?
Pond	FCWQT	Lined	6.00	58,880.0	3	303,459.0	219,700.0	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.

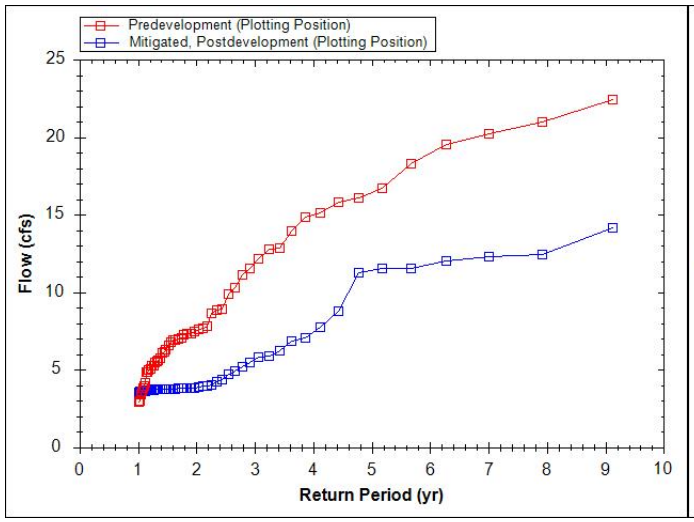
Custom Pond Geometry Configuration

Pond ID: Pond
Design: FlowControlAndTreatment

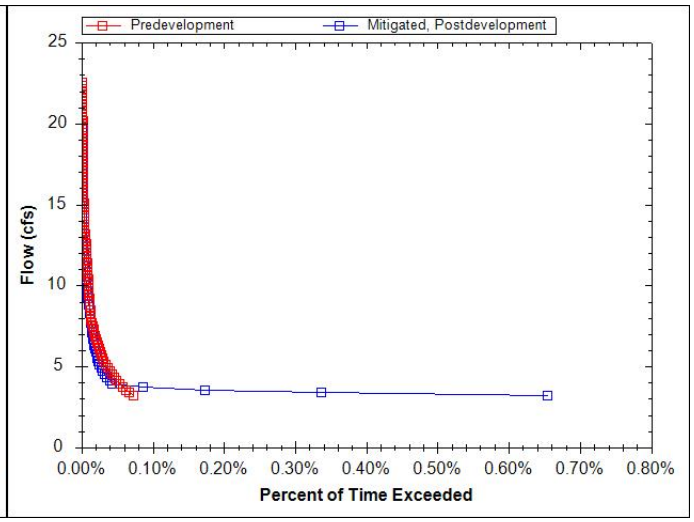
Shape Curve

Depth (ft)	Area (sq ft)	Discharge (cfs)
.0	.0	.0
.2	14,385.0	.3
.4	14,390.0	1.0
.6	14,385.0	1.3
.8	14,390.0	1.6
1.0	14,385.0	1.7
1.2	14,390.0	1.9
1.4	14,385.0	2.1
1.6	6,740.0	2.2
1.8	480.0	2.3
2.0	480.0	2.5
2.2	480.0	2.6
2.4	480.0	2.7
2.6	480.0	2.8
2.8	475.0	2.9
3.0	2,855.0	3.0
3.2	48,315.0	3.1
3.4	49,030.0	3.2
3.6	49,745.0	3.3
3.8	50,460.0	3.4
4.0	51,175.0	3.5
4.2	51,895.0	3.6
4.4	52,625.0	3.6
4.6	53,355.0	3.7
4.8	54,080.0	3.8
5.0	54,805.0	3.9
5.2	55,545.0	5.3
5.4	56,285.0	7.9
5.6	57,025.0	10.9
5.8	57,765.0	12.0
6.0	58,510.0	13.0

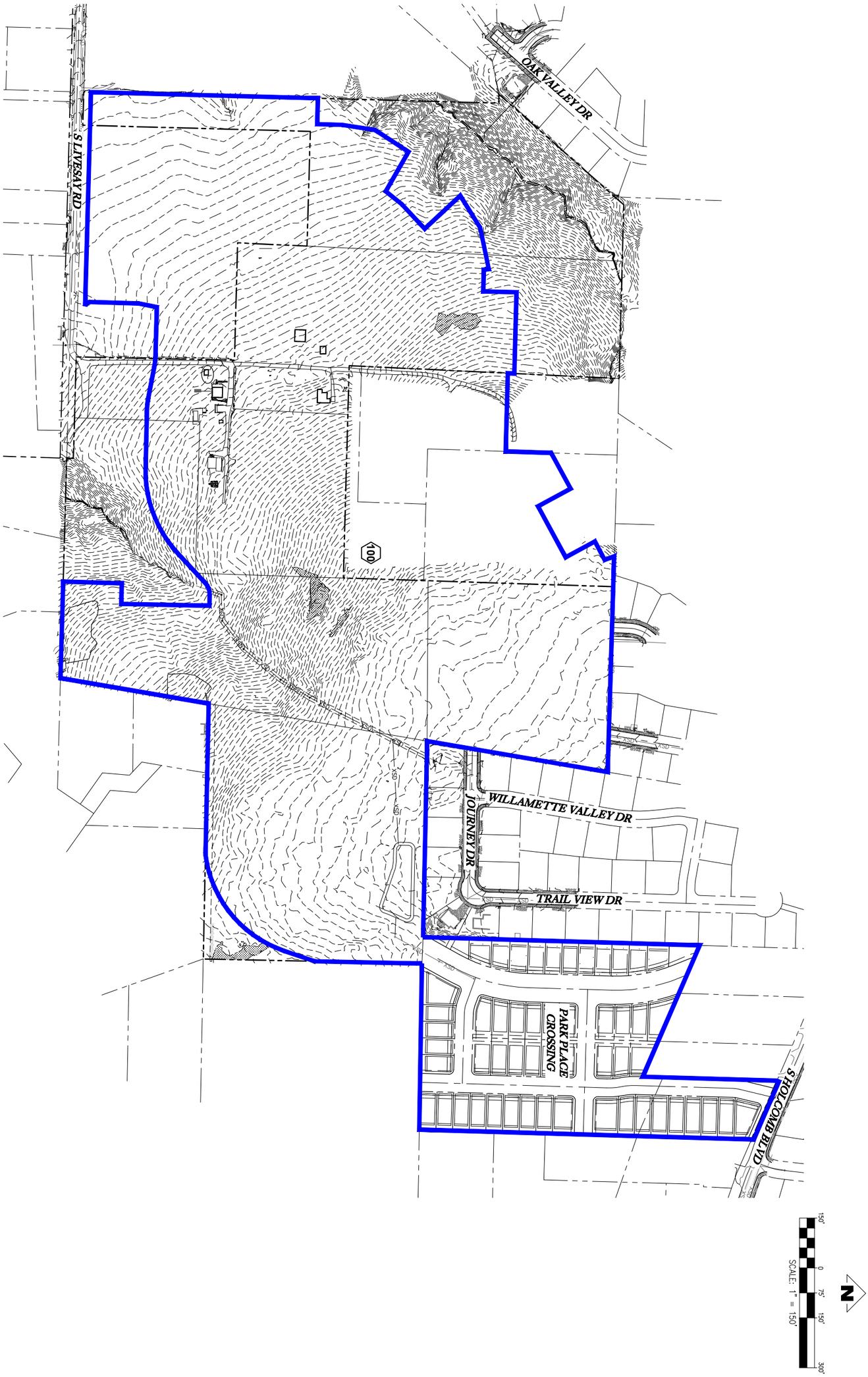
Flow Frequency Chart



Flow Duration Chart

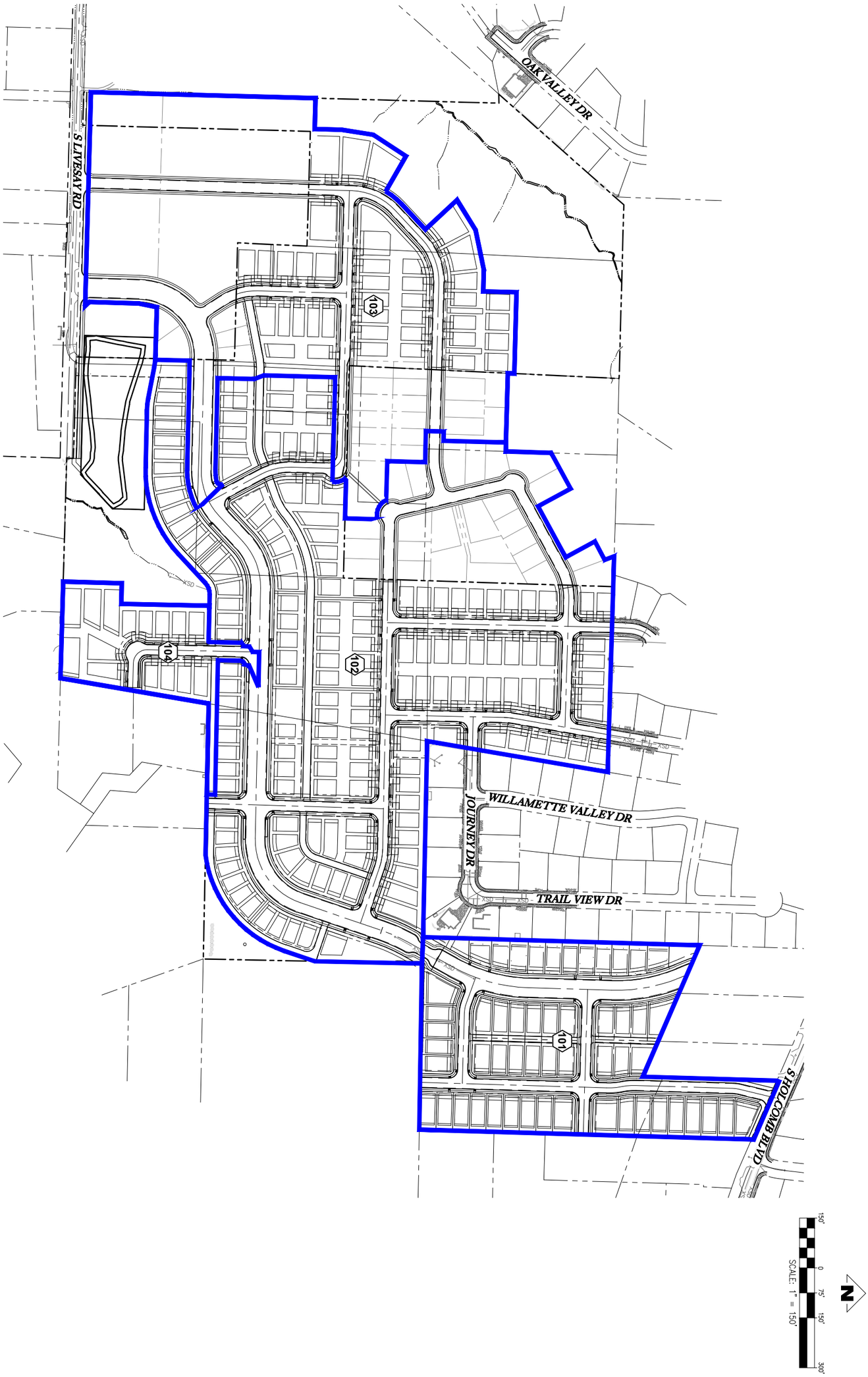


Appendix D:



SHEET 1 OF 3		EMERIO ENGINEERING • SURVEYING • DESIGN 1500 VALLEY RIVER DRIVE, SUITE 100 EUGENE, OREGON 97401 TEL: (503) 746-8812 FAX: (503) 639-9592 www.emeriodesign.com	REVISIONS NO. DATE DESCRIPTION	**PRE-DEVELOPED SITE MAP**	**PARK PLACE II** **A SUBDIVISION OF** **TAX LOT 2 2E 28D 100, 190, 302, 400, 500, 502, 3700** **CITY OF OREGON CITY, OREGON**

FILE:P:\0082-012 Park Place II\docs\civ\Storm\CAD\0082-012 Pre-Dev, Layout: 07 TENTATIVE SITE PLAN, Plot Date: 9/6/2024 9:09 AM, by: Josh Meyer

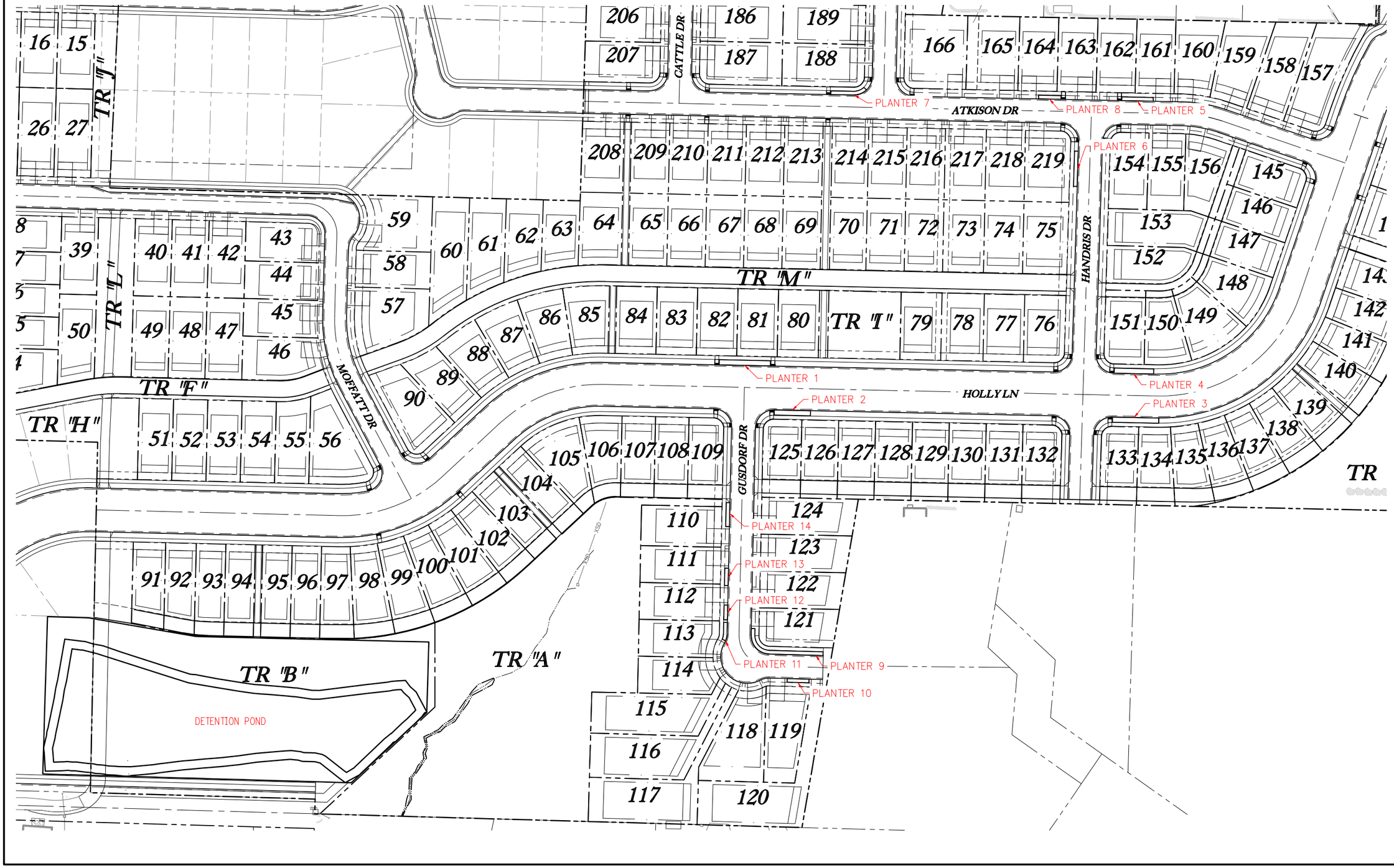


SHEET 2 OF 3		EMERIO ENGINEERING • SURVEYING • DESIGN 1500 VALLEY RIVER DRIVE, SUITE 100 EUGENE, OREGON 97401 TEL: (503) 746-8812 FAX: (503) 639-9592 www.emeriodesign.com	REVISIONS NO. DATE DESCRIPTION	**POST-DEVELOPED BASIN MAP**	**PARK PLACE II A SUBDIVISION OF TAX LOT 2 2E 28D 100, 190, 302, 400, 500, 502, 3700 CITY OF OREGON CITY, OREGON**

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N

SCALE: N.T.S



PARK PLACE II
A SUBDIVISION OF
TAX LOT 2 2E 28D 100, 190, 302, 400, 500, 502, 3700
CITY OF OREGON CITY, OREGON

FACILITY LOCATION MAP

REVISIONS

NO.	DATE	DESCRIPTION

EMERIO
ENGINEERING • SURVEYING • DESIGN
1500 VALLEY RIVER DRIVE, SUITE 100
EUGENE, OREGON 97401
TEL: (503) 946-9460
FAX: (503) 338-9855
www.emeriodesign.com

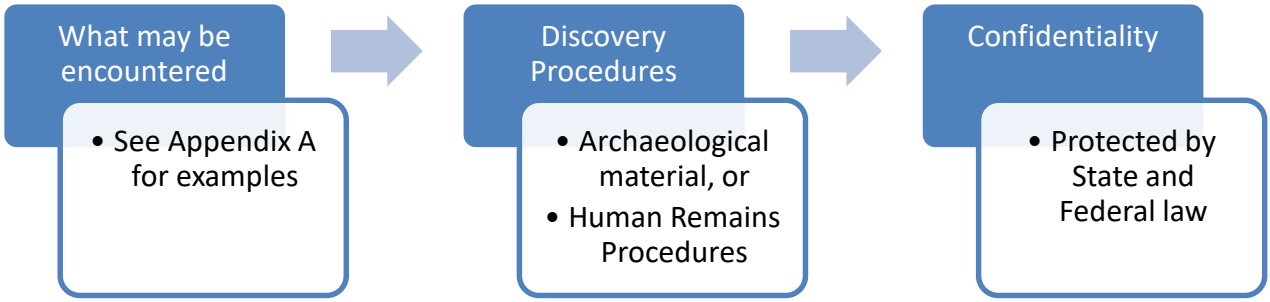
SHEET 3 OF 3

FILE P:\0082-012 Park Place II\Docs\civil\Storm\CAD\0082-009 Facility Layout 07 TENTATIVE SITE PLAN, Plot Date: 9/6/2024 11:39 AM, by: Josh Meyer

ARCHAEOLOGICAL INADVERTENT DISCOVERY PLAN (IDP)
Park Place II Subdivision

Project Manager: Emerio Design
Dan Boultinghouse

HOW TO USE THIS DOCUMENT



Archaeology consists of the physical remains of the activities of people in the past. This IDP should be followed should any archaeological sites, objects, or human remains are found. These are protected under Federal and State laws and their disturbance can result in criminal penalties.

This document pertains to the work of the Contractor, including any and all individuals, organizations, or companies associated with Park Place Subdivision.

WHAT MAY BE ENCOUNTERED

Archaeology can be found during any ground-disturbing activity. If encountered all excavation and work in the area MUST STOP. Archaeological objects vary and can include evidence or remnants of historic-era and precontact activities by humans. Archaeological objects can include but are not limited to:

- **Stone flakes**, **arrowheads**, **stone tools**, **bone or wooden tools**, **baskets**, **beads**.
- Historic building materials such as **nails**, **glass**, **metal** such as cans, barrel rings, farm implements, **ceramics**, **bottles**, **marbles**, **beads**.
- Layers of **discolored earth** resulting from hearth fire
- Structural remains such as **foundations**
- **Shell** Middens
- **Human skeletal remains** and/or **bone fragments** which may be whole or fragmented.

For photographic examples of artifacts, please see Appendix A. (Human remains not included)

If there is an inadvertent discovery of any archaeological objects see procedures below.

If in doubt call it in.

DISCOVERY PROCEDURES: WHAT TO DO IF YOU FIND SOMETHING

1. Stop ALL work in the vicinity of the find

2. Secure and protect area of inadvertent discovery with 30 meter/100 foot buffer—work may continue outside of this buffer
3. Notify Project Manager and Agency Official
4. Project Manager will need to contact a professional archaeologist to assess the find.
5. If archaeologist determines the find is an archaeological site or object, contact SHPO. If it is determined to *not* be archaeological, you may continue work.

HUMAN REMAINS PROCEDURES

1. If it is believed the find may be human remains, stop ALL work.
2. Secure and protect area of inadvertent discovery with 30 meter/100 foot buffer, then work may continue outside of this buffer with caution.
3. Cover remains from view and protect them from damage or exposure, restrict access, and leave in place until directed otherwise. **Do not take photographs. Do not speak to the media**.
4. If the site is determined not to be a crime scene by the Oregon State Police, do not move anything! The remains will continue to be *secured in place* along with any associated funerary objects, and protected from weather, water runoff, and shielded from view.
5. Do not resume any work in the buffered area until a plan is developed and carried out between the State Police, SHPO, LCIS, and appropriate Native American Tribes and you are directed that work may proceed.

CONFIDENTIALITY

All contractors and consultants associated with the Park Place Subdivision project shall make their best efforts, in accordance with federal and state law, to ensure that its personnel and contractors keep the discovery confidential. The media, or any third-party member or members of the public are not to be contacted or have information regarding the discovery, and any public or media inquiry is to be reported to Dan Boultinghouse. Prior to any release, the responsible agencies and Tribes shall concur on the amount of information, if any, to be released to the public.

To protect fragile, vulnerable, or threatened sites, the National Historic Preservation Act, as amended (Section 304 [16 U.S.C. 470s-3]), and Oregon State law (ORS 192.501(11)) establishes that the location of archaeological sites, both on land and underwater, shall be confidential.

APPENDICES AND SUPPLEMENTARY MATERIALS

A. Visual reference and examples of archaeology

APPENDIX A

VISUAL REFERENCE GUIDE TO ENCOUNTERING ARCHAEOLOGY



Figure 1: Stone flakes



Figure 2: Stone tool fragments



Figure 3: Cordage



Figure 4: Shell midden



Figure 5: Historic glass artifacts



Figure 6: Historic metal artifacts



Figure 7: Historic building foundations



Figure 8: 18th Century ship

Schott & Associates
Ecologists & Wetland Specialists
P.O. Box 589 | Aurora, OR 97002 | (503) 678-6007

NATURAL RESOURCE OVERLAY DISTRICT REPORT
For

Park Place II

T2S, R2E, Sec.28D, TL 500, 100, 3700 &
Sec. 28CA, TL 2700
Oregon City, Oregon

Prepared for

Harlan Borow
Icon Construction & Development, LLC
1969 Willamette Falls Drive, Suite 260
West Linn, OR 97068

Prepared by

Juniper Tagliabue
Schott & Associates, Inc.

Date:

December 2025
Revised January 2026

Project #: 3287

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Introduction

This report is based on preliminary site plans and is intended to support feasibility-level evaluation only. When land use approvals and engineering design are finalized or modified, this report may require revision to reflect any associated changes to project design, impact areas, and mitigation requirements.

Schott & Associates (S&A) was contracted to conduct a natural resource assessment to support a Type III NROD Permit for the proposed project including residential development, stormwater infrastructure, and an offsite sewer line connection. Portions of this property contain Natural Resource Overlay District (NROD) subject to Chapter 17.49 of the Oregon City Municipal Code (OCMC). This report is intended to describe existing conditions and impact evaluation within the NROD boundary for residential development and sewer line west of the Park Place II development (West: T2S, R2E, Sec.28D, TL 500; Section 28CA, TL 2700; Figure 2) as well as for the proposed stormwater facility and adjacent development in the eastern portion of the site (East: T2S, R2E, Sec.28D, TL100, 3700; Figure 2). This report provides a preliminary proposal and addresses Section *17.49.100 General Development Standards,* Section *17.49.140 Standards for Utility Lines* (for the West-Sewer Crossing), Section *17.49.155 Standards for Stormwater Facilities* (for the East-Water Quality Facility), Section *17.49.160 Standards for Land Divisions*, and Section *17.49.200, Adjustment from Standards*.

Statement of Qualifications

All S&A staff are comprised of well-qualified and experienced individuals with expertise in ecology, wildlife biology, and soil science as well as wetland delineation and functions assessment, natural resource assessments, and local, state, and federal permitting.

Jodi Forgione: Principal, Project manager and Wetland biologist, completed fieldwork, onsite assessment, reporting, and project management for this project. Jodi holds a Bachelor's degree from Oregon State University in Fisheries and Wildlife and provides experience conducting bird and wildlife surveys for habitat and population data as well as wetland determinations, delineations, natural resource and wildlife habitat assessments, and mitigation monitoring.

Juniper Tagliabue: Project manager and Senior wetland biologist, drafted the report and mitigation plan. Juniper has a Bachelor's degree from Lewis & Clark College in Portland, Oregon and over 20 years of experience with S&A preparing wetland determinations, wetland delineations, joint permit applications, and natural resource assessments. She is a permitting specialist proficient in coordinating all phases of project management.

Site Description

West-Sewer Crossing

The sewer crossing area consists of a temporary utility easement extending from the northwest portion of the Park Place II development project northwest across a forested ravine to connect to an existing manhole at the intersection of Oak Valley Drive and Oak

Valley Terrace (T2S, R2E, Section 28CA, Tax Lot 2700 and T2S R2E Section 28D, Tax Lot 500; Figure 2). Single-family residential development was present at the top of the slope and on the north and west sides of the ravine. The ravine contains a perennial tributary to Tour Creek, which is a tributary to Abernathy Creek. The tributary was delineated by AKS Engineering and Forestry and concurred with by Oregon Department of State Lands (DSL; WD2021-0311). The NROD Map identifies a 200-foot Vegetated Corridor extending outward from the tributary at the bottom of the drainage (Figure 3).

Topography adjacent to the tributary was steep, generally greater than 25% slopes. Vegetation within the proposed impact areas was dominated by a deciduous forest community composed of predominantly bigleaf maple (*Acer macrophyllum*) with a shrub layer of hazelnut (*Corylus cornuta*), Himalayan blackberry (*Rubus armeniacus*), and English holly (*Ilex aquifolium*). On the south side of the ravine, vegetation was similar with the inclusion of sweet cherry (*Prunus avium*) trees.

East-Water Quality Facility (WQF)

The East-WQF is proposed to be located east of the intersection of S Livesay Road and Frank Avenue (T2S, R2E, Section 28D Tax Lot 100, 3700; Figure 2). An intermittent drainage, delineated by AKS, emerged from an outlet in the south-central portion of the site, extending southwest offsite (WD2021-0311). The NROD Map identifies a 200-foot Vegetated Corridor extending outward from the drainage (Figure 3).

This portion of the site was generally forested with a mixed coniferous-deciduous community including Douglas fir (*Pseudotsuga menziesii*), big leaf maple, Oregon ash (*Fraxinus latifolia*), sweet cherry, red alder (*Alnus rubra*), European white birch (*Betula pendula*), and grand fir (*Abies grandis*). The understory at the top of slope was heavily dominated by Himalayan blackberry with English holly and hazelnut on the lower slopes. English ivy (*Hedera helix*) was heavily dominant in the southern portion of the site, covering the ground and extending into the tree canopy. Topography was characterized by a steep slope, becoming more gradual to the west and northwest.

Methods

A combination of onsite and offsite assessment methods was followed. The following existing data and information were reviewed:

- City of Oregon City Natural Resource Overlay District (NROD) Map (Figure 3)
- National Wetland Inventory (NWI)
- Oregon City Local Wetland Inventory (LWI)
- Oregon Department of Forestry (ODF) stream mapping
- U.S. Department of Agriculture (USDA) NRCS gridded Soil Survey Geographic (gSSURGO) database for Clackamas County
- Metro Title 3 lands, stream, and wetland mapping available from the Regional Land Information System (RLIS)
- DEA Memo Park Place II NROD

- Preliminary Plans (Emerio Engineering, Surveying & Design; Appendix A, B and C)
- Mary Giersch Consulting Arborist Reports (Appendix D).

S&A visited the West-Sewer Crossing portion of the project on September 30, 2025 to assess Vegetated Corridor conditions within the NROD. A second site visit was conducted on December 12, 2025 to assess and document Vegetated Corridor conditions within the proposed East-WQF and residential development area.

Drainages were well defined by topography and OHWM was mapped by AKS and concurred with by DSL. Vegetation data was assessed at representative sample plots to document conditions in both areas mapped in the NROD.

Vegetated Corridor widths were determined according to Table 17.49.110, which applies widths based on type of protected water feature and adjacent slope gradient. Slope gradient adjacent to protected water features was determined based on the topographical survey.

Existing trees on the property were surveyed and an arborist report has been prepared documenting species and size of trees within the proposed impact areas.

Only areas of proposed impact/mitigation were physically assessed during this study; areas within 200 feet were assessed remotely via aerial maps, available data, and onsite vantage points.

Results

Two areas were assessed for the proposed project: the West-Sewer Crossing and the East-WQF. These areas are addressed separately (as applicable) in the sections below.

According to the1999 Oregon City LWI, a palustrine emergent, palustrine forested (PEM/PFO) wetland (L15) extends through the northern portion of the project site associated within the West-Sewer Crossing vicinity. The East-WQF is outside of the mapped LWI assessment area. The NWI map identifies a wetland corresponding with the drainage as palustrine forested seasonally flooded (PFO1C) and maps a unknown perennial unconsolidated bottom, permanently flooded riverine (R5UBH) aquatic habitat in the areas of the southern drainage. ODF mapped a small size stream, and the National Hydrography Dataset (NHD) mapped a perennial waterway in both locations. According to Metro mapping sources, Riparian Habitat Class I is mapped in the project area. According to NRCS soil survey mapping, the slopes are mapped as Xerochrepts and Haploxerolls, very steep. Helvetia silt loam at slopes of 8-15% and Woodburn silt loam at slopes of 8-15% are mapped at the break in slope.

Protected Water Features

Drainage 1: Located in the West-Sewer Crossing site. It is a perennial tributary to Tour Creek which occurred at the bottom of a steep ravine, flowing southwest across the study

site. It was delineated by AKS and concurred with by DSL. Due to steep slopes, physical access to this feature was not possible or safe and S&A did not document the drainage. It is assumed to have a seasonal flow regime and may have seasonal fish presence (assumed based on ODF mapping).

Drainage 2: Located in the East-WQF site this feature was determined to be an ephemeral to intermittent tributary to Abernathy Creek. The drainage outlets from a pipe discharging stormwater from offsite development to the north (Trailview, etc.) and was delineated by AKS and concurred with DSL. Due to steep slopes, physical access to the bottom of the ravine (drainage) was not possible or safe and S&A did not document the drainage. Based on available information, the drainage is assumed to have a seasonal flow regime in its lower section and may have seasonal fish presence (based on ODF mapping).

Vegetated Corridor: West-Sewer Crossing

Two areas were assessed for the West-Sewer Crossing project area: an area north of the ravine and an area south of the ravine, for the respective proposed landing pads. Ravine slopes adjacent to the stream were 40% or greater (Appendix B). As per 17.49.110 and Table 17.49.110, streams with adjacent slopes ≥25% for 150 feet or more are accorded Vegetated Corridor widths of 200 feet. NROD verification for these areas is not requested as part of this application.

North of the Ravine:
The area north of the ravine is adjacent to the existing residential subdivision located off Oak Valley Drive. The proposed impact area consisted of a maintained residential yard characterized by mown turfgrasses and a laurel hedge. South of the maintained yard, vegetation transitions to a dense canopy dominated by big leaf maple, with an understory and groundcover primarily composed of blackberry and English ivy. Due to the predominance of non-native species and the manicured nature of the landscaping, this portion of the NROD featured is considered ‘degraded’ in condition according to 17.49.190(A).

South of the Ravine:
South of the ravine, the proposed impact area consisted of a sloped ravine with high overall vegetative cover, including trees, shrubs, and groundcover and a dense canopy dominated by bigleaf maple. The understory and groundcover layers were largely composed of invasive Himalayan blackberry and English holly, which together comprised approximately 20-50% of the overall vegetative cover. Based on these conditions, the onsite NROD within this area is considered ‘degraded’ in condition according to 17.49.190(A).

Vegetated Corridor: East-WQF

The NROD boundary in this area is proposed to be reduced based on observed site conditions, which verify that the City mapped NROD does not accurately reflect the true location of the resource and associated buffer.

Surveys confirmed the slopes adjacent to the tributary exceeded 25% for less than 150 feet (Appendix C). As per 17.49.110 and Table 17.49.110, streams with adjacent slopes ≥25% for less than 150 feet are measured from the top of ravine (break in ≥25 % slope) plus 50 feet. This adjusted corridor was verified in the field based on observed topography, vegetation patterns and existing conditions.

As assessed onsite, the corridor consists of a sloped ravine containing high cover of combined trees, shrubs, and groundcover. Tree cover was predominantly a mix of Douglas fir, grand fir, sweet cherry, European white birch, and big maple leaf. The shrub layer included vine maple, hazelnut and a few snowberry (*Symphoricarpos albus*). Invasive cover included cherry, a high percentage of English holly and Himalayan blackberry and a few Scotch broom. The onsite NROD is considered 'degraded' in condition according to 17.49.190(A).

Proposed Project

This application is provided to show proposed impacts within the NROD and associated mitigation areas (Appendix A-C) for a sewer line crossing in the west portion of the project site and a water quality facility (WQF) and residential lots in the both portions of the project site.

- The general development standards as defined by *17.49.100* apply to the proposed East-WQF facility.
- The West-Sewer Crossing is subject to *OCMC 17.49.140* and the land division is subject to *OCMC 17.49.160.*

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):

Response: The general development standards apply only to the proposed East-WQF. The West-Sewer Crossing is subject to OCMC 17.49.140 and the land division is subject to OCMC 17.49.160.

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;

Response: A tree survey was completed by Mary Gierch Consulting Arborist on January 8th, 2026. All areas within the proposed impact area for the WQF were assessed. There were forty-three (43) trees identified. Nine (9) of the trees had fallen or were dead,

seventeen (17) of the trees were in poor condition and the remaining seventeen (17) trees were in fair condition.

Of the poor and fair conditions trees, eighteen (18) were native and sixteen (16) were Oregon nuisance species

Trees listed to be removed are outlined in the arborist report (Appendix D).

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;

Response: The majority of the subject property is zoned R-5, but a portion of the northwest quadrant is governed by the R-10 zoning district. These zoning districts do not contain specific landscaping standards; rather other municipal code chapters enforce landscaping standards for residential development. Currently being reviewed during this tentative subdivision application is Chapter 17.41 – Tree Protection, Preservation, Removal and Replanting Standards.

Throughout the application process, the narrative has stated that compliance with 17.41 will be met via the Cash-in-Lieu of Planting option instead of Removal & Replanting, Preservation Tracts, or Protection. Unless the situation has changed, the application did not propose to meet the landscaping standards via preserving, restoring and permanently protecting habitat on development sites in the natural resource overlay district. If this is now a desirable option, please let us know and we will work with the city and environmental consultant to determine the level of effort required to accomplish this goal.

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);

Response: All vegetation planted within the NROD shall be native and listed on an applicable native plant list. See mitigation plan and Table below.

D. Grading is subject to installation of erosion control measures required by the city;

Response: A grading and erosion control plan was submitted and it is assumed that the City will review the erosion control plan for consistency with standards.

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;

Response: Response combined with F. below.

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;

Response: There is no benefit to deviating from the setbacks for Lots 96 through 104. These lots have frontage on Holly Lane, a collector street. Due to the classification of this street, vehicle access for these lots is limited and a rear alley is required to provide access. This alley accounts for the majority of NROD impact on these lots. Regardless of the exact placement of the future structures on these lots, the impacts will remain relatively the same because all lots must be rear loaded.

G. Fences in compliance with OCMC 17.49.080.N;

Response: No fencing is shown on the shown on the tentative plan set, other than construction fencing which is only temporary. However, if new permanent fencing is proposed it would need to comply with the following standards:

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.

H. Exterior lighting shall be placed or shielded so that they do not shine directly into resource areas;

Response: Once land use approval and engineering are approved, requirements will be followed for street lighting and home construction.

I. If development will occur within the one hundred-year floodplain, the standards of OCMC 17.42 shall be met; and

Response: Not applicable. The development is not within the one-hundred year floodplain.

J. Mitigation of impacts to the regulated buffer is required, subject to OCMC 17.49.180 or 17.49.190.

Response: Mitigation is proposed as shown below.

17.49.140 Standards for Utility Lines

The below will address the West (Sewer Crossing) area:

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;

Response: This standard is not applicable, as the proposal does not include private connections to utility lines.

B. The disturbance area for the upgrade of existing utility lines shall be no greater than fifteen feet wide;

Response: This standard is not applicable; no utility lines are proposed for upgrade.

C. New utility lines shall be within the right-of-way, unless reviewed under subsection D.

Response: The proposed new utility lines are not within the right-of-way, and therefore must be 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.

Response: The proposed sanitary sewer line would cross a ravine outside of a right-of-way. Therefore, the application must be processed as a Type III.

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;

Response: No impacts are proposed within OHWM. No state or federal permits are required. This standard is met.

F. The Division of State Lands must approve any work that requires excavation or fill in a wetland;

Response: No impacts are proposed within wetlands. No permits shall be required from DSL.

G. Native trees more than ten inches in diameter shall not be removed unless it is shown that there are no feasible alternatives; and

Response: Both the west and east abutments for the proposed sewer crossing were assessed by Mary Giersch, the consulting arborist (attached report, Appendix D). Findings are summarized below:

- West Abutment: Twenty (20) observed trees
    - Nineteen (19) Big Leaf Maple

        - Seventeen (17) -10 inch or larger DBH
    - One (1) Cherry Plum
        - Not on Oregon City Nuisance list, assumed invasive
- East Abutment: Nine (9) observed trees
    - Six (6) Big Leaf Maple-10 inch or larger DBH
    - Three (3) Sweet Cherry
        - On the Oregon City Nuisance list
        -

Maximum number of native trees greater than 10" to be removed is 23 (17 to the west and six to the east).

As described below, the only alternative route to avoid the trees and the NROD would require one mile of new sewer line to be built.

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.

Response: Plans are preliminary and precise tree removal is subject to change. Each 6-10" DBH native tree removed shall be replaced at a ratio of 3:1. Each 11" or greater DBH native tree shall be replaced at a ratio of 5:1. Replacement trees shall be minimum of ½ inch diameter and selected from the Oregon City Native Plant List. All trees shall be planted within the NROD on the subject property.

Table 1.Tree Replacement Summary

DBH Range (inches)	Max # Removed	Max # Planted
6-10	2	6
≥ 11	24	120

I. Mitigation is required, subject to OCMC 17.49.180 or 17.49.190.

Response: Mitigation is proposed as shown in described in the Mitigation Plan and shown in Appendices A and C. Alternative mitigation standards are being used and are outlined below.

17.49.155 Standards for Stormwater Facilities

The below will address the East-WQF:
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.

Response: The trees within the WQF disturbance area were assessed by Mary Giersch Consulting Arborist (see attached report, Appendix D). Key findings are summarized below:

- Forty-three (43) trees were identified
    - Seventeen (17) trees were in poor condition
    - Seventeen (17) trees were in fair condition
    - Nine (9) of the trees had fallen or were dead/dying
    - Eighteen (18) of the poor and fair condition trees are Oregon native species
    - Sixteen (16) of the poor or fair condition trees are Oregon nuisance species

Disturbance within the existing canopy is unavoidable. Trees will be mitigated as described in the Mitigation Plan.

B. Only vegetation from the Oregon City Native Plant List shall be planted within these facilities.

Response: All planted species shall be listed on the Oregon City Native Plant List.

C. Mitigation is required, subject to OCMC 17.49.180 or 17.49.190.

Response: Mitigation is detailed in the Plan below and in Appendix A and C In accordance with 17.49.180 (E), total disturbance within the West-Sewer Crossing and East-WQF NROD is greater than one acre, triggering the application of Mitigation Option 2.

D. The stormwater facility may encroach up to one-half the distance of the NROD corridor.

Response: The WQF will encroach more than ½ of the NROD corridor (see Appendix C). Impacts will be addressed.

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.

Response: The impacts will be greater than one thousand square feet so the proposed development will 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.

Response: The majority of the subject property is zoned R-5, but a portion of the northwest quadrant is governed by the R-10 zoning district. These zoning districts do not contain specific landscaping standards; rather other municipal code chapters enforce landscaping standards for residential development. Unless the situation has changed, the application did not propose to meet the landscaping standards via preserving, restoring and permanently protecting habitat on development sites in the natural resource overlay district. If this is now a desirable option, please let us know and we will work with the city and environmental consultant to determine the level of effort required to accomplish this goal.

G. The design of the stormwater facility shall be subject to OCMC 13.12.

Response: Stormwater facility design meets OCMC 13.12.

17.49.160 Standards for Land Divisions

The below will address both the West-Sewer Crossing and the East-WQF, as applicable.
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:

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.

Response: The following impacts will occur within the NROD.

- West-Sewer Connection will have impacts for development of lots 3 and 4
- East-WQF will have impacts for lots 98-104

Mitigation provided will be placed in a separate tract.

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.

Response: As indicated by DEA, this will be addressed at the time of the final plat review.

17.49.180 Mitigation Standards

The following standards (or the alternative standards of OCMC 17.49.190) apply to required mitigation:

Response: For the West-Sewer crossing and the East-WQF, the applicant elected to follow the alternative mitigation standards of 17.49.190, which will be addressed below.

17.49.200 Adjustment from Standards

These standards apply to the proposed West-Sewer Crossing and not the WQF. Pursuant to OCMC 17.49.140 (D), the sanitary sewer line would cross a ravine outside of the public right-of-way and therefore requires approval through a Type III permit process. As a result, the project must comply with the approval criteria outlined in OCMC 17.49.200.

For the purposes of the project and this report, all proposed impacts associated with both the West-Sewer Connection and the East-WQF will be addressed in accordance with OCMC 17.49.200, all applicable approval criteria (A-F) must be met.

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;

Response:

West-Sewer Crossing: This utility connection has been designed to provide the most direct connection to an existing manhole, located on the opposite side of the ravine. It consists of approximately 500 feet of bridge and pipe through property owned by the applicant with less than 300 linear feet of impact offsite through easements. Despite engineering challenges to construct the bridge across the ravine, the project is designed to minimize impacts and proposed impacts within the NROD are 10,206 sf, to be modified based on final design.

An alternative layout, extending south from the Park Place II development, was explored to reduce impacts to the NROD. This connection extended west and south along S Livesay Road to Redland Road, and then west along S Redland Road to connect at S Anchor Way. This alternative requires construction of over a mile of new sewer line and the proposed option is preferred.

East-WQF

The stormwater management system for the Park Place II subdivision was designed per the standards of Oregon City, as described in the "Stormwater and Grading Design Standards". Testing by GeoPacific Engineering found that due to the existing soils onsite, infiltration of stormwater was extremely low, eliminating that as an option for stormwater management. Per the Standards, if infiltration is not an option, then detention is required to manage stormwater. Detention is the process of holding back runoff and releasing it slowly to match pre-developed runoff conditions. A stormwater pond was chosen as the best method to detain the stormwater. Additionally, the pond can perform water quality treatment, which is also required by the Standards.

In order to maximize the area of stormwater runoff that can be treated and detained, the pond needs to be located "downstream" from as much of the site as possible. Additionally, drainage and overflow from the pond need to have an outlet to an existing water way.

The site topography dictated the current pond location, at a low point on the site where a maximum amount of water could be collected, and in proximity to a waterway to release treated and detained water. It is more effective and efficient to treat and detain stormwater in one structure, but to minimize the size of the pond, additional stormwater treatment planters were added to the site. Additionally, during the construction of the pond, invasive species will be removed from the area and native species will be planted.

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;

Response: Proposed impacts are minimal. Mitigation will consist of replacement of invasive species with a more diverse assemblage of native trees, shrubs and groundcover, improving wildlife value.

C. The proposed use or activity proposes the minimum intrusion into the NROD area that is necessary to meet development objectives;

Response:

West-Sewer Connection: The sewer line connection has been designed to minimize intrusion into the NROD to the greatest extent possible while still meeting project objectives. The line will be laid out along a bridge, crossing over the ravine and avoiding impacts to the water resource as well as the majority of the NROD. Due to the steep slopes, grading requirements for placement of the bridge footings will be greater than the area of the footings, but permanent impact areas will be located in flatter areas as close to the top of the slope as feasible and grading will be minimized as much as possible. The proposed layout as shown in this report is subject to change based on City input as well as engineering and other technical requirements.

East-WQF: As outlined above, the site topography dictated the pond location. The pond will be used to both treat and detain stormwater in one structure. Additional stormwater treatment planters were added to the site to minimize the size of the pond and reduce impacts to the NROD.

D. Fish and wildlife passage will not be impeded;

Response: No impacts to the water resources will occur and impacts within the NROD will not impede wildlife passage.

E. With the exception of the standard(s) subject to the adjustment request, all other applicable NROD standards can be met; and

Response:

West-Sewer Crossing: Applicable standards pursuant to 17.49.140 (A-I) are described above in report.

East-WQF: Applicable standards pursuant to17.49.155 are described above in report.

F. The applicant has proposed adequate mitigation to offset the impact of the adjustment.

Response: See Mitigation Plan.

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.

Response: As assessed onsite, the entire NROD was in ‘degraded’ condition and mitigation shall consist of actions to improve the designated area to ‘good’ condition according to Alternative Mitigation Standards of 17.49.190.

B. The proposed mitigation shall occur at a minimum two-to-one ratio of mitigation area to proposed disturbance area;

Response: Based on preliminary layout and impact areas, the following mitigation measures are proposed. Tables 2 and 3 below summarize the proposed impact and

mitigation areas. Mitigation will be located within the existing NROD above the 25% break in slope and adjacent to the existing NROD. The steep slopes are generally in good condition and mitigation on the steep slopes within the NROD is not proposed.

Table 2. NROD Impact Area

NROD IMPACT AREA					
Area	**Facility Impact (SF)**	**Lot Impact (SF)**	**Total Impact (SF)**	**Mitigation Factor**	**Total Mitigation (SF)**
West-Sewer Crossing	5,460	4,746	10,206	2	20,412
East-WQF	26,624	13,302	39,926	2	79,852
Total	**32,084**	**18,048**	**50,132**	**2**	**100,264**

Table 3. NROD Mitigation Area

NROD MITIGATION PLAN AREA			
Area	**Within NROD Above 25% Grade Break (SF)**	**Adjoining NROD ((SF)**	**Total Mitigation (SF)**
West-Sewer Crossing	31,071	18,734	49,805
East-WQF	27,862	22,635	50,497
	58,933	**41,369**	**100,302**

C. The proposed mitigation shall result in a significant improvement to good existing condition as determined by a qualified environmental professional;

Response: Mitigation will be based on alternative mitigation standards, improving the 'degraded' corridor, as described above, to 'good' condition by removing invasive Himalayan blackberry and other non-native species and replacing with native trees, shrubs and groundcover species. Native species will be retained as much as possible. Thie proposed plantings will also satisfy the requirements for 17.49.140 (H).

D. There shall be no detrimental impact on resources and functional values in the area designated to be left undisturbed;

Response: No detrimental impact on resources and functional values in undisturbed areas will occur.

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;

Response: No development is proposed within the stream channel and no detrimental impact will occur.

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.

Response: Mitigation shall take place onsite adjacent to proposed impacts. Proposed mitigation areas are shown in Appendices A and C.

Due to high existing canopy cover on the site A total of 150 trees and 1,000 shrubs/groundcover are proposed to mitigate for permanent disturbance impacts. Mitigation will focus on the top of slope, where habitat was largely dominated by invasive blackberry. The proposed tree plantings are inclusive of the required plantings for 17.49.140 (H).

Bare ground shall be planted or seeded with native grasses or herbs. Non-native sterilewheat grass may also be planted or seeded, in equal or lesser proportion to the native grasses or herbs.

Table 4. Mitigation Planting

Species	**Category**	**Minimum Size**	**Spacing**	**Quantity**
Permanent Impact Mitigation (50,132 ft²)				
Red alder *Alnus rubra*	Tree	2 gal. or bare root	15’ OC	30
Western Red Cedar *Thuja plicata*	Tree	2 gal. or bare root	15’ OC	30
Grand fir *Abies grandis*	Tree	2 gal or bare root	15’ OC	30
Douglas-fir *Pseudotsuga menziesii*	Tree	2 gal. or bare root	15’ OC	30
Flowering dogwood *Cornus nuttalli*	Tree	1 gal. or bare root	15’ OC	30
Tree Total				**150**
Hazelnut *Corylus cornuta*	Shrub	1 gal. or bare root	10’OC	170
Vine maple *Acer circinatum*	Shrub	2 gal.	10’OC	170
Tall Oregon grape *Mahonia aquifolium*	Shrub	1 gal.	10’OC clusters	170
Nootka rose *Rosa nutkana*	Shrub	1 gal.	10’OC clusters	170
Snowberry *Symphoricarpos albus*	Shrub	1 gal.	5’OC clusters	160
Salal Gaultheria shallon	Shrub	1 gal.	5’ OC clusters	160
Total Shrub				**1,000**

Western swordfern *Polystichum munitum*	Groundcover	2 gal.	5'OC clusters	80
*Sunmark Upland Mix or equivalent	Herb	seed	1 lb/1,000ft^2	4.2 lbs

Plantings may vary in size dependent on whether they are live cuttings, bare root stock or container however, no initial plantings may be shorter than twelve inches in height.

Trees and shrubs will be planted with reference to existing vegetation as directed by a project biologist at the time of planting.

All proposed species are included on the Oregon City Native Plant List. Planting will occur in fall when the rainy season commences (late September-late October). The applicants will provide the following maintenance to ensure tree survival as required by the OCMC for mitigation plantings (Section 17.49.180):

- Manual or mechanical weed control and mulching of new plantings a minimum of three inches in depth and eighteen inches in diameter.
- Irrigation of one inch per week from June 30th to September 15th, as needed, for three years following planting.

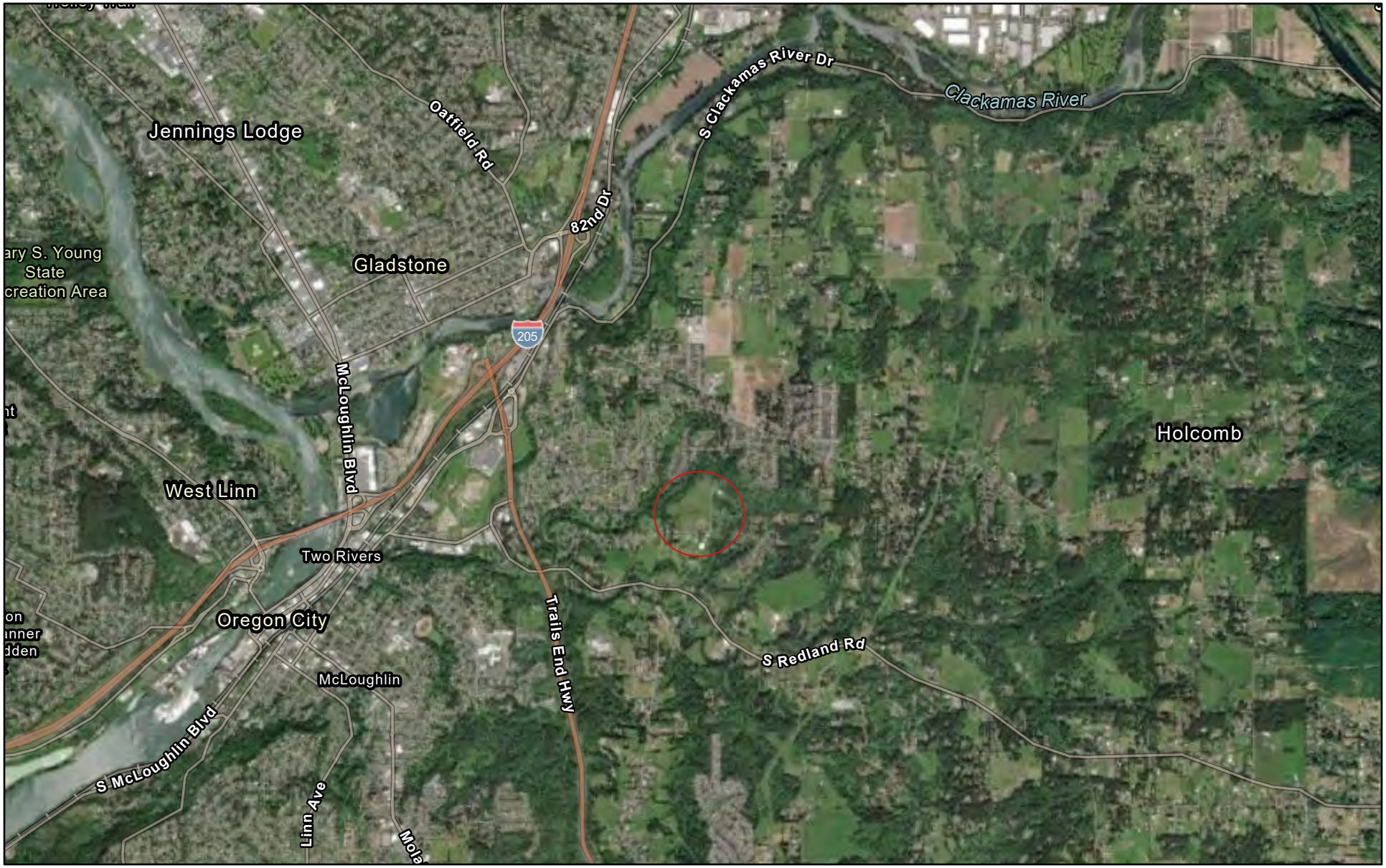
Summary and Conclusions

This proposal of impacts and mitigation for work within the NROD is provided to determine feasibility of the project proposal. The proposed activity is an allowed use to be processed as a Type III Permit.

Impacts and mitigation areas discussed in this report are preliminary and subject to change, consistent with Oregon City code, based on engineering or other requirements.

FIGURE 1: PROJECT VICINITY MAP

Figure 1. Project Vicinity



1/16/2026

World Imagery

Low Resolution 15m Imagery

High Resolution 60cm Imagery

High Resolution 30cm Imagery

Citations

1:58,975

0 0.35 0.7 1.4 mi

0 0.5 1 2 km

Earthstar Geographics, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community

Schott & Associates, Inc.

FIGURE 2: PRELIMINARY COMPOSITE PLAT

West: Sewer Crossing Project Area

East: Water Quality Facility Project Area

NW SEE SHEET 5.4

NE SEE SHEET 5.3

SW SEE SHEET 5.1

SE SEE SHEET 5.2

"HOLCOMB RIDGE"
OAK VALLEY DR
"WITTKE ESTATES"
WETLAND MITIGATION AREA
"HOLCOMB HILL NO 2"
"TRACEY HEIGHTS"
"WASKO ACRES"
CATTLE DR
SHARTNER DR
WILLAMETTE VALLEY DR
"TRAIL VIEW"
TRAIL VIEW DR
"PARK PLACE CROSSING"
AINSWORTH LN
WAGON DR
SHADOW PLAT OF FUTURE PHASE
JOURNEY DR
PIONEER DR
TR "G"
TR "J"
TR "L"
TR "F"
PRVT RD
TR "H"
MORROW LN
MOFFATT DR
TR "M"
TR "I"
TR "K"
TR "R"
TR "N"
HOLLY LN
HANDRIS DR
TR "D"
TR "P"
TR "O"
ATKINSON DR
TR "E"
GUSDORF DR
TR "A"
TR "B"
WATER QUALITY FACILITY
S LIVESAY RD

PRELIMINARY COMPOSITE PLAT

SCALE: 1" = 100'

TENATATIVE PLAT NOTES:

1. PLAT SHALL BE PROCESSED UNDER A DIFFERENT PERMIT

PARK PLACE II
A SUBDIVISION OF
TAX LOT 2 2E 28D 100, 190, 302, 400, 500, 502, 3700
CITY OF OREGON CITY, OREGON

PRELIMINARY COMPOSITE PLAT

REVISIONS

NO.	DATE	DESCRIPTION

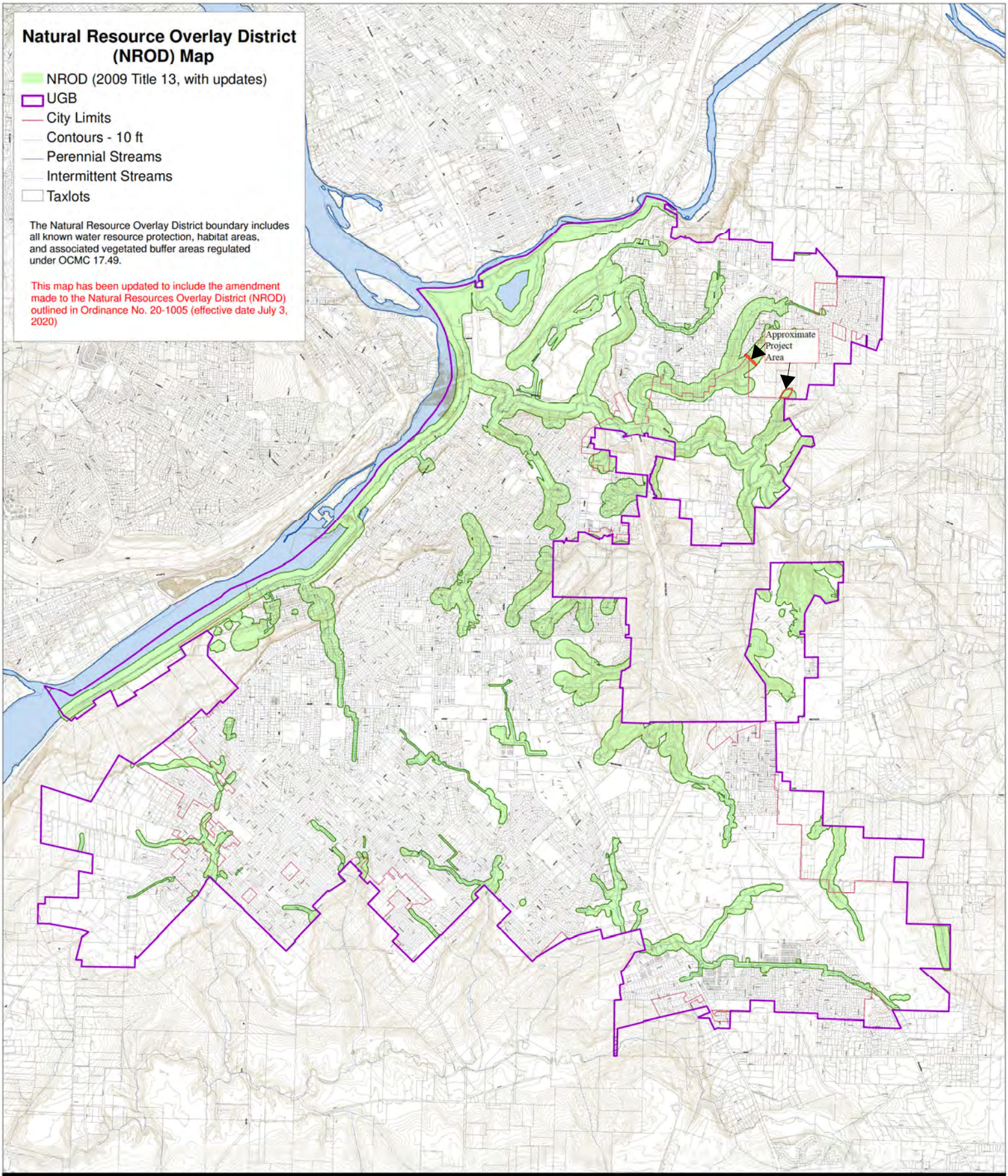
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REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 27, 2007
DAVID L. BURNETT
RENEWAL: 12/31/2025
PRELIMINARY NOT FOR CONSTRUCTION

EXPIRES: 12/31/2025

SHEET 5.0 OF 39

FIGURE 3: OREGON CITY NROD MAP



Natural Resource Overlay District

City of Oregon City
Geographic Information Systems
PO Box 3040
625 Center St
Oregon City, Oregon 97045
www.orcity.org | maps.orcity.org

The information in this map is detailed in Chapter 17.49 -- Municipal Code of the City of Oregon City

N
W E
S

APPENDIX A: WEST-SEWER CROSSING PRELIMINARY PLAT WITH MITIGATION

NROD HATCH LEGEND

- MITIGATION AREA WITHIN NROD = 31,071 SF
- MITIGATION AREA ADJOINING NROD = 18,734 SF
- NROD IMPACT SANITARY = 5,460 SF
- NROD IMPACT LOT DEVELOPMENT = 4,746 SF

"HOLCOMB RIDGE"
OAK VALLEY DR
T/L 800 2 2E 28AC
T/L 900 2 2E 28AC
T/L 1000 2 2E 28AC
T/L 1100 2 2E 28AC
T/L 1200 2 2E 28AC
T/L 2700 2 2E 28CA
T/L 3000 2 2E 28CA
T/L 6300 2 2E 28AC
WETLAND MITIGATION AREA
"WITTKE ESTATES"
"HOLCOMB HILL NO 2"
T/L 1709 2 2E 28A
T/L 7300 2 2E 2AD
SITE BOUNDARY
5.0' PGE ESMT
TAX LOT 303
TAX LOT 200
TAX LOT 300
TAX LOT 301
SHADOW PLAT OF FUTURE PHASE
150 FEET FROM EX INTERMITTENT STREAM
200 FEET FROM EX INTERMITTENT STREAM
MITIGATION LIMITS
NATURAL RESOURCE OVERLAY DISTRICT (O.C. GIS)
GRADING LIMITS
50.0' SAMITARY EASEMENT
EG 25% GRADE BREAK.
50.0' BUFFER
50.0' SANITARY EASEMENT
TR "C" 394630 SF
TR "F" 6390 SF
TR "G" 11390 SF
TR "L" 10765 SF
1 14513 SF
2 12554 SF
3 12166 SF
4 11011 SF
5 11146 SF
6 6189 SF
7 5350 SF
8 7070 SF (WITH FLAGPOLE) 6000 SF (NO FLAGPOLE)
9 7070 SF (WITH FLAGPOLE) 6000 SF (NO FLAGPOLE)
10 5350 SF
11 5350 SF
12 7070 SF (WITH FLAGPOLE) 6000 SF (NO FLAGPOLE)
13 7390 SF (WITH FLAGPOLE) 6319 SF (NO FLAGPOLE)
14 5465 SF
15 5120 SF
16 5120 SF
17 5120 SF
18 5120 SF
19 5110 SF
20 5076 SF
21 10154 SF
22 6000 SF
23 6000 SF
24 6000 SF
25 6000 SF
26 6000 SF
27 6000 SF
28 13738 SF
29 7959 SF
38 6056 SF
39 5243 SF
40 5224 SF
41 5214 SF
42 5205 SF
43 5258 SF
59 6974 SF
60 7798 SF
61 6250 SF
62 5202 SF
WAGON DR
PIONEER DR
R=185.0' L=143.7'
R=185.0' L=146.4'
R=410.0' L=84.4'
S88° 25' 37.73"E
N47° 03' 45.48"E
N01° 43' 08.46"E
260.4'
308.7'
485.5'
10.0' PUE (TYP.)
43.0' PGE ESMT
20.1' ACCESS ESMT
54.0' ROW
40.8' ROW
27.0' 1/2 ROW
13.8'
54.0' ROW

NROD MITIGATION WEST

SCALE: 1" = 60'

N

60' 0 30' 60' 120'

SCALE: 1" = 60'

PARK PLACE II
A SUBDIVISION OF
TAX LOT 2 2E 28D 100, 190, 302, 400, 500, 502, 3700
CITY OF OREGON CITY, OREGON

NROD MITIGATION WEST

REVISIONS

NO.	DATE	DESCRIPTION

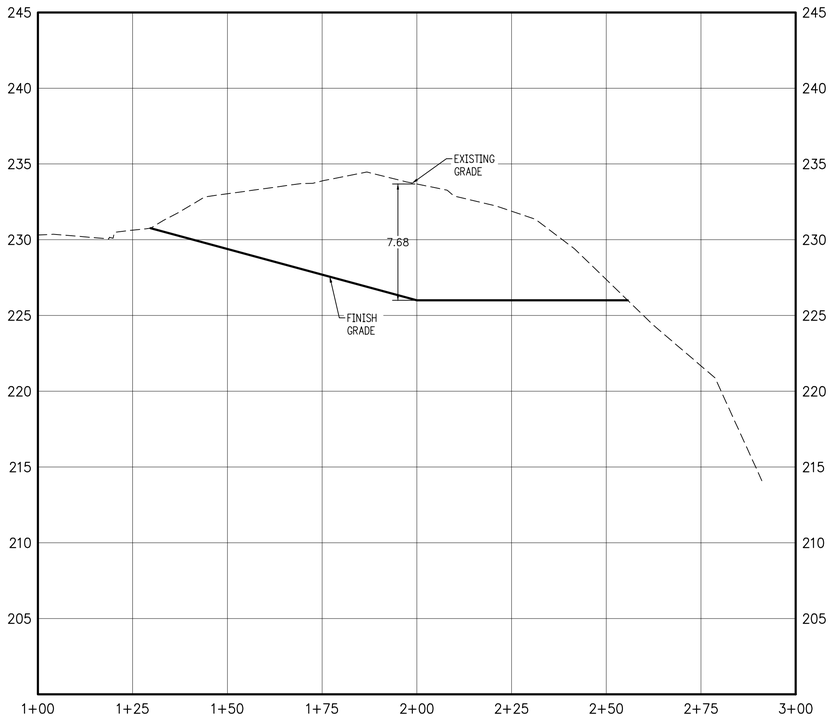
EMERIO
ENGINEERING • SURVEYING • DESIGN
6445 SW FALLBROOK PLACE, SUITE 100
BEAVERTON, OREGON 97008
TEL: (503) 746-8812
FAX: (503) 639-9592
www.emeriodesign.com

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 13, 2007
DAVID L. BURNETT
PRELIMINARY NOT FOR CONSTRUCTION
EXPIRES: 12/31/2025

SHEET
OF

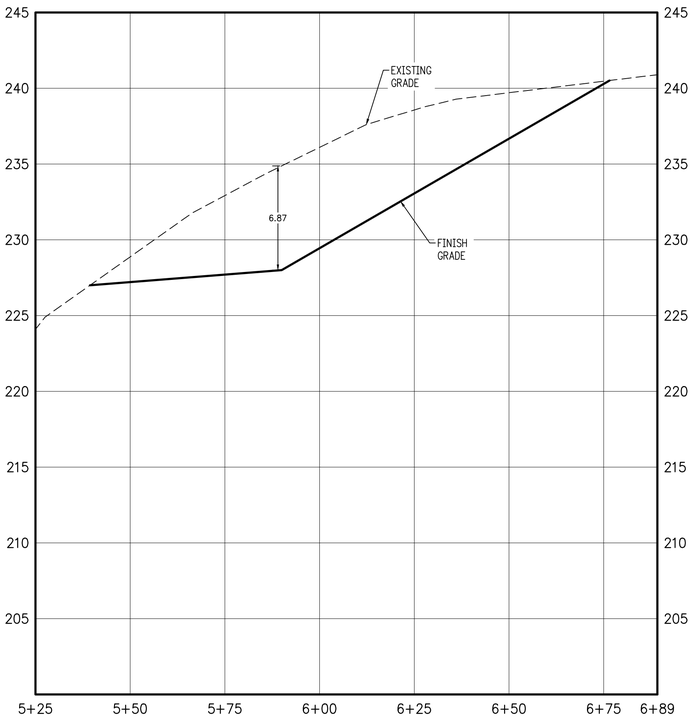
FILE P: \0082-012 Park Place II\Engineering\0082_012_05.4plot rnw; Layout: NROD MITIGATION WEST; Plot Date: 1/15/2026 3:08 PM; by: David Burnett

APPENDIX B: WEST-PRELIMINARY UTILITY PLAN CROSS-SECTION



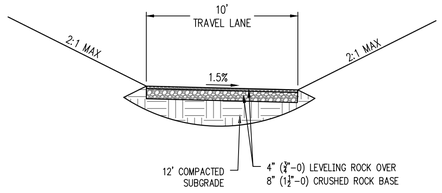
SS-A PRELIMINARY PROFILE

SCALE: H: 1" = 20', V 1" = 5'



SS-A PRELIMINARY PROFILE

SCALE: H: 1" = 20', V 1" = 5'



SS BRIDGE PATH - TYPICAL SECTION

SCALE: 1"=5'

PARK PLACE II
A SUBDIVISION OF
TAX LOT 2 2E 28D 100, 190, 302, 400, 500, 502, 3700
CITY OF OREGON CITY, OREGON

PRELIMINARY UTILITY PLAN NW

REVISIONS

NO.	DATE	DESCRIPTION

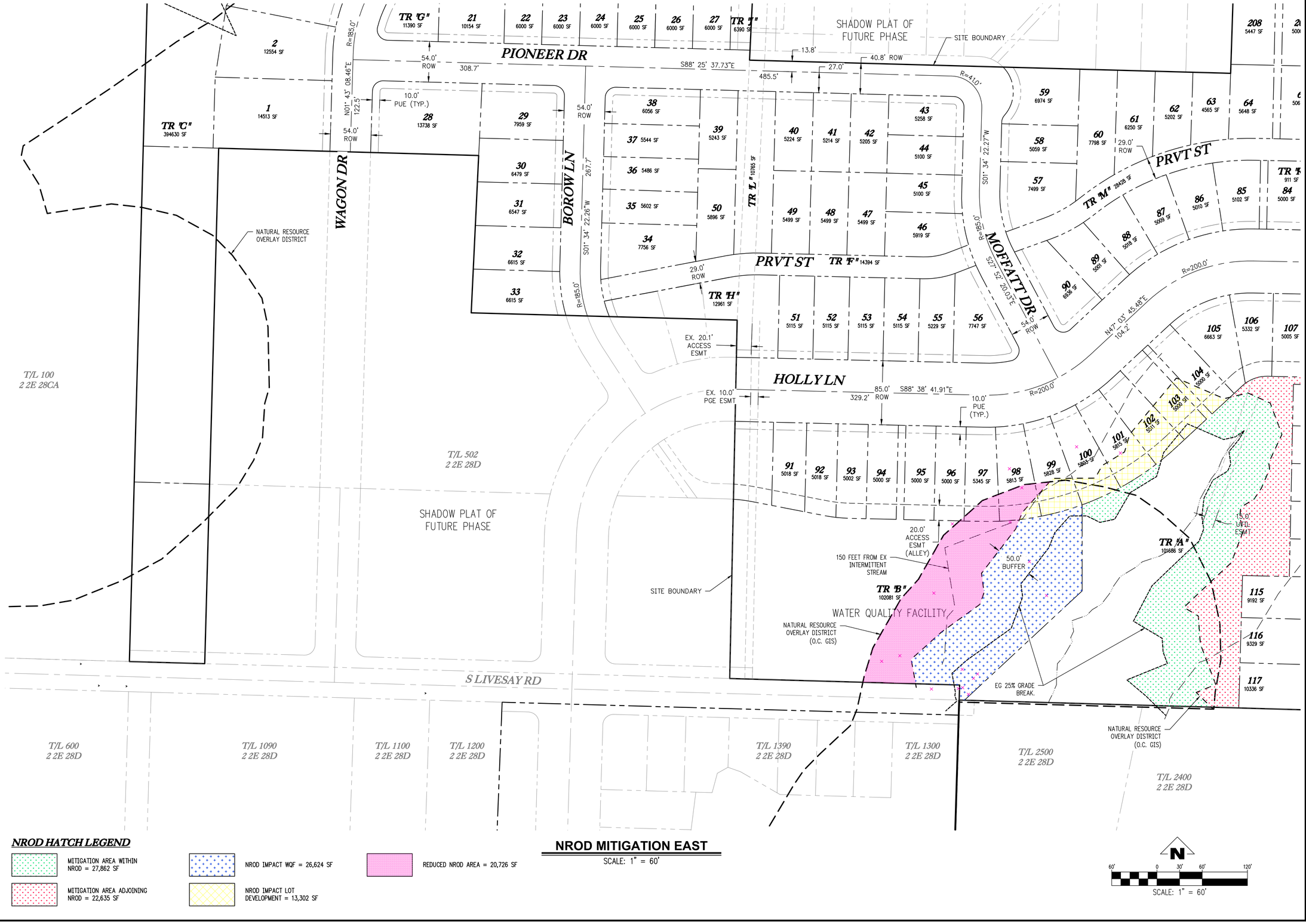
EMERIO
ENGINEERING • SURVEYING • DESIGN
6445 SW FALLBROOK PLACE, SUITE 100
BEAVERTON, OREGON 97008
TEL: (503) 946-9572
FAX: (503) 626-8552
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REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 27, 2007
PRELIMINARY NOT FOR CONSTRUCTION
EXPIRES: 12/31/2025

SHEET
7.5
OF
39

FILE P: \0082-012 Park Place II\dwg \plan \0082-012_07.4plutil NW, Layout: 7.5 SS-A PRELIMINARY PLAN AND PROFILE (2), Plot Date: 1/15/2026 3:08 PM, by: David Burnett

APPENDIX C: EAST-PRELIMINARY WATER QUATILITY FACILITY PLAT WITH MITIGATION



NROD HATCH LEGEND

- MITIGATION AREA WITHIN NROD = 27,862 SF
- MITIGATION AREA ADJOINING NROD = 22,635 SF
- NROD IMPACT WQF = 26,624 SF
- NROD IMPACT LOT DEVELOPMENT = 13,302 SF
- REDUCED NROD AREA = 20,726 SF

NROD MITIGATION EAST

SCALE: 1" = 60'

SCALE: 1" = 60'

PARK PLACE II
A SUBDIVISION OF
TAX LOT 2 2E 28D 100, 190, 302, 400, 500, 502, 3700
CITY OF OREGON CITY, OREGON

NROD MITIGATION EAST

REVISIONS

NO.	DATE	DESCRIPTION

EMERIO
ENGINEERING • SURVEYING • DESIGN
6445 SW FALLBROOK PLACE, SUITE 100
BEAVERTON, OREGON 97008
PH: (503) 946-9652
FAX: (503) 626-8612
www.emeriodesign.com

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 13, 2007
DANIEL J. BURNETT
PRELIMINARY NOT FOR CONSTRUCTION
EXPIRES: 12/31/2025

SHEET
OF

FILE P:\0082-012 Park Place II\dwg\plan\0082-012_05.tpplot SW Layout: NROD MITIGATION EAST, Plot Date: 1/15/2026 3:08 PM, by: David Burnett

APPENDIX D: ARBORIST REPORTS

503.523.6411

ISA Certified Arborist
PN-6732A

MARY GIERSCH CONSULTING ARBORIST

PO Box 621, Tualatin, OR 97062

ASSIGNMENT

To conduct a Limited Visual Assessment for multiple trees within the Park Place 2 development Water Quality Facility (WQF) disturbance area and to prepare a report summarizing my observations.

FIELD OBSERVATIONS

I conducted my assessment on January 8th, 2026. I met Harlan Borow, Land Development and Acquisitions Manager for ICON Construction and Development, LLC, and was provided an Existing Conditions Survey Map showing the WQF disturbance area and the trees within it.

There were forty-three (43) trees in the WQF disturbance area consisting of the following species:

- Grand Fir *(Abies grandis)*
- Bigleaf Maple *(Acer macrophyllum)*
- Red Alder *(Alnus rubra)*
- European White Birch *(Betula pendula)*
- English Holly *(Ilex aquifolium)*
- Sweet Cherry *(Prunus avium)*
- Douglas-fir *(Pseudotsuga menziesii)*.

Nine (9) of the trees had fallen or were dead/dying. Seventeen (17) of the trees were in poor condition. The remaining seventeen (17) trees were in fair condition. Eighteen (18) of the poor and fair condition trees are Oregon native species. Sixteen (16) of the poor or fair condition trees are Oregon nuisance species.

The tree Diameter-at-Breast-Height (DBH) measurements ranged from 6 to 33 inches. An Arborist Tree Inventory Table and Arborist Site Map are included as attachments.

Please contact me with any questions at 503-523-6411, or *mkgiersch@gmail.com*.

Sincerely,

Mary Kay Giersch
ISA Certified Arborist PN-6732A
Tree Risk Assessment Qualified TRAQ
Member, American Society of Consulting Arborists

503.523.6411
ISA Certified Arborist
PN-6732A
MARY GIERSCH CONSULTING ARBORIST
PO Box 621, Tualatin, OR 97062

ATTACHMENT A – ARBORIST TREE INVENTORY TABLE (Page 1 of 2)

ID	NAME	BOTANIC NAME	DBH(1)	NATIVE/ NUISANCE	CONDITION(2)
14678	Douglas-fir	*Pseudotsuga menziesii*	8	**NATIVE**	Fair
14704	English Holly	*Ilex aquifolium*	8	NUISANCE	Fair
14707	Sweet Cherry	*Prunus avium*	11	NUISANCE	Poor
14708	Sweet Cherry	*Prunus avium*	20	NUISANCE	Poor
14710	Sweet Cherry	*Prunus avium*	14	NUISANCE	Poor
14711	Sweet Cherry	*Prunus avium*	14	NUISANCE	Poor
14713	Sweet Cherry	*Prunus avium*	14	NUISANCE	Poor
14714	European White Birch	*Betula pendula*	13	NUISANCE	Poor
14715	Sweet Cherry	*Prunus avium*	18		Dying
14716	Sweet Cherry	*Prunus avium*	17	NUISANCE	Poor
14718	Sweet Cherry	*Prunus avium*	17	NUISANCE	Poor
14814	Douglas-fir	*Pseudotsuga menziesii*	8	**NATIVE**	Fair
14816	European White Birch	*Betula pendula*	6		Dying
14817	European White Birch	*Betula pendula*	11	NUISANCE	Poor
14818	Douglas-fir	*Pseudotsuga menziesii*	10	**NATIVE**	Fair
14819	European White Birch	*Betula pendula*	7		Dying
14826	Douglas-fir	*Pseudotsuga menziesii*	7	**NATIVE**	Fair
14827	Douglas-fir	*Pseudotsuga menziesii*	8	**NATIVE**	Fair
14828	Grand Fir	*Abies grandis*	12	**NATIVE**	Fair
14829	Grand Fir	*Abies grandis*	8		DEAD
14830	European White Birch	*Betula pendula*	9	NUISANCE	Poor
14831	Grand Fir	*Abies grandis*	13	**NATIVE**	Fair
14832	Bigleaf Maple	*Acer macrophyllum*	12	**NATIVE**	Fair
14837	Douglas-fir	*Pseudotsuga menziesii*	14	**NATIVE**	Fair
14840	Sweet Cherry	*Prunus avium*	8	NUISANCE	Poor
14880	Douglas-fir	*Pseudotsuga menziesii*	12	**NATIVE**	Fair
14881	European White Birch	*Betula pendula*	10		Dying
14887	Bigleaf Maple	*Acer macrophyllum*	8	**NATIVE**	Fair
14888	Bigleaf Maple	*Acer macrophyllum*	8	**NATIVE**	Fair

503.523.6411
ISA Certified Arborist
PN-6732A
MARY GIERSCH CONSULTING ARBORIST
PO Box 621, Tualatin, OR 97062

ATTACHMENT A – ARBORIST TREE INVENTORY TABLE (Page 2 of 2)

ID	NAME	BOTANIC NAME	DBH(1)	NATIVE/ NUISANCE	CONDITION(2)
14889	Bigleaf Maple	*Acer macrophyllum*	20	**NATIVE**	Fair
14890	Deciduous				FALLEN
14905	Bigleaf Maple	*Acer macrophyllum*	7	**NATIVE**	Fair
14906	Bigleaf Maple	*Acer macrophyllum*	7	**NATIVE**	Fair
14908	Sweet Cherry	*Prunus avium*	33	NUISANCE	Poor
15012	European White Birch	*Betula pendula*	7	NUISANCE	Poor
15013	European White Birch	*Betula pendula*	7	NUISANCE	Poor
15014	Grand Fir	*Abies grandis*	8	**NATIVE**	Poor
15015	Red Alder	*Alnus rubra*	8	**NATIVE**	Poor
15016	Red Alder	*Alnus rubra*	8		Dying
15017	European White Birch	*Betula pendula*	7		Dying
15018	European White Birch	*Betula pendula*	7		Dying
15023	Bigleaf Maple	*Acer macrophyllum*	20	**NATIVE**	Fair
15038	European White Birch	*Betula pendula*	12	NUISANCE	Poor

(1) DBH: Diameter-at-Breast-Height = measured at 4.5 feet above natural grade

(2) Condition: Good (No Apparent Problems), Fair (Minor Problems), Poor (Major Problems), Dying or Dead

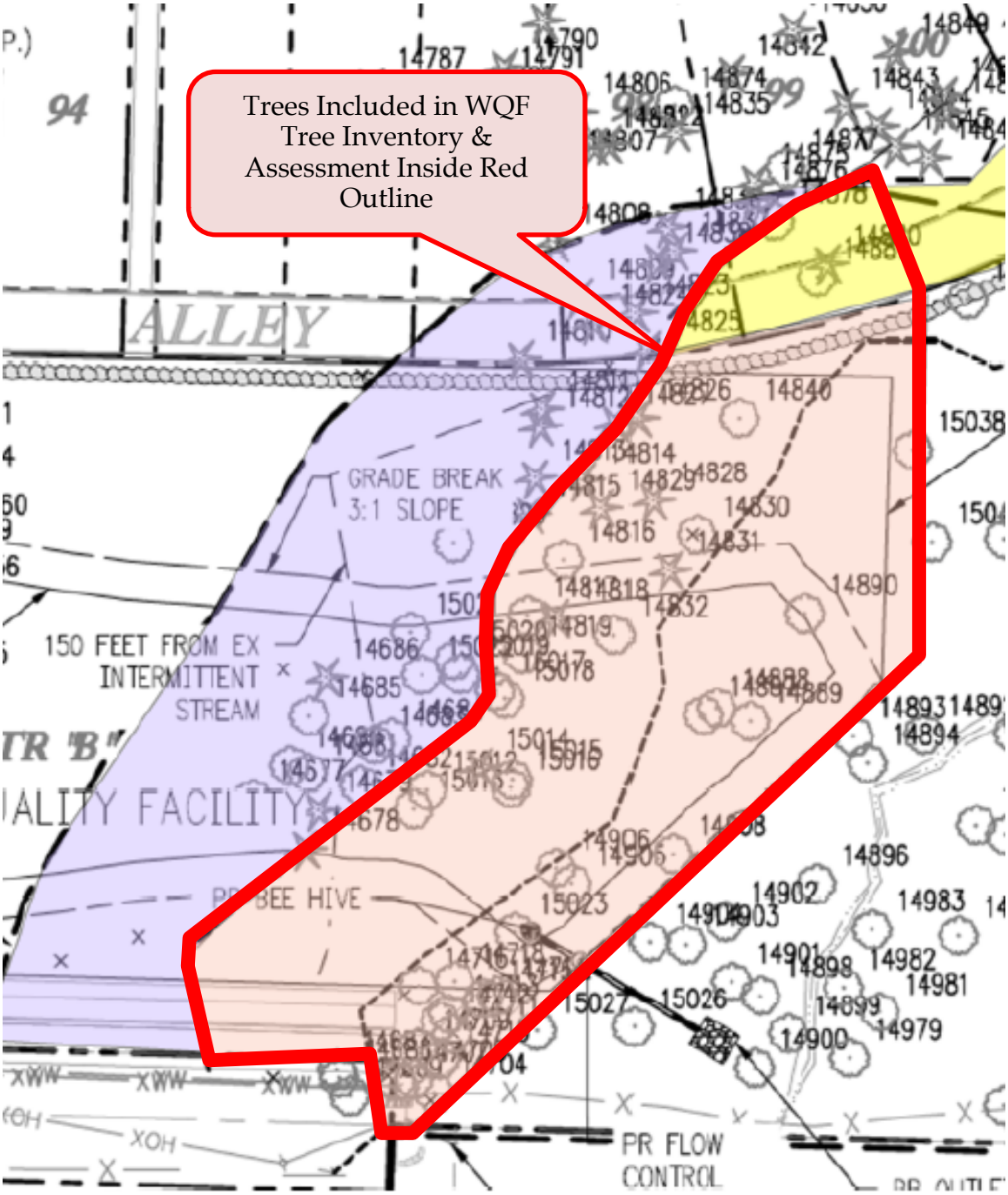
503.523.6411

ISA Certified Arborist
PN-6732A

MARY GIERSCH CONSULTING ARBORIST

PO Box 621, Tualatin, OR 97062

ATTACHMENT B – ARBORIST SITE MAP



503.523.6411

ISA Certified Arborist
PN-6732A

MARY GIERSCH CONSULTING ARBORIST

PO Box 621, Tualatin, OR 97062

ATTACHMENT C – CERTIFICATION OF PERFORMANCE

I, Mary Kay Giersch, certify:

- That I have personally inspected the trees and property referred to in this report, and have stated my findings accordingly. The extent of the evaluation is stated in the attached report and the terms of Assignment;
- That I have no current or prospective interest in the vegetation or the property that is the subject of this report and have no personal interest or bias with respect to the parties involved;
- That the analysis, opinions and conclusions stated herein are my own and are based on current scientific procedures and facts;
- That my analysis, opinions and conclusions were developed and this report has been prepared according to commonly accepted arboriculture practices;
- That no one provided significant professional assistance to me, except as indicated within the report;
- That my compensation is not contingent upon the reporting of a predetermined conclusion that favors the cause of the client or any other party nor upon the results if the assignment, the attainment of stipulated results, or the occurrence of any subsequent events;
- Any legal description provided to me is assumed to be correct. Titles and ownerships to property are assumed to be good and marketable;
- Sketches, drawings and photographs in this report are intended as visual aids and are probably not to scale;
- Unless expressed otherwise, information in this report covers only items that were examined and reflects the condition of those items at the time of inspection. The inspection is limited to visual examination of accessible items without laboratory analysis, dissection, excavation, probing or coring, unless otherwise stated;
- There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the plants or property may not arise in the future;
- Loss or alteration of any part of the report invalidates the entire report. Ownership of the report passes to the client only when all fees have been paid.

I further certify that I am an International Society of Arboriculture Certified Arborist (*PN-6732A*) and Tree Risk Assessment Qualified (TRAQ).

503.523.6411

ISA Certified Arborist
PN-6732A

MARY GIERSCH CONSULTING ARBORIST

PO Box 621, Tualatin, OR 97062

ASSIGNMENT

To conduct a Limited Visual Assessment for several trees within two temporary and permanent disturbance areas for the Park Place 2 development.

FIELD OBSERVATIONS

I was called to the site on September 30th, 2025, and met with Harlan Borow, Land Development and Acquisitions Manager for ICON Construction and Development, LLC. I was provided an Existing Conditions Survey Map and a plan sheet showing the proposed temporary and permanent disturbance areas for this project. The disturbance areas are on the east and west side of a steep ravine which made accessing individual trees difficult. An Arborist Tree Inventory Table is included as an attachment to this letter.

I observed 20 trees in the WEST abutment temporary and permanent disturbance area. Nineteen (19) of the trees were Bigleaf Maple (*Acer macrophyllum*) with Diameter-at-Breast-Height (DBH) measurements ranging from 6 to 46 inches. One of the trees was a 7 inch DBH Cherry Plum (*Prunus cerasifera*). These trees were primarily in fair to good health and condition. An Arborist Tree Inventory Table and Arborist Site Map are included as attachments to this report.

I observed 9 trees in the EAST abutment temporary and permanent disturbance area. Bigleaf Maple as well as Sweet Cherry (*Prunus avium*) were the two species in this area. Their DBH measurements ranged from 6 to 24 inches and they were primarily in fair condition. Of the twenty-nine (29) trees listed above, twenty-five (25) are Oregon Native Species, and three are Oregon Nuisance Species.

Please contact me with any questions at 503-523-6411, or *mkgiersch@gmail.com*.

Sincerely,

Mary Kay Giersch
ISA Certified Arborist PN-6732A
Tree Risk Assessment Qualified TRAQ
Member, American Society of Consulting Arborists

503.523.6411
ISA Certified Arborist
PN-6732A
MARY GIERSCH CONSULTING ARBORIST
PO Box 621, Tualatin, OR 97062

ATTACHMENT A – ARBORIST TREE INVENTORY TABLE

EAST / WEST	ID	NAME	BOTANIC NAME	DBH	NATIVE/ NUISANCE	CONDITION
West	13300	Cherry Plum	*Prunus cerasifera*	7		Good
West	13303	Bigleaf Maple	*Acer macrophyllum*	20	**NATIVE**	Fair
West	13306	Bigleaf Maple	*Acer macrophyllum*	16	**NATIVE**	Good
West	13307	Bigleaf Maple	*Acer macrophyllum*	21	**NATIVE**	Good
West	13308	Bigleaf Maple	*Acer macrophyllum*	21	**NATIVE**	Good
West	13309	Bigleaf Maple	*Acer macrophyllum*	21	**NATIVE**	Good
West	13310	Bigleaf Maple	*Acer macrophyllum*	18	**NATIVE**	Good
West	13311	Bigleaf Maple	*Acer macrophyllum*	18	**NATIVE**	Good
West	13312	Bigleaf Maple	*Acer macrophyllum*	14	**NATIVE**	Good
West	13313	Bigleaf Maple	*Acer macrophyllum*	25	**NATIVE**	Good
West	13314	Bigleaf Maple	*Acer macrophyllum*	23	**NATIVE**	Good
West	13315	Bigleaf Maple	*Acer macrophyllum*	17	**NATIVE**	Good
West	13316	Bigleaf Maple	*Acer macrophyllum*	46	**NATIVE**	Fair
West	13317	Bigleaf Maple	*Acer macrophyllum*	11	**NATIVE**	Fair
West	13318	Bigleaf Maple	*Acer macrophyllum*	22	**NATIVE**	Good
West	13319	Bigleaf Maple	*Acer macrophyllum*	8	**NATIVE**	Good
West	13320	Bigleaf Maple	*Acer macrophyllum*	16	**NATIVE**	Good
East	13959	Bigleaf Maple	*Acer macrophyllum*	19	**NATIVE**	Fair
East	13960	Bigleaf Maple	*Acer macrophyllum*	16	**NATIVE**	Fair
East	13961	Bigleaf Maple	*Acer macrophyllum*	18	**NATIVE**	Fair
East	13962	Bigleaf Maple	*Acer macrophyllum*	24	**NATIVE**	Fair
East	13977	Bigleaf Maple	*Acer macrophyllum*	24	**NATIVE**	Fair
East	13978	Sweet Cherry	*Prunus avium*	6	NUISANCE	Fair
East	13979	Bigleaf Maple	*Acer macrophyllum*	16	**NATIVE**	Fair
East	13980	Sweet Cherry	*Prunus avium*	13	NUISANCE	Fair
East	14279	Sweet Cherry	*Prunus avium*	17	NUISANCE	Fair
West	121758	Bigleaf Maple	*Acer macrophyllum*	6	**NATIVE**	Fair
West	121759	Bigleaf Maple	*Acer macrophyllum*	18	**NATIVE**	Fair
West	121760	Bigleaf Maple	*Acer macrophyllum*	18	**NATIVE**	Fair

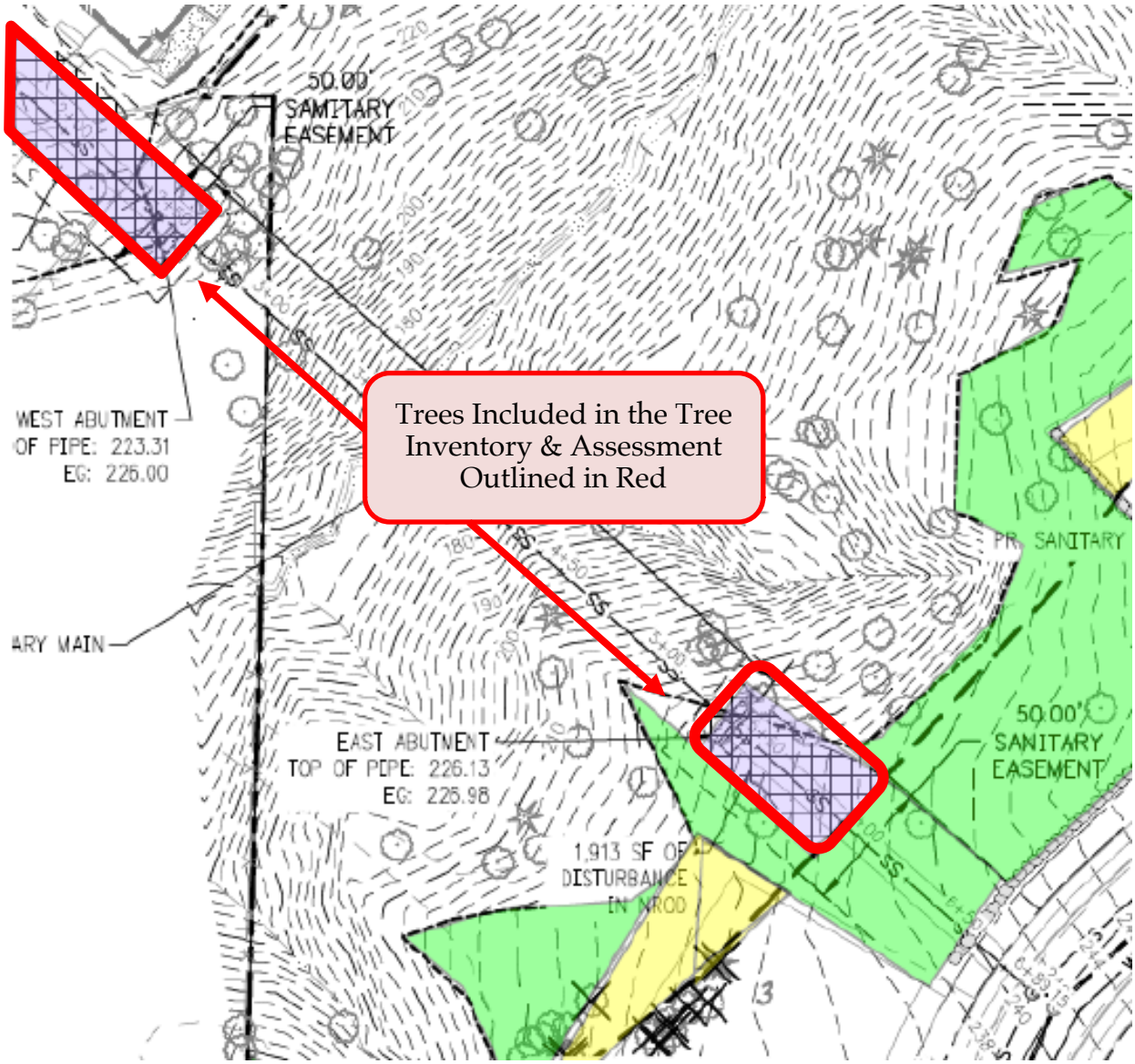
503.523.6411

ISA Certified Arborist
PN-6732A

MARY GIERSCH CONSULTING ARBORIST

PO Box 621, Tualatin, OR 97062

ATTACHMENT B – ARBORIST SITE MAP



503.523.6411

ISA Certified Arborist
PN-6732A

MARY GIERSCH CONSULTING ARBORIST

PO Box 621, Tualatin, OR 97062

ATTACHMENT C – CERTIFICATION OF PERFORMANCE

I, Mary Kay Giersch, certify:

- That I have personally inspected the trees and property referred to in this report, and have stated my findings accordingly. The extent of the evaluation is stated in the attached report and the terms of Assignment;
- That I have no current or prospective interest in the vegetation or the property that is the subject of this report and have no personal interest or bias with respect to the parties involved;
- That the analysis, opinions and conclusions stated herein are my own and are based on current scientific procedures and facts;
- That my analysis, opinions and conclusions were developed and this report has been prepared according to commonly accepted arboriculture practices;
- That no one provided significant professional assistance to me, except as indicated within the report;
- That my compensation is not contingent upon the reporting of a predetermined conclusion that favors the cause of the client or any other party nor upon the results if the assignment, the attainment of stipulated results, or the occurrence of any subsequent events;
- Any legal description provided to me is assumed to be correct. Titles and ownerships to property are assumed to be good and marketable;
- Sketches, drawings and photographs in this report are intended as visual aids and are probably not to scale;
- Unless expressed otherwise, information in this report covers only items that were examined and reflects the condition of those items at the time of inspection. The inspection is limited to visual examination of accessible items without laboratory analysis, dissection, excavation, probing or coring, unless otherwise stated;
- There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the plants or property may not arise in the future;
- Loss or alteration of any part of the report invalidates the entire report. Ownership of the report passes to the client only when all fees have been paid.

I further certify that I am an International Society of Arboriculture Certified Arborist (*PN-6732A*) and Tree Risk Assessment Qualified (TRAQ).

DAVID EVANS
AND ASSOCIATES INC.

February 10, 2026

Pete Walter, Planning Manager
City of Oregon City, Planning Division
695 Warner Parrott Road
Oregon City, OR 97045

SUBJECT: S E C O N D R E V I S E D NROD-24-032: Park Place Crossing II Subdivision

Dear Pete,

The applicant is seeking approval of a Type III Natural Resources Overlay District Review for the 219-lot subdivision on 16472 and 16582 S. Livesay Road Clackamas County Map T2S-R2E-Section 28 Tax Lots 100, 190, 302, 400, 500, 3700, and 3701). The applicant is proposing to install a sanitary sewer line over a ravine and stormwater facilities within the NROD boundary, which per OCMC 17.49.090(H) requires a Type III NROD permit.

Per your request of January 20, 2026, we reviewed the applicant's updated NROD report dated January 2026, prepared by Schott & Associates.

Per your request of October 14, 2025, We previously reviewed the submitted NROD section of the narrative (July 1, 2025), plan set, and *Preliminary Stormwater Report* (September 6, 2024) prepared by Emerio Design, LLC.

Josh Smith, David Evans and Associates, Inc. (DEA) Biologist conducted the review of the applicant's material. Gigi Cooper, DEA Senior Land Use Planner, assisted in the preparation of this memo and conducted a quality review.

The applicable OCMC sections are provided in *italic*. DEA review and findings are in **responses**.

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.

Response. The project proposes utilities within the NROD; therefore, the use is not allowed outright and is subject to OCMC 17.49.090.

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:

G. Land divisions provided they meet the following standards, and indicate the following on the final plat:

2. All public and private utilities (including water lines, sewer lines or drain fields, and stormwater disposal facilities) are located outside the NROD

Response. The project proposes utilities within the NROD; therefore, the use is not allowed outright and is subject to OCMC 17.49.090.

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:

D. Land divisions when not exempted by OCMC 17.49.080, subject to the applicable standards of OCMC 17.49.160.

H. Utility lines subject to OCMC 17.49.140.

Response: The project proposes utilities within the NROD; therefore, the proposed land division is not exempted by OCMC 17.49.080 and the proposed utility lines are subject to OCMC 17.49.140. The proposal is allowed under prescribed conditions. However, the proposed sanitary sewer line would cross a ravine outside right-of-way. Therefore, per OCMC 17.49.140 D., the application must be processed as a Type III.

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):

Response: The general development standards apply only to the proposed stormwater facility. The other utility lines are subject to OCMC 17.49.140 and the land division is subject to OCMC 17.49.160.

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;

Response: Applicant responded agreeing to comply with this standard for the stormwater facility. Trees listed to be removed are identified in the arborist report and comply with the standards. A condition of approval is recommended.

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;

Response: The applicant intends to comply with 17.41 through a Cash-in-Lieu of Planting option instead of Removal and Replanting, Preservation Tracts, or Protection. DEA assumes that the City will review the application for compliance with this standard.

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);

Response: The applicant only proposes planting native vegetation. This standard is met.

D. Grading is subject to installation of erosion control measures required by the city;

Response: A tentative grading and erosion control plan was submitted with the plan set. DEA assumes that the City will review the erosion control plan for consistency with standards.

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;

Response: The setbacks for Lots 96 through 104 will remain the same as the classification of this street, vehicle access for these lots is limited and rear alley is required to provide access. The base zone is not proposed to be reduced.

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;

Response: Same as the response to E.

G. Fences in compliance with OCMC 17.49.080.N;

Response: The applicant did not propose any fencing around the stormwater facility other than silt fence during construction. The application meets this standard.

H. Exterior lighting shall be placed or shielded so that they do not shine directly into resource areas;

Response: Unable to evaluate—the applicant has agreed to comply with this standard, but the applicant needs to provide lighting details and show exterior lighting in relation to the NROD area. The application does not comply with this standard as submitted.

I. If development will occur within the one hundred-year floodplain, the standards of OCMC 17.42 shall be met; and

Response: Not applicable. The development is not within the one-hundred year floodplain.

J. Mitigation of impacts to the regulated buffer is required, subject to OCMC 17.49.180 or 17.49.190.

Response: The proposed mitigation for the Water Quality Facility (WQF) meets the standards for 17.49.190.

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*	*Width of Vegetated*

		from Water Feature	*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 twenty-five percent or more slope.*

Response: There are two drainages on the property. The drainage by the WQF drains to Abernethy Creek and is intermittent. The applicant does not state the distance from the starting point to the top of the ravine, but on the plan, shows the vegetated corridor as the grade break plus 50 feet, likely because the break in the ravine varies, although it does break before the 150 feet. The required vegetated corridor for the Abernethy Creek drainage on the west side of the stream, where work is proposed, varies from approximately 115 feet to 180 feet wide. The applicant only proposes mitigation work on the east side of the stream, where the required vegetation corridor is narrower. The second drainage is perennial and drains to Tour Creek, and has slopes greater than 25 percent for more than 150 feet. Therefore, the required vegetated corridor is 200 feet.

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;

Response: This standard is not applicable, as the proposal does not include private connections to utility lines within the NROD.

B. The disturbance area for the upgrade of existing utility lines shall be no greater than fifteen feet wide;

Response: This standard is not applicable; no utility lines are proposed for upgrade.

C. New utility lines shall be within the right-of-way, unless reviewed under subsection D.

Response: The proposed new utility lines are not within the right-of-way, and therefore must be 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.

Response: The proposed sanitary sewer line would cross a ravine outside right-of-way. Therefore, the application must be processed as a Type III.

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;

Response: The proposal shows no impacts to OHW. No state or federal permits are required. This standard is met.

F. The Division of State Lands must approve any work that requires excavation or fill in a wetland;

Response: The applicant has agreed to obtain all state and federal permits associated with impacts to wetlands. This should be a condition of approval.

G. Native trees more than ten inches in diameter shall not be removed unless it is shown that there are no feasible alternatives; and

Response: The applicant provided a maximum number of trees (23) greater than ten inches in diameter that could be removed but did not determine the exact number that will be removed. According to the applicant, the only alternative route to avoid the trees and the NROD would require one mile of new sewer line to be built. This standard is met.

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.

Response: Based on the plant set the applicant provided, the application is in compliance with the ratio of trees to be replaced for the varying sizes of trees. The applicant's revised NROD report (January 2026) includes native plant species, quantities, size, and spacing in Table 4. This standard is met.

I. Mitigation is required, subject to OCMC 17.49.180 or 17.49.190.

Response: The applicant submitted a mitigation plan in accordance with 17.49.190.

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.

Response: The applicant states that disturbance within the existing forest canopy is unavoidable and trees will be mitigated for as outlined in the mitigation plan. It does not appear that the activity will disturb the drip line of the trees to remain. However, we recommend a condition of approval to protect the driplines.

B. Only vegetation from the Oregon City Native Plant List shall be planted within these facilities.

Response: The applicant's revised NROD report (January 2026) includes native plant species, quantities, size, and spacing in Table 4. This standard is met.

C. Mitigation is required, subject to OCMC 17.49.180 or 17.49.190.

Response: The applicant submitted a mitigation plan in accordance with 17.49.180. Mitigation Option 2 will be used as the disturbance area is greater than an acre.

D. The stormwater facility may encroach up to one-half the distance of the NROD corridor.

Response: The WQF will encroach more than one-half the distance of the NROD corridor. The application does not meet this standard.

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.

Response: The impacts will be greater than one thousand square feet so the proposed development will 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.

Response: The applicant does not intend to meet the landscaping standards via this standard.

G. The design of the stormwater facility shall be subject to OCMC 13.12.

Response: We did not review for compliance with OCMC 13.12

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:

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.

Response: The applicant proposes mitigation as a separate tract. This standard is met.

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.*

   Response: We did not review for this standard, as it will be addressed at the time of the final plat review.

17.49.180 Mitigation standards.

The following standards (or the alternative standards of OCMC 17.49.190) apply to required mitigation:

Response: The applicant has followed the standards for 17.49.190.

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.*

Response: The report has documented the existing condition of the vegetated corridor as degraded.

B. *The proposed mitigation shall occur at a minimum two-to-one ratio of mitigation area to proposed disturbance area;*

Response: The applicant provides the impact and mitigation areas in Tables 2 and 3 in the NROD report and the planting details in Table 4. The applicant is applying removal of invasive species and replacing with a native seed mix toward the required 2:1 mitigation ratio. This standard is met. The applicant does not show plantings on a plan. As a condition of approval, the applicant could provide a plan showing where mitigation plantings will be planted.

C. The proposed mitigation shall result in a significant improvement to good existing condition as determined by a qualified environmental professional;

Response: The proposed mitigation should result in a significant improvement by removing invasive species and planting native trees and shrubs. Therefore, this standard is met.

D. There shall be no detrimental impact on resources and functional values in the area designated to be left undisturbed;

Response: The proposed mitigation plan should not have any detrimental impact on resources and functional values as proposed and therefore meets this standard.

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;

Response: The proposed mitigation does not include any alterations or replacements of development in a stream channel, wetland, or other water body and therefore meets this standard.

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.

Response: The proposed mitigation will occur on site adjacent to the impacts and therefore meets this standard.

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:

Response: These standards apply only to the sanitary sewer line, not the stormwater facility. The proposed sanitary sewer line would cross a ravine outside right-of-way. Therefore, per OCMC 17.49.140 D., all of the OCMC 17.49.200 criteria A-F must be met for approval. The Schott & Associates preparers of the NROD report are qualified environmental professionals. The application meets this standard.

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;

Response: There are no feasible alternatives for the sewer line, so this standard has been met.

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;

Response: This standard is met.

C. The proposed use or activity proposes the minimum intrusion into the NROD area that is necessary to meet development objectives;

Response: This standard is met, as the proposed sewer line will only impact vegetation within the NROD to place the line.

D. Fish and wildlife passage will not be impeded;

Response: The proposed work will not impede fish or wildlife passage as the sewer line will be suspended over the ravine. This standard is met.

E. With the exception of the standard(s) subject to the adjustment request, all other applicable NROD standards can be met; and

Response: The application meets the applicable standards and therefore meets this standard.

F. The applicant has proposed adequate mitigation to offset the impact of the adjustment.

Response: The applicant has proposed adequate mitigation of the sewer line to offset the impact of adjustment. This standard is met.

Conclusions and Recommendations

DEA determines that the application, as submitted, complies with most of the OCMC NROD requirements. The application does not comply with these three standards:

- 17.49.100 H. The applicant did not provide a lighting plan.
- 17.49.155 D. The WQF will encroach more than one-half the distance of the NROD corridor. The applicant proposes mitigation, but the OCMC does not provide a way to meet this standard through mitigation.
- 17.49.155. A. The applicant states that disturbance within the existing forest canopy is unavoidable and trees will be mitigated for as outlined in the mitigation plan. It does not appear that the activity will disturb the drip line of the trees to remain.

We recommend the following conditions of approval:

- Per 17.49.100 A., include a protective covenant for native trees to be protected.
- Per 17.49.100 H., provide lighting details and show exterior lighting in relation to the NROD area.
- Per 17.49.140 F., if required, obtain all state and federal permits associated with impacts to wetlands.
- Per 17.49.155. A., provide evidence that the forest canopy within the driplines of existing trees to remain shall not be disturbed.
- Per 17.49.190 B, provide a plan showing where mitigation plantings will be planted.

DEA assumes that the City will review the application for compliance with the following standards:

- 17.49.100 B. Landscaping requirements

- 17.49.100 D. Erosion control measures

If you have any questions or need further information concerning this review, please contact me at Josh.Smith@deainc.com 503-499-0357 or Gigi.Cooper@deainc.com or 503-499-0229.

Sincerely,

DAVID EVANS AND ASSOCIATES, INC.

Josh Smith, Biologist



Gigi Cooper, AICP, Planner

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
Meeting Date: 7/2/2024
Final Notes Sent: 8/9/2024
Pre-application Conference File #: PA-24-00019

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.

Planning Division
Pete Walter, Planning Manager, reviewed this pre-application.
pwalter@orcity.org
(503) 496-1562

Development Services Division (Utilities/Public Improvements/SDC's, etc):
See separate notes from Public Works Development Services Division.
Contact Erik Nichols, PE, Project Engineer, Public Works Department
Email: enichols@orcity.org

Anticipated Applications and Fees

2024 Planning Fee Schedule (Effective Jan 1, 2024)

Subdivision	$5,471 plus $455 per lot
Mailing Labels	$21
Incomplete Type II-IV (Excluding Geologic Hazards)	First Incomplete: $0 Submittal after 1st: $368
Natural Resource Review - Type I Exemption Review - Type I Verification Residential - Type I Verification Non-Residential - Type II Review/Verification Residential - Type II Review/Verification Non-Residential - Consultant Fee	 $104 $279 $557 $1,295 $2,592 Actual City Cost
Geologic Hazards Review	$1,149
Land Use Compatibility Statement (LUCS)	$92
Phased Subdivision or Site Plan & Design Review Occupancy Plan	$1,042
Public Improvement Modification	$469
Renotice Application	$766

Other Fees

- Building Department Fee Schedules
- System Development Charges (SDCs)
- Development Services Fee Schedule

Building Division:
Your application was forwarded to the Oregon City Building Division for comments regarding the building permit process and applicable building codes. If you have any questions please contact permits@orcity.org. Jim Sayers, Building Official, may be reached at jsayers@orcity.org or 503) 496-1517.

Clackamas Fire District:
Questions can be directed to Mike Boumann, Lieutenant Deputy Fire Marshal of Clackamas Fire District #1. You may contact Mr. Boumann at (503)742-2660 or mike.boumann@clackamasfire.com

Proposed Project:

- Subdivision of approximately 321 lots.
  - Nine (9) R-10 zone lots (2.2 ac)
  - 251 R-5 zone lots (31.5 ac) – On-Site
  - 70 R-5 zone lots (8.4 ac) – Off-Site
  - NC zone parcel X = 22,088 sf
  - NC zone parcel Y = 54,821 sf
  - NC zone parcel Z = 54,825 sf
  - Tract A Open Space: 159,047 sf
  - Tract B Water Quality Detention: 63,756 sf
  - Tract C Open Space: 82,161 sf
  - Tract D Open Space: 30,741 sf
  - Tract E Open Space: 10,339 sf
  - Tract N Open Space: 360,254 sf
  - Tract Q Open Space: 43,163 sf

Note: staff did not attempt to calculate the proposed residential densities within the zone districts.

General Information:

Zoning	Acres (approx.)
• R-10 – Low Density Residential	9.5
• R-5 – Medium Density Residential District	77.4
• NC – Neighborhood Commercial	4.5

Applicable overlay districts	Acres (approx.)
• Natural Resource Overlay District	13
• Geologic Hazards Overlay District	23.7

Previous Oregon City Land Use Decisions

- AN-17-0004 / ZC-17-0005. Conditions of Approval included requirement of Master Plan process per OCMC 17.65 prior to development. Please provide an explanation why this requirement no longer applies in your land use application.
- Ordinance 08-1014, Legislative Adoption of the Park Place Concept Plan.

Applicable Code:
The following chapters of the Oregon City Municipal Code may be applicable to this application.
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 16.04 – General Provisions and Administration of Land Divisions
OCMC 16.08 – Land Divisions – Process and Standards
OCMC 16.12 – Minimum Public Improvements and Design Standards for Development
OCMC 17.08 – Low Density Residential Districts
OCMC 17.10 – Medium Density Residential Districts
OCMC 17.21 – Single-Family Residential Standards – Park Place Concept Plan
OCMC 17.24 – Neighborhood Commercial District
OCMC 17.41- Tree Protection, Preservation, Removal, and Replanting Standards
OCMC 17.44 - Geologic Hazards
OCMC 17.47 – Erosion and Sediment Control
OCMC 17.49 – Natural Resource Overlay District
OCMC 17.50 – Administrative Processes
OCMC 17.52 – Off-Street parking and Loading (NC Zone)
OCMC 17.62 – Site Plan and Design Review (NC Zone)
OCMC 17.54 – Supplemental Zoning Regulations and Exceptions
OCMC 17.65 - Master Plans and Planned Unit Developments (Option)

Staff will provide you with a code response template.

Review Process: https://www.orcity.org/776/Processes-Timelines

- Type II Procedure (PDF)

OCMC 17.50.030.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.

Transportation Impact Analysis:

- Please see separate notes from DKS Engineering.

Tree Protection/Mitigation – OCMC 17.41

- Tree protection, removal and replacement is governed by OCMC 17.41 for development outside of the Natural Resources Overlay District. The application will require the submittal of an arborist report for all trees greater than 6" DBH on the site.
- An applicant for development may claim exemption or modifications to the standard mitigation requirements of Chapter 17.41 if the development site is or has been managed as a farm or forest

use with applicable tax status and 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. You must address this in your application and provide evidence that the property was a designated farm within one year of the land use application. Otherwise, standard mitigation requirements will apply.

- A tree removal and mitigation plan must include the lot setbacks and the caliper of the trees to be removed as well as the species, caliper and location of the mitigation trees. The tree mitigation plan report shall be prepared by a certified arborist, horticulturalist or forester or other environmental professional with experience and academic credentials in forestry or arboriculture.

Street Trees – OCMC 12.08

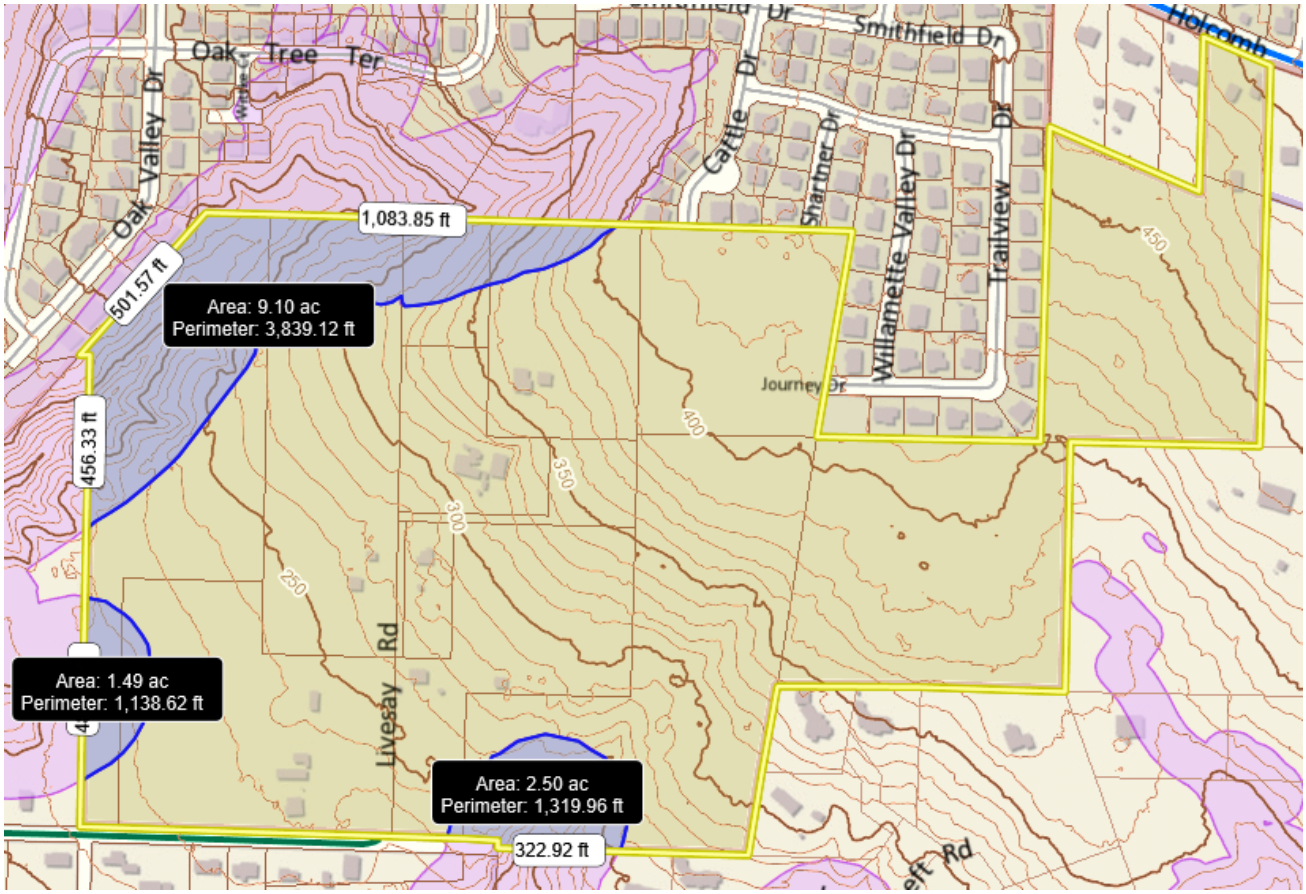
- A street tree plan including one tree for every 35' of frontage is required in accordance with OCMC 12.08. Please provide total frontage length in the application to demonstrate the number of street trees is correct.
- The code allows modification of public improvement requirements to preserve established mature trees in future right-of-way areas.

Natural Resource Overlay District (NROD) – OCMC 17.49:

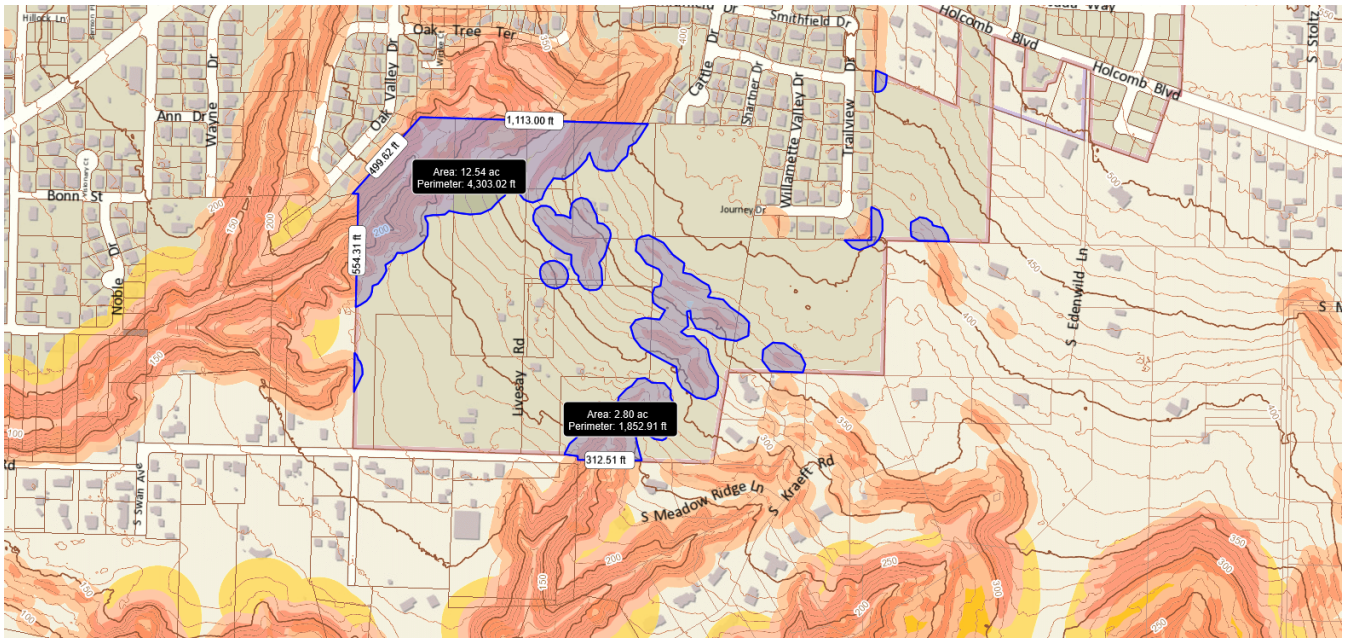
About 13.1 acres of the proposed development fall within the adopted NROD. The Natural Resource Overlay District protects inventoried natural resources with a vegetated corridor which varies in width.

- The applicant is responsible for determining the current condition of the resources pursuant to OCMC Chapter 17.49 - NATURAL RESOURCE OVERLAY DISTRICT. The applicant shall conduct an on-site survey of the Water Resource to determine its condition and the extent of the associated vegetated corridor width required.
- An applicant may accept the city's adopted buffer as shown above, however, the applicant wishes to further to delineate the feature location or disturb the vegetated corridor, the application is discretionary and is required to be reviewed with public notification as a Type II application.
- If you are proposing a stormwater facility within the NROD, please refer to OCMC 17.49.155.
- Sewer crossing to Oak Valley Drive.
- Note that mitigation is required for all disturbance including roadway as well as the stormwater facility and all temporary disturbances.
- All studies shall be conducted by a certified professional.

The following map indicates the extent of the NROD on the applicant's property.



Geologic Hazards Overlay District (US) – OCMC 17.44:
Approximately 24 acres of the property fall within the Geologic Hazards Overlay District due to the present of steep and/or landslides. Additional hazards may be present due to subsurface geology and soils. The applicant should consult all available references pertaining to landslides in this area, including the Park Place Concept Plan and applicable appendices. The applicant shall submit a geologic hazards review application with all applicable studies for development within the overlay. Prior to submission of an application, please arrange a meeting with Development Services to discuss the requirements of the Geologic Hazards Application.



Neighborhood Association

A Neighborhood Association meeting is required. The site is in the Park Place Neighborhood Association.

Park Place Neighborhood Association - https://www.orcity.org/1331/Park-Place-NA

- Chair: Stephen VanHaverbeke
- Vice Chair: Nick Dierkman
- Treasurer: Jackie Hammond-Williams
- Secretary: Linda Smith
- CIC Representatives:
  - Steve Van Haverbeke
  - Bob La Salle
- 2024 Steering Committee Meetings are held the third Mondays of January, March, April, June, August, September, and November via Zoom. Email Park Place to receive links for Zoom meetings.
- 2024 General Meetings occur three times in the year and are held in-person at Park Place Church at 13933 Gain St, Oregon City. All meetings are scheduled to begin at 6:30 pm.

Other notes

- 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. Meeting mid August.
- Archeological Monitoring Recommendation. Your pre-application will be transmitted to the State Historic Preservation Office (SHPO) and affected tribes for review. Comments received will be provided to the applicant.
- We encourage a diversity of tree species planted throughout your development.

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

Community Development – Planning

695 Warner Parrott Rd | Oregon City OR 97045
Ph (503) 722-3789 | Fax (503) 722-3880

NOTICE OF PLANNING COMMISSION PUBLIC HEARING

COMMENT DEADLINE:	On **Monday, February 23rd, 2026,** the **City of Oregon City - Planning Commission** will conduct a public hearing at 7:00 p.m. in the Commission Chambers at the Robert Libke Public Safety Building, 1234 Linn Avenue, Oregon City 97045 and virtually on the following Type III Land Use Application. Any interested party may testify at the public hearings or submit written testimony at or prior to the close of the Planning Commission hearing. Please contact planning@orcity.org to provide virtual testimony. The meeting may be viewed live at www.youtube.com/user/CityofOregonCity. Written comments must be received by the Planning Division by 4pm two weeks before the first scheduled hearing to be included in the staff report. Written comments received after that date will be provided to the Commission but may not be included in the staff report. The agenda and associated report will be posted at www.orcity.org/meetings one week prior to the meeting.
FILE NUMBERS:	GLUA-24-034 / SUB-24-03 / GEO-24-07 / NROD-24-032
APPLICANT:	Icon Construction & Development; 1969 Willamette Falls Drive, Suite 260; West Linn, Oregon 97068
REPRESENTATIVE:	Emerio Design
OWNERS:	Multiple – See Application
PROJECT WEBPAGE:	https://www.orcity.org/3421/GLUA-24-034-SUB-24-03-Park-Place-II-Subd
ZONING	R-5 Medium Density Residential (approx. 50 ac), R-10 Low Density Residential (approx. 9.5 ac)
REQUEST:	219-lot residential subdivision on 59.54 acres, partially located within the Natural Resources Overlay District (NROD) and the Geologic Hazard Overlay District. This residential subdivision application is subject to non-discretionary criteria in the OCMC. A portion of the proposed stormwater and sanitary sewer systems impact the Natural Resources Overlay District and require a discretionary review for adjustment pursuant to OCMC 17.49.200, a type III land use decision.
LOCATION: **(see map on reverse)**	16472/16582 S Livesay Road Oregon City, OR 97045 Clackamas County Assessor's Map No. 22E28D, Tax Lots 190, 100, 301, 3700, 302, 400 & 500
STAFF CONTACT:	Pete Walter, Planning Manager, Phone: (503) 496-1562, Email: pwalter@orcity.org
NEIGHBORHOOD:	Park Place Neighborhood Association | Date of Neighborhood Meeting: 8/18/2025
APPROVAL CRITERIA:	Oregon City Municipal Code chapters: 12.04 – *Streets, Sidewalks, and Public Places*; 12.08 – *Public and Street Trees*; 13.12 – *Stormwater Management*; 15.48 – *Grading, Filling, and Excavating*; 16.04 – *General Provisions and Administration of Land Divisions*; 16.08 - *Land Divisions Process and Standards*; 16.12 – *Minimum Public Improvements and Design Standards for Development*; 17.08 – *Low Density Residential Districts*; 17.10 *Medium Density Residential Districts*; 17.44 – *Geologic Hazards*, 17.47 – *Erosion and Sediment Control*; 17.49 – *Natural Resource Overlay District*; 17.54 – *Supplemental Zoning Regulations and Exceptions*; 17.50 – *Administration and Procedures*. See https://library.municode.com/or/oregon_city/codes/municipal_code

For tips on submitting public comments, please visit *https://orcity.org/1101/How-Do-I* and click on "*How do I Make the Most Effective Comments on Development Applications?*". *Give us a call to learn more about the development process.*

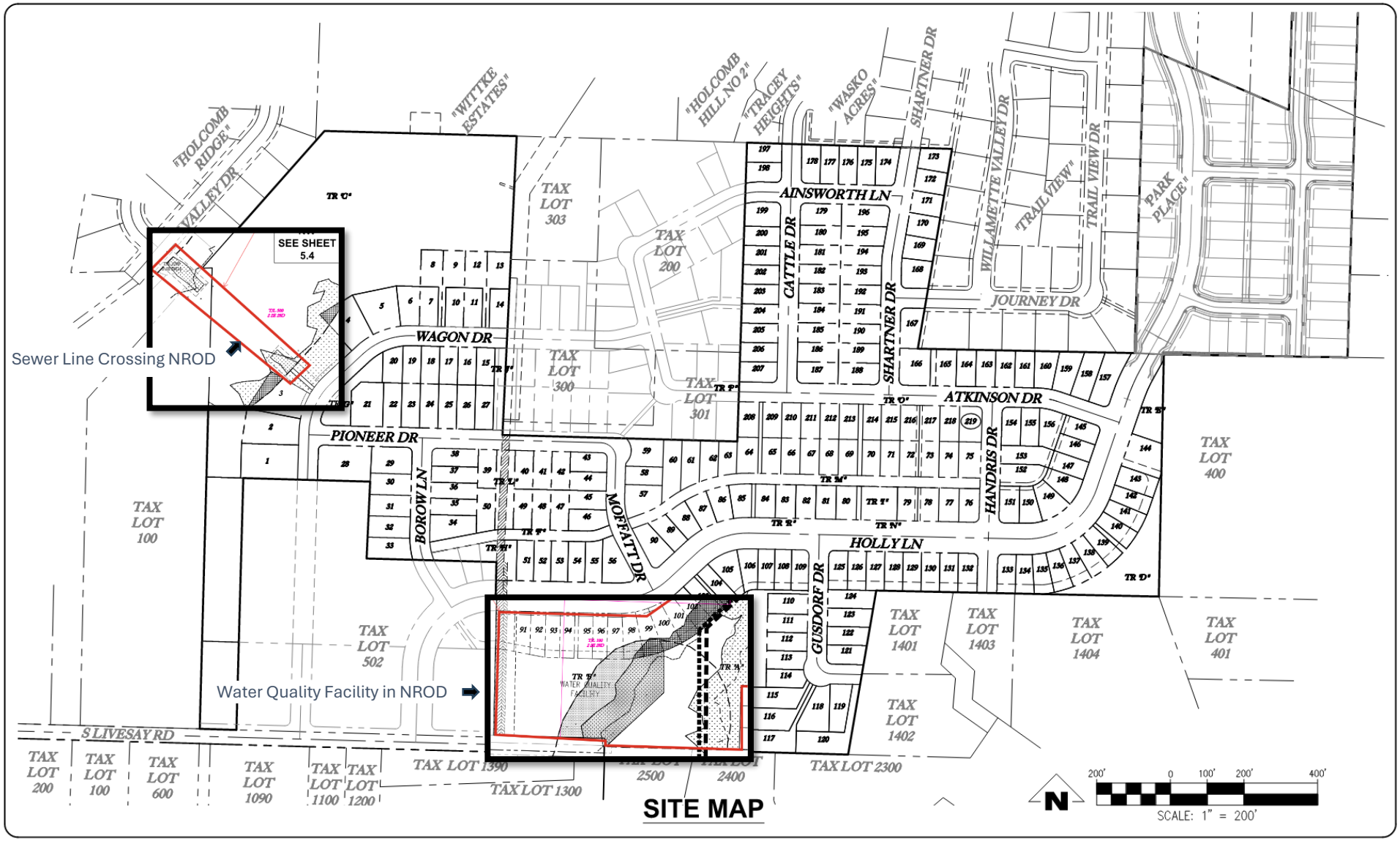
The applicant and all documents submitted by or on behalf of the applicant are available for inspection at no cost at the Oregon City Planning Division during regular business days at 695 Warner Parrott Rd, Oregon City, Oregon 97045, from 9a.m. to 4p.m Monday thru Friday. The staff report, with all the applicable approval criteria, will also be available for inspection seven days prior to the hearing. Copies of these materials may be obtained for a reasonable cost in advance. The staff report, with all the applicable approval criteria, will also be available for inspection seven days prior to the hearing. Copies of these materials may be obtained for a reasonable cost in advance. Any interested party may testify at the public hearing and/or submit written testimony at or prior to the close of the record by the Planning Commission.

Please be advised that any issue that is intended to provide a basis for appeal must be raised before the close of the Planning Commission hearing, in person or by letter, with sufficient specificity to afford the Planning Commission and the parties an opportunity to respond to the issue. Failure to raise an issue with sufficient specificity will preclude any appeal on that issue. The decision of the Planning Commission may be appealed to the City Commission by parties with standing within 14 days of the notice of decision. Any appeal will be based on the record. The procedures that govern the hearing will be posted at the hearing and are found in OCMC Chapter 17.50 and ORS 197.797.

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.

Site Map

NROD impact areas indicated within dark solid lines



Pete Walter

From: mikemueller7788@gmail.com
Sent: Monday, February 9, 2026 3:15 PM
To: Pete Walter
Cc: Jane Varley; 'Mike Mueller'
Subject: written testimony for planning commission meeting 2-23-26

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.

February 9, 2026

To: Oregon City Planning Department
Attn: Pete Walter

As property owners of land downhill from the proposed Type III Land Use Application for review by the Oregon City Planning Commission on 2/23/26, we wish to go on record having multiple concerns. Our property borders the southeast portion of the proposed development. The intent of this email is to include the contents below as written testimony into the public record for the Planning Commission hearing. Can you please confirm receipt of this email and its inclusion as written testimony for the Planning Commission hearing?

Our concerns include, but are not limited to:

1. The design and location of the proposed stormwater retention facility. This land is in both an NROD and Geo Hazard OD. This facility borders our property; any runoff would drain directly onto our property. How will the city ensure that no runoff or drainage will impact our property during construction and/or operation of the facility?

   In the NROD report provided as part of the 2/23/26 hearing package, on page 4, in the "East-Water Quality Facility (WCF)" section, the report states that, *"an intermittent drainage, delineated by AKS, emerged from an outlet in the south-central portion of the site, extending southwest offsite"*. If we are reading this section and the map correctly, it appears that this drainage goes across our property.

   There are many maps in the package for the Planning Commission meeting that show the Water Quality Facility, however, many of these maps differ in the exact location of the WQF. Various maps and documents refer to it as the "Water Quality Facility", others refer to it as "Stormwater Retention". Are the terms are synonymous?

2. There are proposed modifications/expansions to Livesay Road. Our property has significant frontage on Livesay, any expansions to Livesay could significantly impact our property and structures. We'd like to understand what the city plans to do about expanding Livesay Road. Since we have not seen any specific details from the city regarding a Livesay Road expansion, we cannot be more specific with our concerns.

   a. Our understanding is that Livesay is currently a county road, how does this impact any proposed changes to Livesay? Will some portions of Livesay be annexed into Oregon City, and if so, what portions?
   b. On the north side of Livesay Road, the existing property at 14631 S Livesay is not included in the current plan for development. We respectfully request that Clackamas County alter their standard road widening practice to take all the necessary land for making this section of Livesay wider from

the north side of Livesay Rd (at 14631) and leave the four smaller properties on the south side as they currently are with minimal frontage changes. This request was made in writing to the OC Planning Department regarding Land Use Application GLUA-20-00045 on 5/9/2022 and is part of the public record at that time.

3. There has been discussion about a new road from the Park Place Crossing development to connect with the intersection of Redland Road and Holly Lane, which could potentially impact our property. We'd like to understand what the city plans to do about the route and timing for this road. Since we have not seen any specific details from the city regarding this new road, we cannot be more specific with our concerns.

4. In the Revised Narrative document, section 17.44.050 deals with Geo Hazards. 17.44.050.A states a requirement for a geological assessment and geotechnical report. The response from the applicant is that a Geotech report was included with the application, but we don't see it in the package for the Planning Commission. Therefore, we cannot be more specific with our concerns. Since our property is right below the Water Quality Facility plus a significant amount of planned construction, we would like to see and understand the Geotech report that the applicant references.

5. Over the 20+ years of the various Park Place development projects, we have seen several different NROD and Geo Hazard OD maps, but they have not been consistent. We would like to see current NROD and Geo Hazard OD maps that show both the proposed development areas and the properties immediately downhill (south) of the development.

We request that this letter be included in the staff report for the Planning Commission and that the Planning Commission take our concerns into consideration. We believe this letter is sufficient to provide us standing for future appeals. We will continue to review the documentation and will add comments to the Hearing testimony as appropriate.

Thank you,

Mike Mueller
Jane Varley

Dan and Alyssa Oliner
16502 Oak Valley Drive
Oregon City, Oregon
Dan@OlsenBarton.com

February 9, 2026

Oregon City Planning Commission
c/o Pete Walter – Planning Manager
pwalter@orcity.org

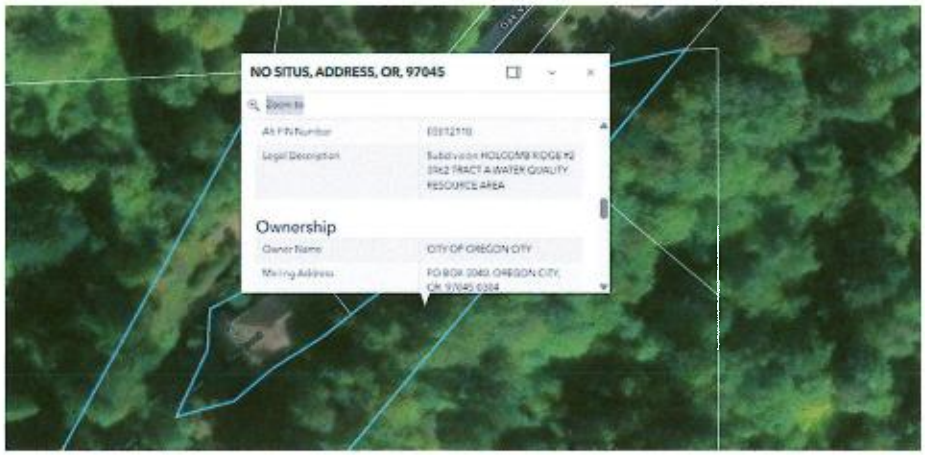
Re: **GLUA-24-034/SUB-24-03/GEO-24-07/NROD-24-032**

Dear Planning Commission,

We write as the owners of the property to the immediate south of the proposed utility easement and suspension bridge. In short, we have serious concerns regarding the feasibility and safety of this plan and urge a different approach. In a relatively tight-knit neighborhood of 43 ~~households, on short notice, 19 of our neighbors' households join us in these concerns and have~~ permitted us to add their names and addresses to this letter to indicate their agreement. We believe many more would join given more notice of this letter.

By way of background, one of the reasons we purchased our property was the beauty and privacy offered by the adjoining greenspace and ravine, and the limited access to our neighborhood. We know many of our neighbors feel similarly about these matters. As the arborist's report observes, the area in which the proposed suspension bridge has many trees in varying condition, but which we will note are generally quite tall, being well in excess of 100 feet. Several, as we understand it, constitute old growth.

The ravine has a stream running through it, which we understand either seasonally or generally connects to further streams and water sources downstream. At the time the land was initially developed, this particular area was designated a Water Quality Resource Area, presumably to preserve the stream and the area's natural beauty:



Dan and Alyssa Oliner
16502 Oak Valley Drive
Oregon City, Oregon
Dan@OlsenBarton.com

Retrieved on Feb. 9, 2026, from LRM Condemnation GIS software. That designation appears to be current. In briefly reviewing the applicable land use rules, it appears that seeking to develop on such land requires a separate WQRA Development application. *See, e.g.*, Section 709.06(A), Water Quality Resource Area District (WQRAD), Clackamas County ZDO ("ZDO"). It does not appear that such an application has been submitted. On brief review of the materials, it does not appear that the existence of this stream is necessarily acknowledged at all.

The plan as we understand it is to suspend a sewage line above this natural water source, in an area full of tall, beautiful trees in varying conditions. We cannot fathom how this would be an environmentally sound or safe approach. Initially, any leaks from the pipes would poison the water source and everything around it. Worse yet, branches fall and trees fall. We hear them, it's not uncommon in a storm. The only way to resolve that would likely be to clear cut everything around, which would be completely unacceptable and would ruin the natural beauty, and presumably property values, for the area.

We therefore urge you to reconsider this proposal and utilize the "non-preferred" option involving a standard, in-ground sewer line. Our household only became aware of this plan yesterday, February 8, 2026, and were shocked and dismayed to find out about it. Accordingly, we have not yet fully evaluated the issues and our accompanying options. By this letter, we and those similarly-situated intend to preserve all appellate rights and legal recourse. We hope you will proceed with the safer and less impactful way of resolving this issue, rather than putting our entire green space at risk and, for the adjoining owners, likely impacting our property values.

Thank you for your consideration,



Dan and Alyssa Oliner – 16502 Oak Valley Drive

Co-signing:

Mike and Morgan Garritson – 16501 Oak Valley Drive

Brandon Sneed – 16448 Oak Valley Drive

Rich and Katie Reid – 16586 Oaktree Terrace

Aaron and Kristina Parker – 16501 Oaktree Terrace

Joshua and Whitney Chapek – 16429 Oaktree Terrace

Dan and Alyssa Oliner
16502 Oak Valley Drive
Oregon City, Oregon
Dan@OlsenBarton.com

Will and Tara Ulbricht – 16213 Oak Valley Drive

Brook Pearson – 16538 Oaktree Terrace

Corey and Autumn Schreiber – 16361 Witke Court

Tracvy and Gaya Bariao-Arce – 16232 Oak Valley Drive

Elaeh Raphael and Thomas Floyrd – 16325 Wittke Court

Meliha Sacirovic – 16345 Oaktree Terrace

Neal Preston – 16376 Oak Valley Drive

Debra Schlosser – 16321 Oak Valley Drive

Davin and Roxsee Feliciano – 16477 Oaktree Terrace

~~David and Jennifer Price – 16447 Oak Valley Drive~~

Cheri and Nelson Flores – 16195 Oak Valley Drive

Clayton McCrea – 16357 Oak Valley Drive

Beth Byrne and Alex Halpern – 16177 Oak Valley Drive

Steve Ballard – 16412 Oak Valley Drive

Cc: *planning@orcity.org*

Pete Walter

From: ROBERT TERSHEL <bobtershel@comcast.net>
Sent: Monday, February 9, 2026 3:29 PM
To: Pete Walter
Subject: Written Testimony regarding file number GLUA-24-034/SUB-24-03/GEO-24-07/NROD-24-032

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.

Mr. Walter:

I am the owner of 22E28D,tax lot #502 that directly borders the above noted land use application to the north, east and west.

My property has approximately 500 lineal feet to the east of the application along Frank Road.

(1) as proposed the application effectively blocks my access to Frank Road because of the proposed usage of this road for emergency access purposes because of the proposed "gate" blocking access to Livesay Road. This is a detriment to my property and a concern to me.

(2) Regarding the Storm water plan. On most maps submitted for exhibits the entirety of the storm water treatment center is on the applicant's property. However, on the last page of the Drainage Report (page 125 of 125) a portion of the detention pond is clearly ON my property? Please reconcile.

(3) Lastly, since the application does NOT include my property -does the planned water retention facility encompass stormwater runoff from my property (in the future whenever it gets developed)? OR would I be responsible to have my own plan and thus detention pond? If so please consider that the slope of my land runs downward from north to south. Also consider (as conceived) that the wide neighborhood traffic arterial for the neighborhood also is designed to run through my property which entails greater than average water runoff. Consequently, a detention pond would have to potentially be created along Livesay Road (in between the commercial) "neighborhood center" of the development. Depending on what the city would require, this is a distinct possibility. Is this what you envisioned or want?

Respectfully submitted,

Robert Tershel
(owner of 14631 South Livesay Road)

Public Comment Summary – Park Place II – GLUA-24-024 / SUB-24-03

Public comments were tracked as they were received and have been summarized here. Staff has attempted to link the comments to the applicable approval criteria where possible.

None of these comments appear to reference any adopted Oregon City approval criteria that are not met, or which cannot be met by the applicant through compliance with the recommended conditions of approval, as discussed in the staff recommendation.

Public Comment

Commenter	Comment	Staff Response
Mike Mueller, 02/09/2026	1. The design and location of the proposed stormwater retention facility. How will the city ensure that no runoff or drainage will impact our property during construction and/or operation of the facility?	A condition of approval is standard to follow the Stormwater and Grading Design Standards. These standards ensure no negative impacts to adjacent properties. Additionally, conditions of approval are proposed to address the analysis required to impact the Geologic Hazard Overlay Zone.
	"Water Quality Facility", others refer to it as "Stormwater Retention". Are the terms synonymous?	Yes, essentially the terms are synonymous, although there are many ways to treat stormwater and the final design of the facilities may include multiple approaches to assure that stormwater is property managed.
	Proposed modifications to Livesay Road / Clackamas County road standards	Livesay Road is under Clackamas County jurisdiction. This application provides no change to Livesay Road.
	Prior master plan GLUA-20-00045	Application GLUA-20-00045 was withdrawn and has no bearing on this application.
	Connection of Holly Lane to Redland Road impacting property	The Holly Lane road connection to Redland Road is neither required nor proposed with this application. See findings in 16.12 / Traffic Impact Study.
	Geotech report missing from application	The Geotech report was included with the application, bundled within the drainage report.
	Locations of NROD and Geo Hazard are inconsistent	

Commenter	Comment	Staff Response
		The current NROD and GeoHazard layers are in OC Maps and the applicant has provided site specific locations of the adopted overlay district regulated areas. They are current. (OCMC 16.12, 17.44, 17.49)
Robert Tershel, 2/9/2026	(1) as proposed the application effectively blocks my access to Frank Road because of the proposed usage of this road for emergency access purposes because of the proposed "gate" blocking access to Livesay Road. This is a detriment to my property and a concern to me. (2) Regarding the Storm water plan. On most maps submitted for exhibits the entirety of the storm water treatment center is on the applicant's property. However, on the last page of the Drainage Report (page 125 of 125) a portion of the detention pond is clearly ON my property? Please reconcile. 3) Lastly, since the application does NOT include my property -does the planned water retention facility encompass stormwater runoff from my property (in the future whenever it gets developed)? OR would I be responsible to have my own plan and thus detention pond? If so please consider that the slope of my land runs downward from north to south. Also consider (as conceived) that the wide neighborhood traffic arterial for the neighborhood also is designed to run through my property which entails	Frank Road is a privately owned parcel owned by Hidden Falls Development LLC. It is not a platted right-of-way under the jurisdiction of any government entity. It is private land. The City has no authority to require retaining this access. As the property in question has access to Livesay Road, it has no change in access to public right-of-way. The OCMC has NOT been violated by this design and proposed development with respect to access of land by Taxlot 502. The composite site plan shows the stormwater tract completely within the owner's property. We agree that the exhibit on page 125 of the report is incorrect. A condition of approval is proposed that requires the applicant to update their materials per the Stormwater and Grading Design Standards. This will be done during design which allows incorrect exhibits during the planning phase of the project. (Applicable code: OCMC 16.12, 13.12, Stormwater and Grading Design Standards) The proposed development is not required to provide stormwater management for taxlot 502. When taxlot 502 develops, stormwater management would be required for that new development. Stormwater management can be provided in numerous ways. It will all depend on the proposed development and the design proposed by its engineers to comply with the City's Stormwater and Grading Design Standards. The City does not dictate where stormwater management is provided, just that it is required in certain scenarios. (Applicable code: OCMC 16.12, 13.12, Stormwater and Grading Design Standards)

Commenter	Comment	Staff Response
	greater than average water runoff. Consequently, a detention pond would have to potentially be created along Livesay Road (in between the commercial) "neighborhood center" of the development. Depending on what the city would require, this is a distinct possibility. Is this what you envisioned or want?	
Dan Oliner and other neighbors	Concerns for crossing Tour Creek with a proposed sewer line. A WQRA Development application was not submitted. Commenter cites Section 709.06(A), Water Quality Resource Area District (WQRAD), Clackamas County ZDO ("ZDO").	The property is not under Clackamas County jurisdiction. The regulations protecting the natural resources in both the County and the City have the same origin under Oregon State land use laws, but this application is subject to Oregon City code OCMC 17.49, not the Clackamas County Zoning and Development Ordinance or ZDO. The applicant has submitted an NROD report pursuant to OCMC 17.49. Because the application involves a proposed utility crossing of the NROD, a Type III planning commission review is required.